ASPECTS OF TONE AND VOICE IN PHUTHI

BY

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DISertation

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Abstract

This dissertation seeks to explore the architecture of tonal structures in a formal phonological analysis of the tone patterns found in Phuthi, a Bantu language. The focus of the work is the phonological presence of high tone (H) in Phuthi, the interaction of this H with potentially polysyllabic tonal ‘depression domains’, triggered (often, but not always) by phonologically breathy voiced segments that condition low tone within the lexical phonology. Both theoretical and empirical claims are made. Within a general Optimality Theory framework, the Phuthi data requires a distinction between the planning and execution of a H tone within a tonal domain, modeled here with distinct PARSE and EXPRESS constraints in the tone grammar, as there are frequently found to be very significant mismatches between H tone domains—established by lexical tone placement—and domains of tonal depression (consonant-triggered, or morphologically imposed). The morphology that chiefly instantiates these tone phenomena is the wide range of extremely productive verb paradigms present in the language (though productive noun paradigms are explored too).

A strong case is made for the presence of tonal low (L) domains, which can be nested—even multiply—within a single H domain. In such instances, the single H tone is argued not to fission into two separate tone domains, nor in any way to instantiate violation of locality.

Phuthi does instantiate, however, a wide range of L- and H-domain edge conflicts. When these conflicts coincide with a tone domain-head (a notion developed in the work), the language attempts to force tone shift, a phenomenon widely commented on for Nguni languages. Phuthi displays a number of unprecedented variations on tone shift and tone block, arising from a cline of tone-depression interactions not observed in other languages. Phuthi is shown to be a language that prohibits or severely restricts the coincidence of H and L tone domains over the same interval. And yet the grammar seems often to conspire with the lexicon to assign both H and L features to syllabic nuclei in head positions of phonological domains. The simultaneous assignment of H and L tones introduces a feature conflict that is resolved in a striking variety of ways across verbal and nominal paradigms. Optimal Domains Theory (ODT) is argued to be a theoretical framework capable of sufficiently expressing this range of voice and tone data, in contrast to any type of optimal constraint model that lacks the augmented domains architecture.
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and my brother, Martin,
and all the others who have waited so patiently for so long

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both of lower Mpapa village,
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a scholarly giant among the greatest of the Indoeuropeanists, who taught us with great love, and
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*Mutfu gumutfu gebatu* (Phuthi version of proverb common to Southern Africa):

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terre: rapide, son verbe la parcourt.”

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Symbols and Abbreviations

~ grammatical alternation
< comes from (e.g. a certain Phuthi item ‘comes from’ a certain Sotho item), used in Appendix D
* illicit item (lexical gap, ill-formed item)
[...] in the lexicon (Appendix D), grammatical information is placed between square brackets
1ps / 1pp first person singular / plural
2ps / 2pp second person singular / plural
3ps / 3pp third person singular / plural
3-σ+ longer than three syllables
adj adjective (special usage in Phuthi, and in Bantu generally, often in contradistinction to ‘relative’, cf. Chapter 2 §2.2.3).

Afrik. Afrikaans
AM Associative Marker (or ‘Possessive Marker’ or ‘Possessive Prefix’ in the Southern African tradition)
AP Adjective Phrase; Associate Prefix; Autosegmental Phonology
A&P Archangeli & Pulleyblank
aug. augmentative
btw between
C any consonant
Ch. Chapter(s)
Cl. (Noun) Class
C&K Cassimjee & Kisseberth (various publications, always given with year)
dim. diminutive
e.o. each other
et.seq. et sequitur: ‘and following (below)’
F falling tone
fn. footnote
H high tone (the distinction between lexical or grammatical H is clear from context)
HD high tone domain
H_gram grammatical H tone
H lexical H tone
H_lex lexical H tone
h/h ‘him/her’ (as a gloss)
io ideophone
indic indicative (mood)
INSTR Instrumental
L low tone (either: the active feature-element, ‘Low’, or occasionally the paradigm of lexically ‘Low’ stems that occur in a Bantu language such as Phuthi: the distinction is clear from context)
LD low tone domain

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<tr>
<td>L_0</td>
<td>grammatical L tone</td>
</tr>
<tr>
<td>L_{GRAM}</td>
<td>grammatical L tone</td>
</tr>
<tr>
<td>L_d</td>
<td>lexical L tone</td>
</tr>
<tr>
<td>L_{LEX}</td>
<td>lexical L tone</td>
</tr>
<tr>
<td>lit</td>
<td>literally</td>
</tr>
<tr>
<td>LOC (loc)</td>
<td>locative</td>
</tr>
<tr>
<td>Mp.</td>
<td>Mpapa (village name)</td>
</tr>
<tr>
<td>M&amp;P</td>
<td>McCarthy &amp; Prince</td>
</tr>
<tr>
<td>Min</td>
<td>minimal(ity), cf. the HD-MIN constraint</td>
</tr>
<tr>
<td>NEG</td>
<td>negative</td>
</tr>
<tr>
<td>NC</td>
<td>Noun Class</td>
</tr>
<tr>
<td>NPref</td>
<td>noun (class) prefix</td>
</tr>
<tr>
<td>non-3p</td>
<td>non-3rd person (that is, 1st or 2nd grammatical person)</td>
</tr>
<tr>
<td>OP</td>
<td>Object Prefix (or ‘Object Marker’)</td>
</tr>
<tr>
<td>perf</td>
<td>perfective (aspect)</td>
</tr>
<tr>
<td>Ph</td>
<td>Phuthi</td>
</tr>
<tr>
<td>pl</td>
<td>plural</td>
</tr>
<tr>
<td>pp</td>
<td>person plural, e.g. 1pp: 1st person plural; 2pp: 2nd person plural, etc.</td>
</tr>
<tr>
<td>PR</td>
<td>phonetic (surface) representation</td>
</tr>
<tr>
<td>ps</td>
<td>person singular, e.g. 1ps: 1st person singular; 2ps: 2nd person singular, etc.</td>
</tr>
<tr>
<td>P&amp;S</td>
<td>Prince &amp; Smolensky</td>
</tr>
<tr>
<td>pres</td>
<td>present (tense)</td>
</tr>
<tr>
<td>PWord</td>
<td>prosodic word</td>
</tr>
<tr>
<td>q</td>
<td>interrogative word (used in Appendix D)</td>
</tr>
<tr>
<td>redup</td>
<td>reduplicative (morphological form of any tense/mood/voice/aspect)</td>
</tr>
<tr>
<td>rfx</td>
<td>reflexive</td>
</tr>
<tr>
<td>REL (rel)</td>
<td>relative</td>
</tr>
<tr>
<td>σ</td>
<td>syllable</td>
</tr>
<tr>
<td>sg</td>
<td>singular</td>
</tr>
<tr>
<td>Sgx.</td>
<td>Sigxodo (village name), that is: Sinxondo/Zingxondo (Xh), Seqoto (SS)</td>
</tr>
<tr>
<td>smn</td>
<td>someone</td>
</tr>
<tr>
<td>SP</td>
<td>Subject Prefix (or ‘Subject Marker’)</td>
</tr>
<tr>
<td>sq. km</td>
<td>square kilometres</td>
</tr>
<tr>
<td>SS</td>
<td>Sotho (that is, Southern Sotho)</td>
</tr>
<tr>
<td>sth</td>
<td>something</td>
</tr>
<tr>
<td>SUBJUNC</td>
<td>subjunctive</td>
</tr>
<tr>
<td>Sw.</td>
<td>Swati</td>
</tr>
<tr>
<td>T/A</td>
<td>tense/aspect marker</td>
</tr>
<tr>
<td>T&amp;K</td>
<td>Thomason &amp; Kaufman (1988)</td>
</tr>
<tr>
<td>UR</td>
<td>underlying representation</td>
</tr>
<tr>
<td>V</td>
<td>any vowel</td>
</tr>
<tr>
<td>vb</td>
<td>verb (used in Appendix D)</td>
</tr>
<tr>
<td>vs.</td>
<td>versus</td>
</tr>
<tr>
<td>Xh.</td>
<td>Xhosa</td>
</tr>
<tr>
<td>w.r.t.</td>
<td>with respect to</td>
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<tr>
<td>Z.</td>
<td>Zulu</td>
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Chapter 1

Introduction

“Uyad[h]ala muthfu lotsi kugarudwa bathfwana udlhala gematshe emati akona”\(^1\)

John Mbenyane Gqada, 1949, Tshepisong, Matatiele (quoted in Mzamane 1949:248)

‘The person who says children should not be educated is just playing; he plays with spittle when there is water’

This chapter is presented in three parts: §1.1 includes an overview of previous sources on the language (§1.1.1), a profile of the extant Phuthi communities (§1.1.2), an outline history of the speakers (§1.1.3), some insight into the maintenance of the Phuthi language (§1.1.4), the effects displayed from contact with other languages (§1.1.5), possible obsolescence (§1.1.6), and a classification (§1.1.7) of Phuthi as Nguni (§1.1.7.2), then more specifically Tekela Nguni (§1.1.7.3). §1.2 outlines the methodology used (§1.2.1), the empirical tradition into which the work fits (§1.2.2) and a brief overview of salient theoretical issues that will be raised in this work (§1.2.3). Finally, §1.3 outlines the structure of the dissertation.

\(^1\) The quote would be written in my Phuthi orthography with morpheme and interlinear glosses (breathy voice/depression diacritics, morpheme boundaries have been added, but not tone):

\[
\begin{align*}
\text{u- ya- dal-a mu-tfu lo- tshi ku- ga- rud- w- a (e)ba- tfwana} & \\
\text{SP1-T/A-play-T/A NC1-person NC1-REL-say NC17-NEG-teach-PASS-T/A NC2-children} & \\
\text{He plays person who-says there-should-not-be-taught children} & \\
\text{u- dal-a ge- ma- tshe ema-ti a- kona} & \\
\text{SP_NC1-play-T/A INSTR-NC6-water NC6- water SP(P)6-there [SP(P)6 = 'subject prefix} & \\
\text{he-plays with-spittle water it-being-there. participial, Class 6'] & \\
\end{align*}
\]
1.1. Language Background

Phuthi is a little described, south-eastern Bantu language spoken in a number of regions in southern Lesotho and the far northern Eastern Cape province of South Africa (Donnelly 1999). Map 1 provides for a somewhat clearer indication of these regions, to the best of my knowledge.

Map 1
Current Phuthi-speaking areas in Lesotho and South Africa.

1.1.1. Sources

Up until the mid-1990s, there had been four identifiable published linguistic sources for the Phuthi language and its speakers: Bourquin (1927), Mzamane (1949), Ownby (1985) and Msimang (1989). Bourquin, a missionary based in Cedarville / Mvenyane, worked with a speaker from the vicinity of the Thinana River source, on the Lesotho-South Africa border—northwest
of Matatiele in the northern Transkei. He focuses on diachronic aspects of how proto-Bantu sounds are manifested in Phuthi, introducing some 280 lexical items which constitute what seems to be the first written record of Phuthi. Like most contemporaneous authors, he pays no attention to tone in the language; in addition, most items are presented in already analysed format (e.g. stems stripped of affixes, and vice versa), which makes it hard to assess what the extent of his knowledge of the language was, and impossible to reanalyse the data presented. Bourquin provides no details of the nature of the Phuthi speech community he was connected to.

Mzamane’s 1948 Masters thesis, published by the University of Fort Hare (1949), contains by far the most substantial body of Phuthi data prior to the present work. He sets out to compare the Phuthi spoken in Matatiele and Mt. Fletcher (both sets of communities are in present-day South Africa, cf. Map 1) with Nguni (Xhosa and Zulu) and Southern Sotho. Although Mzamane covers a number of aspects of phonology and morphology, the treatment is so atheoretical and there are such inconsistencies in his data that it is not always easy to grasp the distribution of distinctive Phuthi phonological phenomena (such as the raised mid vowels [e o] and the labialised consonants [tf, dv])⁶. The greatest strength in this work is the morphological data provided, which enables Phuthi to be convincingly established as a Sotho-Nguni hybrid. Again, there is almost no information on tone—just a single paragraph (1949:147-8), providing little clue to the breadth of paradigms characteristic of the language. Most subsequent references to Phuthi, including the morphological table in Doke (1954) derive from Mzamane’s work.

Ownby (1985) contains 200 Phuthi lexical items from two isolated Phuthi speakers in Mutamong⁷, near Mokhotlong in the east-central part of Lesotho. Since her central purpose was to classify the Nguni languages using a lexicostatistical method, no attention is paid to the distribution or composition of current Phuthi communities, nor to Phuthi grammar.

Msimang (1989) is a comparative phonological and historical treatment of aspects of the largest set of Tekela Nguni languages to be examined at one time: Bhaca, Lala, Nhlangwini,

Mzamane (1949) and elsewhere the river’s name is spelt as ‘Tinana’.

⁶ As in Swati, /dq/ ~ /dy/ and /tsh ~ /tf/ are affricated coronals. Labialised [tf] and [dv] occur in Mpapa before round vocalic segments [ə o u w] (cf. detailed discussion in Chapter 2 §2.1.2). Inconsistently in his own text, Mzamane (1949) reports labialised /kh/ in <mukhfupha> ‘bread’.

⁷ Mutamong is described as being in the foothills of the Sani pass (Katherine Demuth, p.c., 1995).
Phuthi, Sumayela Ndebele and Swati. He is the first researcher in forty years to reestablish contact with a community of Phuthi speakers, but even this was achieved only at the fringes of Phuthi territory (Gcina, in Herschel). The primary data of about 250 lexical items from Palmietfontein (in the Herschel area) and Quthing is internally inconsistent with respect to various aspects of morphology and phonology. This may, in part, point to the semi-speaker status of the consultants, which is a phenomenon I observed in my own work in the Herschel area: most people in that region who claim to be ethnically Phuthi no longer have any fluent command of the language, or even any command at all. They are ‘lexical rememberers’ (Sasse 1992).

Thus, the extant literature offers us little background on where Phuthi speakers are to be found, and what condition their language is in. All sources except Msimang (1989)—and this only in part—lack any tone marking of any sort; all contain serious internal inconsistencies in the tone data presented, raising questions about whether the inconsistencies reflect (a) the way the data was elicited; (b) the fact that the Phuthi language consultants were perhaps not fluent Phuthi speakers at all; (c) the state of the language in general, as it shows increasingly threadbare language maintenance in some communities. In fact, on the basis of this data one could be forgiven for wondering whether perhaps all Phuthi speakers had begun to lose their fully native command of the language. Happily, the present work has been able to establish that the language is still robustly attested, in rich morphological and phonological complexity, among several thousand native speakers. It is this robustly attested variety that this dissertation draws on.

1.1.2. Profile of Speech Communities

Fortunately for the survival of the language, there continue to be several thousand native speakers in various parts of southern Lesotho and the northern Transkei. The ones that I worked with live primarily in the following five non-contiguous areas (a-e), all of them in Lesotho (see Map 1), as well as (f) where I have not yet worked.

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8 A detailed list of the villages where I have established that Phuthi is spoken is contained in Appendix B.

9 Adhering to the convention of omitting noun class prefixes when nouns are cited in English, I have omitted locative prefixes as well, where possible (Phuthi: ka-, ge-, e-; Sotho: ha-, ka-; Xhosa: kwa-, e-). The suffixes, however, remain. For example, Quthing.
(1) Common name in Lesotho / South Africa  Phuthi name (where distinct)

a. Quthing \[^{10}\]  \[!\text{\textit{u}thinj}\]  Qûthînî \[!\text{\textit{u}thini}\]

b. Sinxondo  \[\text{si}n\text{\textit{nd}o}\]  Sigxodo  \[\text{sigl}\text{\textit{d}o}\]

   Seqoto  \[\text{si}\text{\textit{t}o}\]

c. Mpapa  \[\text{mpapa}\]

d. Makoae  \[\text{makwai}\]  Magwayi  \[\text{magwaji}\]

e. Qacha  \[!\text{\textit{at}ha}\]

f. Matatiele  \[\text{matat\textit{ie}le}\]  Madadiela  \[\text{madadi\textit{ela}}\]

Among the sources examined above, only Msimang (1989) and Mzamane (1949) contain data from any of these areas (Quthing; Matatiele, respectively). Mzamane (1949:1) observes that Phuthi is spoken ‘chiefly in some parts of the districts of Qacha’s Nek and Quthing on either side of the Orange River in Basutoland and in the Cape Province at Ngonyameni, Thinana, Dzakwa’s and Likhetlane locations in the Mt. Fletcher district and in some parts of the Matatiele district’. But this information is more than 50 years old, and has not been verified since (to the best of my knowledge).

Yet the locales given in (1) are the ‘core’ Phuthi-speaking areas, as far as I can tell from people consulted in the course of my fieldwork. In addition, Phuthi communities are reported (in personal interviews with Phuthi travellers) to live in areas surrounding Matatiele and Mt. Fletcher, and a small group lives in the northern triangle of former Transkei territory (Palmietfontein, Gcina, Mfingci). Native speakers\[^{11}\] (in South Africa: ‘mother-tongue speakers’) are thus spread across approximately 30 villages in these five fairly robust communities and in the as yet unverified additional areas. These widely scattered villages cover an area of nearly 15 000 sq. km, if one includes the territory in both Lesotho—(a) to (e) above—and South Africa.

At present we simply do not know how many speakers of Phuthi there are. There appears to be no systematic record anywhere of where speakers live\[^{12}\], or who claims to speak the

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\[^{10}\]  Professor David Ambrose (p.c., 1995) from the National University of Lesotho, at Roma, has pointed out that Moyeni (Phuthi Emoyeni [emojeni]) would be the more appropriate appellation, since Quthing is properly located only in the east of the district, and the name of the district headquarters to those who live there is Moyeni (but it is Quthing for those in Maseru). Moreover, Moyeni is a Nguni name (‘in the wind / spirit’).

\[^{11}\]  ‘Native’ unfortunately accrued racist and colonialist overtones during the 20th century in South Africa; ‘native speaker’ is thus typically rephrased as ‘mother-tongue speaker’.

\[^{12}\]  Ambrose (p.c., 2002) points out that Phuthi ethnic membership can be inferred from typically Phuthi such as reflected in the data collected in the 2001 Lesotho census.
language. Neither in South Africa nor in Lesotho is Phuthi recognised as a first or second language for any official purposes.

The 1991 South African census (p.15) contained the following instruction: ‘State which language each person MOST OFTEN speaks at HOME’ [capitals theirs], but possible answers for African languages could consist only of one of the now official standard nine languages\(^\text{13}\) (the only Tekela Nguni language on the list is Swati). There is an additional category, ‘Other’, into which almost 324 000 respondents fell (just over 1% of the almost 31 million in the total census). It is possible that some of the 287 000 Black respondents may have filled in ‘Phuthi’ as a primary home language, but that information is unavailable. This was especially possible since the census indicates that more than 165 000 residents in South Africa were citizens of Lesotho. Clearly, Phuthi—along with a variety of other minority South African languages—will never receive a head count unless the census question of language is rephrased in an open-ended fashion\(^\text{14}\), allowing for more than one language to be filled in as the one ‘most often spoken at home’, and also allowing for a record of which languages (with some reasonable cut-off point) make up the unaccounted for ‘other’ 1% of the South African population. The 2001 census, 10 years later, asked the same limited question, thus allowing for the same faulty or uninterpretable answers from those being sampled in the census (Statistics South Africa 2003: Figure 6, Tables 2.5-2.9). The number of respondents claiming ‘other’ as a home language in 2001 was 0.5% of the total population (of 44 819 778), or around 224 100 inhabitants.

The question of whether some South Africans might have wished to register Phuthi as the primary language is further complicated by the political fact that the ‘independent homelands’ like Transkei were entirely excluded from the 1991 census. Thus although Matatiele, surrounding which several Phuthi communities are reported to live, is included in the South African census, Mt. Fletcher and areas northwards towards the Lesotho border are part of the Transkei. Recent

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\(^{13}\) Actually ten African languages were allowed for in the 1991 census: Southern and Northern Ndebele were listed separately (this is no longer the case in the 2001 census).

\(^{14}\) One of the most ardent promoters of Phuthi linguistic rights who I met, Mr. Reuben Mokoantle, a businessman living at Gcina (near Sterkspruit), briefed lawyers from Bloemfontein some years ago to make representation for him to the ‘South African authorities’ in Pretoria. He wished to petition that his native Phuthi be listed as a South African language. The matter was never resolved.
(1989) statistical information obtainable from the Transkei reflects no examination of languages spoken by its more than 3 million residents (Morrison et al. 1989).

The most recent Lesotho census for which results are available is 2001 (‘Lesotho’, 2001), and includes no questions about language at all. Since it is widely considered by officials, educators and politicians that Lesotho is a monolingual country—or rather should ideally be monolingual—it would appear that there is no perceived need to probe the question of languages spoken at home because there is only one answer: Sotho. The Lesotho population was estimated by the country’s Bureau of Statistics in 2006 to be nearly two million.

I estimate—conservatively, and only very roughly—that there may be as many as 20 000 native Phuthi speakers spread across the five main Phuthi regions of southern Lesotho. If my estimate is anywhere near correct, then Phuthis may compose 1% of Lesotho’s population.

Grimes (1992), however, reported that up to 12% of the Lesotho population speaks Zulu (her sources have surely grossly overestimated this percentage). It has been reported to me that sizeable Xhosa-speaking communities live in the south of Lesotho (e.g. the Vundle people in the Mjanyane valley). I myself visited smaller natively Xhosa-speaking communities in the Mount Moorosi area, where the variety of Xhosa spoken displays a number of contact effects from Sotho and is quite distinct from Xhosa spoken even to the south in the (northern) Transkei.

Although Ethnologue is apparently the only other source up to the present acknowledging a degree of linguistic diversity in Lesotho, in the 15th edition Gordon (2005) suggests there are 43 000 speakers of Phuthi in Lesotho (source unclear). He acknowledges Phuthi as a language of Lesotho, but gives it as a dialect of Swati. Until at least 1992, Phuthi was listed in Ethnologue as also being a dialect of Sotho, which is synchronically an odd statement but historically in part accurate. Although Phuthi and Swati are historically closely related Nguni languages, they are currently spoken hundreds of kilometres apart, and are mutually quite unintelligible.

15 Nor was home language sought in any previous Lesotho censuses (Ambrose, p.c., 2001).
16 The April 2006 estimate is 1 880 661 (‘Lesotho’ 2007); the preliminary results are taken from Lesotho’s own census data website: http://www.bos.gov.ls (accessed 12 December 2007).
17 The distribution of Xhosa, Sotho and Phuthi in the south is complicated (and not even an outline sketch of these dialects is recorded). In one village (e.g. Mpapa), one may find native speakers of all three languages, whose neighbours understand them, but who are not as natively fluent as the native speakers themselves. Speech communities can be literally as big as one homestead (two or three huts, with perhaps ten residents).
Thus, Phuthi, Xhosa and Zulu can be added to the list of languages spoken natively in Lesotho, together comprising perhaps as much as 5% of the population (about 100,000 speakers), somewhere between the two cited figures of 1% and 15%.

My work in this dissertation focuses on the Phuthi spoken in Mpapa (Mp.), supplemented at points by Phuthi from Sinxondo/Sigxodo (Sgx.)\textsuperscript{18}. Though highly mutually intelligible, initial investigation has revealed there are a number of phonological and morphological differences which identify these two varieties as distinct dialects\textsuperscript{19}. Mp. Phuthi bears much heavier influence from Sotho; Sgx. Phuthi displays more Xhosa-affiliated properties (as ongoing research has revealed). Based on brief work with the Qacha, Makoae and Quthing varieties of Phuthi, it appears that dialectal distinctiveness can be anticipated for these areas as well. There appear to be at least three dialect nodes: Mpapa, Sigxodo and Qacha (with the dialect status of Makoae and Quthing less clear). Variation across the Matatiele speech areas to the south (and elsewhere) remains to be examined.

1. 1. 3. History

The settlement and movement patterns of the Phuthi people are only partially understood; for this reason it is impossible to pinpoint when the Phuthi are first identifiable as a distinct group speaking a distinct language. At least three types of evidence, however, shed light on their origins: (a) synchronic comparative linguistic data from which earlier affiliations can be reconstructed; (b) archaeological evidence, though in a limited way; and (c) oral and written histories, including genealogies and clan names. The three sources jointly suggest that the Phuthi are an Nguni people whose ancestors probably crossed into Lesotho in several waves in the 1500s and 1600s from the east side of the Drakensberg Mountains in Natal, and ultimately from

\textsuperscript{18} This area is known (both verbally and on paper) as ‘Sinxondo’ to Xhosa speakers, to Sotho speakers as ‘Seqoto’. I refer to it hence as ‘Sigxodo’ (Sgx.), along with native speakers.

\textsuperscript{19} Examples are referred to, where relevant, throughout this dissertation. Variation includes: (a) morphological: in addition to the class-specific copula prefixes (Sgx., Mp.), Sgx. has a generic yi- copula prefix that can be a copula for any class (cf. Chapter 2 §2.2.1.7, fn.54; §7.5); (b) phonological: Sgx. phrase-medial lexical paradigms target the antepenult as the rightwards widescope target of a H tone domain, whereas the Mp. phrase-medial target is the penult (cf. Chapter 4 §4.5); (c) segmental: Sgx. Phuthi has no labialisation of coronal consonants, \textit{contra} Mpapa (Mp. [tf], [dy] = Sgx. [th], [d]).
much further north in the eastern Transvaal (now: Mpumalanga) or Swaziland region, where there must have been extensive contact with Sotho peoples, chief among these, perhaps, the Fokeng.

Firstly, the grammatical characteristics and classification of Phuthi (cf. §1.1.7 below, and Appendix C, and ongoing research) will show that it is primarily an Nguni language, but with heavy Sotho admixture. Secondly, the archaeological record indicates that the probable ancestors of the present Bantu-speaking peoples of southern Africa had moved south of the Limpopo by around 200 AD, preferring to settle in coastal regions (Gill 1992:38ff). Only much later—by around 900-1200 AD—had distinct Sotho- and Nguni-speaking nuclei probably emerged.

The drier western half of southern Africa had remained essentially unpopulated by these incoming iron-age peoples until after 900 AD; by around 1200 AD a cultural cluster—ancestors of the Sotho, mixed with indigenous Khoisan peoples—had developed, extending from southeastern Botswana to east of the Magaliesberg mountain range (Gill 1992:46ff). At a similar time (or perhaps earlier) an Nguni cluster was developing along the east coast, stretching southwards from Delagoa Bay to the eastern Cape. Even before the Sotho peoples were dispersing from their nucleus to the north during the 1500s, there may have been substantial Nguni-Sotho interaction in the central Transvaal (now: Gauteng). Examples of this are the Nguni languages which display heavy Sotho admixture: Transvaal Ndebele, whose speakers had crossed from the Nguni area of Natal into the Sotho area of the Transvaal in the 15th or 16th century (Gill 1992:48); and Phuthi. There are also the Eastern Sotho varieties, Pai and Pulana, which bear evidence of heavy Nguni influence (Ziervogel 1954).

Since it is well established that the Tekela Nguni languages (including Swati and Phuthi) had become widespread before Shaka’s ascendancy in the 1820s (Gill 1992:46), there must have been extensive interaction between the Nguni- and the Sotho-speaking peoples at an early date, since the 450km buffer zone between where Swati is spoken (Mpumalanga (eastern Transvaal), northern Natal, Swaziland) and where Phuthi is spoken (southern Lesotho) is almost entirely occupied by Sotho-speaking and Zunda (i.e. non-Tekela) Nguni-speaking peoples. The wide geographical separation of Phuthi and Swati must predate the upheavals of the imfecane (‘period of great turmoil’ in the Nguni societies caused by Shaka’s Zulu territorial expansion in the
1830s). Further, Phuthi’s extensive loans from Sotho (Donnelly, in progress) support the suggested early and extensive Sotho-Nguni interactions.

By 1600, at least three Sotho-influenced Nguni peoples—the Phetla, Polane and Phuthi—occupied the far south and centre of Lesotho’s lowlands (along with the first Bantu-speaking inhabitants of the region, the Fokeng clan of the Sotho). All three groups are reported to have been Zizi (in Tekela Nguni: Titi) peoples who came from the Tugela River valley across the Drakensberg mountains, as documented in detail by Ellenberger (1912:21-30)\(^{20}\); the Phuthi were the last of these three to cross into Lesotho (Jolly 1994)\(^{21}\), settling at ‘Korokoro’ (Sekese 1905, quoted in Jolly 1994).

Thirdly, Ellenberger (missionary to the Sotho and the Phuthi; cf. more below) supplies the final type of evidence: oral histories and genealogies. The movements of the Phuthi people are quite complex: initially they appear to have acquired their Phuthi ethnonym only after settling for a time with the Sotho-speaking Phuthing people, adopting not only some of their customs, but also their animal emblem, the *phuthi* (a type of antelope—*blue duiker* in South African English\(^{22}\)). The Phuthing were in turn a branch of the Khatla, descended from Matsiboho, originating in the Magaliesberg area. The Phuthi later lived near the border of Swaziland (Ellenberger 1912:34). This putative home is supported by the facts of the blue duiker’s habitat:

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\(^{20}\) Ellenberger (1912) provides a detailed and relatively unbiased examination of peoples in the Lesotho area, accomplished by lengthy collection of oral histories and genealogies. Theal (1883) includes some information on the Phuthi as well. The Sotho scholar, James Walton, maintains that the Phuthi were not Nguni Zizi people (*contra* Ellenberger) but rather non-Nguni-speaking, eastern Sotho who had left Swaziland (expressed in a letter from James Walton to Marion Walsham How, dated January 21, 1961). This claim must be rejected if the conclusions in this chapter (§1.1.7) are correct, that is, if Phuthi is *not* a case of language shift from Sotho to Nguni, but rather very fundamentally an Nguni language, though with heavy Sotho borrowing.

\(^{21}\) Jolly (1994) suggests that the Phuthi crossed as late as 1700.

\(^{22}\) The exact referent of the name *phuthi* has not been verified with contemporary Phuthi communities. But *phuthi* has been used in Sotho and Xhosa to mean a Blue Duiker —*Philantomba monticola* in the genus *Cephalophus* (Skinner & Smithers 1990:638)—and also to refer to a Cape Grysbok—*Raphicerus melanotis*. Since the Blue Duiker was never a Lesotho animal—it is only found in thickly forested or dense undergrowth areas—and the Cape Grysbok is probably now extinct in Lesotho (David Ambrose, p.c., 2001), it is difficult to pin down these facts. The duiker is any of several small species of South African antelope of the genus *Cephalophus* (in particular the animal, *Sylvicapra grimmia*)—sometimes called ‘diving goat’ (Branford 1987). The work *duiker* is Afrikaans for ‘diver’.
it has never been found in Lesotho; rather, it is found only in thickly forested or dense undergrowth areas from the Outeniqua Mountains to Swaziland, along a strip inland from the coast up to about 100km. This makes Ellenberger’s observation that the Phuthi adopted their emblem when they were still on the borders of Swaziland highly plausible\(^\text{23}\).

In 1795, the most significant figure in Phuthi history was born: Moorosi, son of Mokuoane. He became paramount chief of the Phuthi people, leading them to a varied succession of homes in southern Lesotho and the northern Transkei—partly dictated by conflicts with neighbours—including (in order): Dordrecht, the caves of Lady Grey, Nkoa Khomo (Lundean’s Nek), Kraai River and Litapoleng.

Ellenberger’s oral histories are fleshed out with Phuthi genealogies (1912:344-346) that confirm their mixed ancestry: the original place they are recorded as coming from is named ‘Tlameni’, evidently a Sotho equivalent of the Phuthi (and widespread Nguni) clan name ‘Dlamini’. Although the genealogy reaches back eight generations prior to Moorosi (perhaps as far as the mid-1500s), almost all the names given are unambiguously Sotho. This may reflect perhaps the language used to transcribe Ellenberger’s information, that is, Sotho, and not the real names of the ancestors per se. Although Ellenberger records (1912:344) that the genealogy was compiled by Moorosi himself (and certain members of his family), it is hard to know how accurate such a list is. But if it is so that the Phuthi had already had ancestors with Sotho names for 300 years by the mid 1800s, then a very high degree of cultural interaction is indicated.

Throughout the journeying of the Phuthi people, there was prolonged contact with San speakers\(^\text{24}\) (Jolly 1994:52-63). At least one of Moorosi’s wives had a San name, Quane [!wani]; he himself had a Khoisan nickname: ‘Qhengha’\(^\text{25}\) (Ellenberger 1912:28-9). Early Paris

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\(^\text{23}\) The debt is again to David Ambrose (p.c., 2001) for carefully assembling these facts.

\(^\text{24}\) I do not have evidence to make a careful distinction between San and Khoi peoples here. The San-Nguni (including -Phuthi) relations are explored in detail in Jolly (1994). ‘San’ here refers typically to people speaking ‘Seroa’, i.e. the Rwa language; [rwa] is the Sotho form of a widespread root in Bantu languages which refers to Khoi or San (Bushmen) peoples.

\(^\text{25}\) Pronunciation of this name is not indicated from the text (bearing Sotho orthographic ambiguities in mind), but is likely to be [!hinga], which could easily be Phuthi (although not recorded as such by me); in Xhosa, this verb means ‘advise, counsel; devise, plot; baffle, entrap’ (McLaren 1963:137); the noun í-qhìngà [i-!hinga] means ‘plan, a way of doing something or solving a difficulty; cunning trick’ (Pahl, Pienaar and Ndungane 1989:45), all of which attributes
Evangelical Missionary Society (henceforth: PEMS) missionaries report widespread use of San languages in the 1830s (Gill 1992:38); Ellenberger reports that even in the early 1800s, some of the Phuthi were subject to the San. Confirmation of this is that Joseph Orpen’s guide from Qacha’s Nek in the early 1870s was Qing, a young Bushman who also spoke Phuthi: ‘the language he spoke best besides his own was that of the Baputi, a hybrid dialect between the Basuto and the Amazizi languages’ (Orpen 1874:2, in Traill 1995). These contact facts help to explain the presence of clicks in Phuthi, and notably, the existence of all three click series (dental [], palatal [] and alveolar [], whereas Sotho (in which current Phuthi-speaking communities are embedded) has only one series varying (even in the speech of the same individual) between dental and palatal (as emerged from my field data). Swati, too, has only one click series (dental).

After the second Sotho-Boer (Seqiti) war in 1865, Ellenberger and his family—Swiss missionaries with the PEMS—were forced to leave their mission at Bethesda, and were invited by Moorosi to reside among his people, now at Masitise (just west of Quthing). This they did for 34 years (1866-1873; 1878-1905), serving the Phuthi, and also the Vundle, Thembu, Hlubi, Tlokoa, San remnants and other peoples in the Quthing and Herschel area (Gill 1992:10-11).

All textual citations attributed to Phuthi speakers in Ellenberger (1912) are given in Sotho, which is not surprising, since the Sotho people are the focus of the book. But it is extraordinary that there appears to be no indication of Ellenberger having worked on the Phuthi language, despite the great length of time he spent among the Phuthi people, and despite considerable work (Gill 1992:14) on translating two Old Testament books and a hymn book into Sotho.

The turning point for the Phuthi was the ‘Moorosi rebellion’ of 1879. Moorosi’s son, Doda, had been arrested and charged with cattle theft by the Quthing magistrate, John Austen (Germond 1967:329-340). Moorosi had his son broken free; colonial British troops then pursued Moorosi to what became his stronghold: the natural fortress on top of present-day Mt. Moorosi. For nearly nine months British and Sotho soldiers tried to rout him. Finally—on November 20, 1879—they succeeded. Moorosi and many of his followers were killed, or committed suicide. Hundreds of Phuthis had already surrendered (and were sent to work on building a bridge over appear to apply to Moorosi’s reported leadership style.
the Orange River at Aliwal North). The scattered nature of current Phuthi communities, and their location in remote, mountainous areas, seems to reflect the decimation of the Phuthi people (including their leaders) in the rebellion: survivors fled afterwards as fast and far as they could.

It remains to be determined whether the Qacha, Sigxodo and Matatiele Phuthi communities predate the rebellion, or are a result of the flight of Moorosi’s people from the Quthing and Mt. Moorosi areas a century ago. But it is clear from all three sources of evidence that the Phuthi are an Nguni people who have been in contact with Sotho communities for about 400 years, giving them ample opportunity to experience the intensity of language contact suggested by data to follow in section §1.1.5 (and cf. Donnelly, in progress, and appendices C, D).

Thus, the Phuthi were certainly once powerful under Moorosi. Their history is one of ‘dilution’ with speakers of other languages—even if closely related—and yet their linguistic identity has been maintained, despite the fact that Phuthi communities have been completely submerged in Sotho-speaking ones for more than a century now. All other things being equal, one might have expected their scattering in the post-rebellion times to have led to the complete loss of cohesiveness of the Phuthi speech communities. Essentially what one may construe as their linguistic boundedness in a contained space earlier is now one of scatteredness and isolation.

In §1.1.4, I consider the state of Phuthi language maintenance. When linguistic cohesion diminishes past a certain point, we anticipate that the language will begin to die; I discuss language contact in §1.15, and obsolescence in §1.1.6.

1. 1. 4. MAINTENANCE

Although the perhaps 20 000 Phuthi speakers in Lesotho do not form a single speech community, there can be little doubt that Phuthi is very much alive, given the common historical and social background of the speakers and the fact that children are still acquiring the language. But the inevitable questions arise concerning how Phuthi is being maintained, and for how much longer the various Phuthi speech islands can hold out against surrounding languages.

While the phonological, tonological and morphological research presented in this dissertation lacks sufficient depth to provide comprehensive answers to these sociolinguistic questions, I suggest in this section that Phuthi has survived for a century or more without
succumbing to neighbouring languages it has been in contact with, despite very marked contact-induced change at all levels of the grammar (due mostly to borrowing, but perhaps also shift). I show that while the conditions are ideal for the language to begin the slide towards obsolescence and death, it has not yet begun to do this in a significant way.

It is instructive, after Brenzinger & Dimmendaal (1992:7), to consider the maintenance of Phuthi at two levels: the external environment of its use (including political, historical, economic and linguistic factors), and the nature of the Phuthi speech community (including patterns of language use, speakers’ attitudes and strategies).

1.1.4.1. Environment

Politically, the Phuthi language has no institutional status at all, in either Lesotho or South Africa. It is not recognised as a language of any sort (official, national, regional, local) in either country’s national censuses. It is also not a working language in any industrial or educational sphere. To the best of my knowledge no leading political figures speak Phuthi publically, and neither the language nor its speakers feature as a topic in public discourse at all.

Effectively none of the Phuthi speech communities is represented in national decision-making bodies in either country, despite the recognition of the Phuthi in the 1980s as one of the four official ethnic groups of Lesotho, and the appointment of Chief Masakhale (of Masitise, outside Quthing) as their designated representative to the national government in Maseru. Current chiefs in Phuthi-speaking areas are not even necessarily Phuthi themselves. For example, Daliwe’s chief Sempe [simpi] is a Phuthi, but neighbouring Mongoli’s former chief, Qoaephe [!waiphi], was not.

Phuthi speakers do not live in entirely homogeneous communities, even in their ‘stronghold’ areas: they are intermingled with Sotho- and Xhosa-speaking homesteads, Sotho ones dominating in Mpapa and Xhosa ones in Sigxodo. The extent to which Phuthi serves as an identity for its speakers has not been non-anecdotaly ascertained; the language in its condition of teetering on moribundity is predicted to be ‘an eminent component’ of that identity (Brenzinger

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26 Chief Masakhale appears to be neither an elected representative nor an authentic chief, at least by the say-so of prominent members of the Phuthi community. He appears, rather, to be a figurehead in his political post, not convincingly continuing the chiefly line which was interrupted with the death of Moorosi and several of his sons in the 1879 siege.
& Dimmendaal 1992). There do not appear to have been any non-trivial political ramifications of this identity.

There also appear not to have been any formal educational ramifications of this identity at all. Since the language has never been committed to writing, despite all the missionary work pursued both in the Transkei communities (e.g. by Bourquin) and in Lesotho (e.g. by Ellenberger and his successors at the Masitise mission), there has been no orthography developed, no written literature, or any form of Phuthi print, radio or television media. As far as can be ascertained, the language is not taught at any schools in Phuthi-speaking areas, either formally or informally. The only reference to Phuthi I observed was in a primary school English textbook that retells the introduction of now ubiquitous horses to Lesotho through the Phuthis who presented one to the Sotho paramount chief, Moshoeshoe, in the mid-1800s.

Teachers at schools in the heart of Phuthi areas sometimes do not command the language at all, even though the vast majority of students speak Phuthi as a first language. For example, at Mpapa Primary School only one of the five teachers—and not the headmaster—speaks Phuthi (and this never at school). Yet children playing outside speak almost exclusively Phuthi with one another. Teachers in Mpapa and in Qacha report that some children begin the first year of school unable to speak Sotho (others are monolingual in Xhosa). A Phuthi-speaking teacher complained that the education department regards non-Sotho languages as obstructions to education that are not to be tolerated. This was confirmed by a woman in her twenties from Makoae, who recounted how disorienting primary school initially was, since she spoke only Phuthi, and the school medium was solely Sotho.

Well-defined (non-linguistic) cultural patterns that set Phuthi communities apart from Sotho or Xhosa ones appear to be lacking. Dress, food, crops, music and architecture are very similar if not identical to those of the mostly Sotho communities in which Phuthis are embedded. Just forty years ago certain architectural traits (e.g. corbelled huts similar to the Sotho sefala) are identified as distinctly Phuthi (Walton 1956), though even here they are sometimes grouped more generally with the Southern Sotho.

In conversational exchanges between Phuthi and non-Phuthi speakers, the non-Phuthi language always dominates: broadly, this is Sotho in Lesotho, and Xhosa in Sigxodo and the Transkei. Attitudes of speakers outside of Phuthi communities reveal, at best, lack of interest in
the language, and at worst patronising scorn of it. Sotho-speakers I encountered in Lesotho and
the Transkei were amused that I should be researching Phuthi. They referred to its speakers as the
people who say [gitshi gitshi] (lit. ‘I say I say’), that is, identifying the prominent aspirated
affricate [tsh] which is segmentally so salient in Tekela Nguni languages, contrasted with cognate
non-Tekela Nguni [th] and with Sotho [r].

1. 1. 4. 2. Attitudes and strategies in the Phuthi speech community

The facts on language preference and attitudes are somewhat contradictory. On the one
hand Phuthi appears to be being healthily acquired by children, and native speakers say they are
hopeful that it will be maintained; on the other hand, Sotho (and Xhosa in Sigxodo) is making
increasing inroads into domains of Phuthi usage, and adult speakers often prefer to use the other
language(s). These facts indicate a certain ambivalence of speaker identity and of attitudes
towards Phuthi, and suggest that maintenance strategies are somewhat unstable.

On the more promising side, I observed that Phuthi-speakers in Sigxodo and Mpapa use
the language with each other in most situations, regardless of age. Some Phuthi-speakers in
Mpapa hold virtually all their conversations in Phuthi, saying they feel uncomfortable speaking
Sotho and avoid speaking it if they can, but that they speak it if required (for example on visits to
the clinic in Quthing where medical staff do not command Phuthi). This was the closest I could
find to monolinguals.

In both communities, it is almost exclusively Phuthi that is used in conversations between
adults and young children. As a result, children acquire Phuthi first and often do not command
Sotho or Xhosa until they begin going to school, even though the adults in their families
command these other languages. This is a type of age-grading, where ‘different language
behavior is expected of people in a society at different ages’ (Fasold 1990:215). In deciding
whether Phuthi is moribund, this is a significant factor, because although the number of adult
speakers may be shrinking, the language is widespread among children in Phuthi communities.

On the less promising side, some adult speakers may switch to Sotho (Sotho or Xhosa, in
Sigxodo), even with other first-language Phuthi speakers. In some cases even siblings who grew
up speaking Phuthi together (in Mpapa) were observed to hold most of their conversations in
Sotho. On being questioned later, these interlocutors were not able to easily articulate why they
held these preferences. As Brenzinger and Dimmendaal (1992:4) point out, patterns of language choice reflect language attitudes; these speakers displayed a certain ambivalence towards Phuthi, even though in individual interviews they enthused about maintaining the language.

It may be the case that Phuthi maintenance is further weakened by young men who work on the mines, or at least attempt to mimic the speech of those who do, when they return to Phuthi areas: they speak the more prestigious code, Sotho, or a ‘tsotsitaal’\textsuperscript{27} variation on that theme. Broadly, more speakers in Mpapa switch to speaking Sotho with each other in at least some contexts than in Sigxodo, where people appear to take greater pride in asserting their Phuthi-ness.

Some Mpapa speakers, even a Phuthi-speaking teacher at Mpapa Primary School, are not teaching Phuthi to their own children. They tell me frankly that Phuthi offers their children no future, because it will not get them jobs elsewhere in Lesotho or in South Africa.

Phuthi lacks written scriptural texts\textsuperscript{28}. It seems that all missionary activity was done in the Sotho medium. Even church communities with majority Phuthi congregations in the Mpapa and Sigxodo areas all use Sotho in worship. Phuthi was not used at any\textsuperscript{29} of the church services I witnessed, in formal or spontaneous prayer.

One domain in which Phuthi appears to have all but disappeared is onomastics. No one that I met in Mpapa or Sigxodo had a Phuthi first name, or a distinctively Phuthi family name (though some family names, e.g. Qhaoka ['!hawuka]\textsuperscript{30}, are plausibly Nguni). People pointed out to me that they would not know how to write such names, since they lack a Phuthi writing

\textsuperscript{27} ‘Tsotsitaal’ (also called ‘Flaaitaal’, though sometimes with distinct reference) is the covertly prestigious urban argot associated with large city townships in Gauteng province of South Africa—also occurring to varying degrees in other large urban centres of the subcontinent—involving varying admixture of Nguni/Sotho grammar and Nguni/Sotho/English/Afrikaans lexis; the salient details of lexical and grammatical blends are highly local, and depend also on a variety of social factors (with a heavy emphasis on very high levels of ingroup innovation in lexis). It has been suggested that there is a relatively stable pan-South-Eastern Bantu grammar, with shifting lexis, where the lexicon is the chief index of linguistic locality and register. Cf. Calteaux (1994) on Tsotsitaal.

\textsuperscript{28} Texts are in preparation, though not yet published. Speakers from Sigxodo and Mpapa have collaborated in the decisions of orthography and lexical equivalents in the texts.

\textsuperscript{29} However, after translating a small body of psalms and prayers into Phuthi with two assistants, and testing these in a liturgy with the Catholic congregation at Mpapa, the reaction from Phuthi-speakers was enthusiastic.

\textsuperscript{30} This is the rendering of the name in a Sotho orthography (either South African or Lesotho); in Nguni, it would be spelt <Qhawuka>.
system. But even informally, such names are not used. Since most Sotho and Xhosa first names transparently mean something, and are often structurally an entire noun or verb phrase, they can straightforwardly be translated into Phuthi. But example translations of extant Sotho names met with mirth, such as in (2).

<table>
<thead>
<tr>
<th>Sotho name</th>
<th>potential Phuthi name</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Refuwe [rifuwe]</td>
<td>Siphuwe [siphuwe]</td>
<td>we-have-been-given</td>
</tr>
<tr>
<td>c. Maloro [malɔrɔ]</td>
<td>Emaphupha [emaphupha]</td>
<td>dreams (noun, pl.)</td>
</tr>
</tbody>
</table>

In Qacha, however, a Phuthi informant observed that in some Phuthi villages near Qacha, the Phuthi version of a name may still be informally used, although the Sotho variant is used for official purposes, as in (3).

<table>
<thead>
<tr>
<th>Sotho equivalent</th>
<th>given Phuthi name</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thabang [thabaŋ]</td>
<td>Tshabani [tshabani]</td>
<td>be happy (all of you)!</td>
</tr>
</tbody>
</table>

The only name that is unambiguously Phuthi is ‘Moorosi’, and no one I encountered uses this name any more. However, every Phuthi family retains a (usually unwritten) Phuthi clan name, most commonly one of three (4).

<table>
<thead>
<tr>
<th>Phuthi clan names</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bhulani [bulani]</td>
<td></td>
</tr>
<tr>
<td>b. Dlamini [dlamini]</td>
<td></td>
</tr>
<tr>
<td>c. Khakeni [khakeni]</td>
<td></td>
</tr>
</tbody>
</table>

The first has a Sotho equivalent, Polane [pulani]; the second is widespread as an Nguni clan name, from the Transkei up the east coast through Natal to Swaziland. This probably retraces the route of Tekela (and other Nguni) migration southwards.

Future research will have to examine the patterns of, and attitudes towards, language usage and identity in Phuthi communities in much greater detail.

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31 ‘Bhulani’ (4a) is likely acquired from Sotho ‘Polane’, one of three foundational groups in Lesotho (cf. §1.1.3). Mzamane (1949:125) does not give ‘Khakeni’, but does give ‘Nare’ and ‘Tshedza (Tenza, Fakathi)’ with ‘B[h]ulani’ and ‘Dlamini’ (sic) as the ‘four main clans’.
1.1.5. Contact

It has already been claimed that Phuthi has had a long contact history with other languages, chiefly neighbouring Sotho, and to some extent Afrikaans and English. Two key questions concerning language contact and change are: (a) what type of change does Phuthi display evidence of having undergone? (b) what type of change is anticipated, and is Phuthi heading for death?

Attempting to capture the full range of possible types of language change, Thomason & Kaufmann (henceforth: T&K) (1988) have articulated four broad categories of change (5).

(5) Types of language change
a. genetic, where language changes are not influenced by contact, but are internal; and where language relationships are recoverable by the comparative method;
b. pidginisation / creolisation, where there is a complete break in language transmission and entirely new systems emerge;
c. borrowing, where features of Language A (potentially all of them) are loaned into Language B;
d. substratum influence, where speakers of Language A have shifted to Language B, but through incomplete acquisition of Language B they have introduced remnant features of Language A, which then become generalised among native speakers of Language B.

Type 1, genetic classification, will not be addressed in this introduction for reasons of space, though I have observed above that Phuthi is genetically Bantu, and by subclassification a Nguni language (to be confirmed by typological classification in §1.1.7 below\(^\text{32}\)). Types 2 to 4 above exemplify ‘contact-induced change’. Phuthi does not display evidence of being a pidgin or creole (type 2). The kind of sociolinguistic situation historically that favours pidginisation / creolisation is not in evidence; there does not appear to have been mixing of peoples without a common language, or large-scale physical displacement of Phuthi people into non-Bantu territory. There was widespread warring in the Mfecane/Difaqane period of the early to mid 19th century, and the certainly sweeping dispersal of Phuthi people only later, after the death of Moorosi in 1879, but transmission appears to have been continuous, even though in very scattered communities. Further, the language does not display signs of pidginisation or

\(^{32}\) Also cf. Appendix C, for Swadesh word-list data used to support one lexically-based classification.
creolisation (e.g. gross simplifications, features that cannot be explained from the source languages involved, replacement of synthetic by analytic features).

The ‘aberrancies’ of Phuthi must thus stem from borrowing or language shift scenarios, most specifically in its relationship with Sotho (a non-Nguni Southern Bantu language), which I now briefly explore.

Phuthi is known for the striking evidence it contains of extensive lexical, morphological and phonological borrowing (Bourquin 1927:285, Mzamane 1949). Bourquin notes the difficulty of deciding whether the three clicks in Phuthi are native material, or are borrowed from Xhosa—thus opening the topic of contact-induced change—but none of the Phuthi sources considers what T&K (1988:37-45) maintain to be a critical distinction between two types of possible contact-induced interference: change due to borrowing (maintenance) and change due to shift (substratum effects).

Distinct criteria for the two types is as follows: (a) **borrowing** begins with lexical items; only if there is heavy cultural pressure over an extended period—and therefore heavy lexical borrowing—might structural features be borrowed too: phonetic, phonological, morphological, syntactic; heavy structural borrowing also requires the borrowers to be extensively bilingual; (b) **substratum** effects, due to imperfect learning, begin with phonetics and syntax, sometimes including morphology; finally lexical items from the learner’s native language **may** be borrowed too, but often are not; shift may happen very quickly, within a generation even, e.g. as the Rotse dialect of Sotho became Lozi (spoken in northern Namibia and southern Zambia), with heavy admixture and substratum effects of Luyana, within a generation or two (Gowlett 1989).

Of course, a language may undergo both borrowing and substratum interference, but unless there is heavy structural borrowing and only mild lexical interference, the default assumption is that borrowing—and not shift—has occurred, although it might be a combination (T&K 1988:114), and may have been for Phuthi, too.

To locate Phuthi within the class of languages that have borrowed linguistic material, I draw on the hierarchy of contact effects proposed by T&K (1988:74-109) and supported by numerous case studies. Although languages may not precisely fit into this typology of categories, it is a useful diagnostic for measuring depth of contact. The schema allows predictions about the depth and range of borrowing that accompany each type of contact. There are five main scenarios
to be born in mind as we examine borrowing in Phuthi below (T&K 1988:74-75), where the progressively higher numbers subsume the preceding lower ones (6).

(6)  **Types of contact**
1. casual contact: light lexical borrowing only (content words)
2. slightly more intense contact: heavier lexical borrowing; slight structural borrowing (minor phonological, syntactic and lexical semantic borrowing)
3. more intense contact: deep lexical borrowing; less minor structural borrowing
4. strong cultural pressure: moderate structural borrowing (major structural features that cause relatively little typological change)
5. very strong cultural pressure: heavy structural borrowing (major features that cause significant typological disruption)

In what follows I show that Phuthi has engaged heavily in borrowing not only in the lexicon, but in a variety of other structural features too. The prediction from the T&K typology above (6) is that the primary mechanism of contact-induced interference in Phuthi has been borrowing, not shift. This prediction is supported by two further pieces of historical evidence (§1.1.3): Phuthi has been in contact with Sotho for a very extended period; (b) the incorporation of Phuthi into the Sotho-speaking Phuthing people suggests bilingual speakers. Almost certainly the level of bilingualism has dramatically increased among the scatterlings from the 1879 Mt. Moorosi siege. Currently, there is perhaps universal bilingualism among the Phuthi (with Sotho), a condition which greatly facilitates (though does not guarantee) borrowing.

We will see that a great deal of material has been borrowed into the language, at all levels. The following sections (§1.1.5.1-§1.1.5.4) briefly survey these domains of borrowing, according to lexicon (§1.1.5.1), morphology (§1.1.5.2), phonology (§1.1.5.3) and syntax (§1.1.5.4).

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33 I received verbal reports that some older Phuthi speakers in the mountains around Qacha do not speak fluent Sotho. This remains to be verified. The closest I came to this was what could be termed ‘reluctant bilinguals’ in speakers from some of the remoter Mpapa-area homesteads (such as Mma LaboToka, who resided in lower Mpapa village until her sudden death in 2002).
1. 1. 5. 1. Lexicon

T&K (1988:74-76) and Myers-Scotton (1992) demonstrate that cultural (non-basic) lexical items are most easily borrowed, in T&K’s category 1 (6). But it is difficult to give unambiguous examples in Phuthi, since there is a large degree of overlap in the cultural patterns of southern African peoples; and to make matters worse Phuthi and Sotho culture is at present effectively coextensive. Still, there are examples, and what is most noteworthy about them, is that they seem not necessarily to have filled lexical gaps owing to the introduction of new concepts in the language, but to have replaced perfectly ‘good’ Nguni equivalents (here exemplified by Swati; parentheses indicate non-cognates), in (7).

(7) Phuthi Sotho Zunda Nguni (Swati) gloss
a. í-ñwàlí ñwàlí (í-ñàhíwàslá) female initiand
b. í-tswèžànì sì-tswèžànì (ín-tfômbì) girl returned from initiation
c. lí-gùlànyànlì lì-kòlùwànyànlì (èmá-ñàhà) male initiate
d. kú-kxìbà hù-kxìbà — to perform the young women’s dance
e. kú-bínlì hù-bínlì (kù-làbèlà) to sing
f. ɔɔwàlà ɔɔwàlà tʃwàlà beer
g. sí-lèpè sì-lèpè lí-zëmbè axe

More recently, large numbers of loans from English and Afrikaans come via Sotho (8), virtually unmodified (with respect to segments).

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34 In this introductory chapter, I use a transcription that is phonetically narrower than in the chapters that follow. I indicate tone on every syllable here: á = H, à = L, ā = falling (later, only high tones are indicated). In this chapter, I do not indicate phrase-penult vowel length (which is, in fact, always present in Phuthi and Swati and other Nguni languages, and is found in some Sotho languages); thus, a falling penult tone is given as ā, not as áā; breath/depressed /b/ is here b (later bb). I leave partial words unmarked for tone.
Phuthi has ample examples of the deeper lexical borrowing of T&K categories 2 and 3.

**Borrowed Core Vocabulary**

In each of the examples below (9), the Phuthi item is loaned from Sotho. In addition, each lexical item occurs in Swadesh’s (1971) 100- or 200-word list (cf. Appendix C).

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Nguni (Swati)</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-llib</td>
<td>mú-llib</td>
<td>ùní-libb</td>
<td>fire</td>
</tr>
<tr>
<td>b. émà-dí</td>
<td>mà-dí</td>
<td>íñ-gàtí</td>
<td>blood</td>
</tr>
<tr>
<td>c. í-bònì</td>
<td>pòóní</td>
<td>(úñ-mbhìlà)</td>
<td>maize</td>
</tr>
<tr>
<td>d. -dálá</td>
<td>-tálá</td>
<td>-lùlátà</td>
<td>green</td>
</tr>
<tr>
<td>e. -òlè</td>
<td>-òlè</td>
<td>-èñkhè</td>
<td>all</td>
</tr>
</tbody>
</table>

**Borrowed Superclose Vowel Quality**

Each Sotho-Nguni pair of items (10) is from the same Proto-Bantu stem, but phonological divergences over time are sufficiently clear to show that the Phuthi reflex in each case is Nguni, but has acquired the Sotho superclose vowel qualities [i u] that occur in no other Nguni language. This contact effect can only be demonstrated to hold for stems that contain superclose vowels, since these are the only Sotho vowels that are phonetically *and* phonemically absent in the rest of Nguni (ct. mid vowels [e o] which are harmonically triggered in (Zunda) Nguni).

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Nguni (Swati)</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ký-bítà</td>
<td>hù-bítsà</td>
<td>ký-bítà</td>
<td>to call</td>
</tr>
<tr>
<td>b. ký-jíyà</td>
<td>hù-síà</td>
<td>ký-jíyà</td>
<td>to leave</td>
</tr>
</tbody>
</table>

35 This ‘thank’ is only for informal registers. Some Sigxodo speakers may use the -d- form item here, because it is closer to Xhosa ùkù-dâjìkisà (and Sgx. Phuthi is much more strongly influenced by Xhosa).
c. kú-gùlā hù-kùlā kú-gùlā to be ill, sick  
d. kú-bùsà hù-bùsà kú-bùsà to rule

It is possible that these are shift (rather than borrowing) effects, and that Sotho speakers shifting to Phuthi brought these vowel qualities with them. But this would constitute a ‘complicating effect’ on Phuthi (by expanding the vowel phoneme inventory), which defies the general pattern of the simplifying tendencies that typify shift. However, such complicating effects are known to exist (T&K 1988:131).

Where there are superclose ‘Sotho’ vowels in ‘Nguni’ stems, it is always the case that the current Sotho lexical items also contain superclose vowels. In other words, it is almost never the case that Phuthi has incorrectly (in historical terms) changed [i u] in Nguni stems into [i ʊ]36.

**Function words**

Sotho-origin conjunctions in Phuthi include the following (11).

(11) Phuthi Sotho Nguni (Swati) gloss
a. á há ná when, if (cf. Xh. [ll], Z. [ŋll])
 b. (l)áyíbà, ̀lábà háíbà ̀nèkúba (even) if
c. lá- lí- ná- and, with37

**Lexical doublets**

Phuthi has a considerable number of lexical double reflexes, that is, two words derived from the same Bantu stem historically, but which have arrived in Phuthi via separate paths: one

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36 There are exceptions, such as Ph. -bìnj ‘two’, but SS. -bèdj, Sw. -bilí. The case can plausibly be made that Phuthi has extended the Sotho final quality into the stem, in some harmonic fashion (cf. Chapter 2 §2.1.6). A few other cases are much harder to explain, because they are not etymologically accurate superclose vowels, but rather innovations in Phuthi, e.g. Ph. -bì ‘bad, ugly’, ct. SS. -bí / -(m)pì, Sw. -bí; Ph. wìsè ‘his father’, ct. SS. (ntatáe), Sw. úyìse; Ph. wìtò ‘your father’, ct. SS. (ntatáo), Sw. úyìtó.

37 This example is a little unclear: further to the north, at least one other Nguni language—Ndebele (not the Northern Transvaal Tekela variety)—also has lq-, ‘and’. In addition, it can be observed that there is some general [l ~ n] etymological confusion in southeastern Bantu, most likely because the two sonorants have very similar acoustic properties, even between very closely related varieties, e.g. Zulu <-bǐi> vs. Xhosa <-bini> ‘two’.
item is natively Nguni, the other is loaned from Sotho. Some items exist as variants, and an individual may use either or both in their speech (details of sociolinguistic connotations associated with each form remain unclear).

(12) Phuthi Sotho Nguni (Swati) gloss
a. í-tlhàgú tlhàkú — kernel of maize; letter of alphabet
b. í-tlhàyû — lú-ľàyû kernel of maize; letter of alphabet
   (Sw. berry, grain, pip; syllable)
c. kú-yàľùlá — kw-éľulà divide (Sw. defeat, conquer)
d. kú-yàrúlá hù-ărúlá — divide

Other doublets indicate different denotata suggesting an early retention or loan (13a,c), and a more recent loan (13b,d).

(13) Earlier and later loans

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Nguni (Swati)</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. lèlë́γ̄</td>
<td>(mù-hùmá)</td>
<td>(lí-khùbà)</td>
<td>plough (cf. Z. í-lèmbe 'hoe', Cl. 5)</td>
</tr>
<tr>
<td>b. sì-lèpè</td>
<td>sí-lèpè</td>
<td>lí-ţ̭ɛmbɛ</td>
<td>axe</td>
</tr>
<tr>
<td>c. é-bi̱ lá</td>
<td>pìlì</td>
<td>émbi̱ lá</td>
<td>in front</td>
</tr>
<tr>
<td>d. ká-pìlì</td>
<td>ká-pìlì</td>
<td>(màsínyànè)</td>
<td>quickly</td>
</tr>
</tbody>
</table>

**Synonyms**

There are also many instances of synonyms, where one lexical item is Nguni—Swati, or other Nguni, or even uniquely Phuthi (14a,c,e,g)—and the other is Sotho (14b,f,h) or Swati (14d). In some cases, speakers insist that both items are used without any difference in meaning; in other cases, they acknowledge there is a difference in meaning, according to region (e.g. Mp. vs. Sgx. Phuthi).
For some items, one is dominant in Sgx. Phuthi, the other in Mp. Phuthi.

1.1.5.2. Morphology

**Derivational Affixes**

Derivational affixes are predicted to be abstracted and added to native vocabulary at the ‘more intense contact’ of T&K’s category 3. Phuthi has borrowed the following (fully productive) affixes from Sotho—(15a-e) are verb suffixes, (15f-g) are verb prefixes, (15h) is a noun suffix.

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The item -mapa, ‘hold’, exists in Sotho, but marginally; it is the expected cognate of Ph. -mabha [maːha], ‘hold’; these analogous SS. forms should also exist, but appear not to: *-mapela, ‘forgive’, *-mapeletsa, ‘delay, detain’. They would correspond to Ph. -mabhela and -mahetela, respectively. The structurally analogous SS. forms do exist: -tshwara, ‘hold’; -tshwarela, ‘forgive’; -tshewarelə ‘detain, seize’.

These Swati and Xhosa forms are placed in parentheses, because although they may be cognate, there is nasality asymmetry in the stem-initial consonants: Phuthi has -m- as in Sotho, not -b- as in Swati and Xhosa.

[x] in Phuthi í-phoonâni is a velar fricative, not a lateral click. Later, throughout, this will be given orthographically as <kg>.

Cf. footnote 38.

---

<table>
<thead>
<tr>
<th>(14)</th>
<th>Phuthi</th>
<th>Sotho</th>
<th>Nguni (Swati)</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>kú-!hèlà</td>
<td>—</td>
<td>úkú-!hèlà (Xh.)</td>
<td>be accustomed to</td>
</tr>
<tr>
<td>b.</td>
<td>kú-tlwáyélà</td>
<td>hù-tlwáèlà</td>
<td>—</td>
<td>be accustomed to</td>
</tr>
<tr>
<td>c.</td>
<td>kú-màbètèlə (cf. hù-màpà)</td>
<td>kù-bàmbèlèlə</td>
<td>delay; (Sw. . . lean on) úkù-bàmbèzèlə (Xh.)</td>
<td>delay, hinder</td>
</tr>
<tr>
<td>d.</td>
<td>kú-phútà</td>
<td>—</td>
<td>kú-phútə</td>
<td>delay</td>
</tr>
<tr>
<td>e.</td>
<td>í-phòxánì</td>
<td>—</td>
<td>ímphùnjanè (Xh. impukanë)</td>
<td>fly</td>
</tr>
<tr>
<td>f.</td>
<td>í-tshíntshí</td>
<td>hntsí, tsíntsí (~tshíntshí)</td>
<td>—</td>
<td>fly</td>
</tr>
<tr>
<td>g.</td>
<td>kú-mábèlə (cf. hù-màpà)</td>
<td>—</td>
<td>forgive</td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>kú-tshwárélà</td>
<td>hù-tshwárélə</td>
<td>—</td>
<td>forgive</td>
</tr>
</tbody>
</table>
Phuthi is the only Nguni language to have lost the *segmental* short perfective suffix (-e, as contrasted with the long perfective suffix -ile). It has, however, acquired short perfective *tone* morphology from Sotho, thus structurally maintaining the paradigm as distinct.

### Inflectional Affixes

Inflectional affixes, by contrast with derivational, are predicted to be borrowed and added to native vocabulary only under the ‘strong cultural pressure’ of T&K’s category 4. In Phuthi this

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Nguni (Swati)</th>
<th>function</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. -ag-</td>
<td>-ak-</td>
<td>—</td>
<td>extensive verb extension(^{42})</td>
</tr>
<tr>
<td>b. -ul-~ -ul-</td>
<td>-ul- (-ul- ~ -ulul-)</td>
<td>reversive verb extension(^{43})</td>
<td></td>
</tr>
<tr>
<td>c. -uw-~ -uw-</td>
<td>-uw- -(i)w-</td>
<td>passive verb extension</td>
<td></td>
</tr>
<tr>
<td>d. -ni</td>
<td>-ŋ</td>
<td>(-ni)</td>
<td>inclusive verb suffix(^{44})</td>
</tr>
<tr>
<td>e. -iye~ -iye [T₁]</td>
<td>-i[e [T₁]]</td>
<td>-e</td>
<td>short perfect indicative suffix(^{45})</td>
</tr>
<tr>
<td>f. li-</td>
<td>li-</td>
<td>ni-</td>
<td>you (2pp SP, indicative)</td>
</tr>
<tr>
<td>g. á-</td>
<td>á-</td>
<td>é-</td>
<td>s/he (3ps SP, subjunctive)</td>
</tr>
<tr>
<td>h. -nyana, (-anyana)(^{46})</td>
<td>-nyana</td>
<td>-ana, (-anyana)</td>
<td>nominal diminutive</td>
</tr>
</tbody>
</table>

Phuthi is the only Nguni language to have lost the *segmental* short perfective suffix (-e, as contrasted with the long perfective suffix -ile). It has, however, acquired short perfective *tone* morphology from Sotho, thus structurally maintaining the paradigm as distinct.

---

\(^{42}\) All morphology examples are from Mp. Phuthi, unless noted. Sgx. Phuthi has extensive -ak- and passive -iw-. Cf. fuller discussion of productive extensions in Chapter 2 §2.2.4.6.

\(^{43}\) The reversive is not productive in Nguni languages, but is found morphologically frozen in a significant number of verb stems, with recoverable reversive semantics.

\(^{44}\) The suffix -ni does occur in Xhosa with an inclusive meaning, but is limited to the hortative subjunctive, e.g. mú-si-hambah-é-ni! ‘Let’s (all) go!’, likely extended from the basic imperative plural -ni, e.g. hambahni! ‘Go (all of you)!’. The usage is slightly wider in Sotho, and even wider in Phuthi (it can be attached to any verb in any mood; cf. Appendix A, paradigm V).

\(^{45}\) [T₁] refers to a paradigm-specific tone pattern. The short perfective indicative is tonally distinct from the long perfective indicative, and is examined at some length in Chapter 6 §6.3.1.1.

\(^{46}\) The diminutive -anyana is not productive in Phuthi, and is only marginally productive in other Nguni languages (such as Xhosa), e.g. Ph. mú-tfù ‘person’, mú-tfw-ánà ‘child’, mú-tfw-ányànà ‘young girl’ (cf. Chapter 2 §2.2.1.5).
can be exemplified by the loss of the Class 11 noun prefix, a phenomenon which characterises all the Sotho languages, and almost none of the Nguni languages\(^{47}\) (16).

\[\begin{array}{cccc}
(16) & \text{Phuthi} & \text{Sotho} & \text{Nguni (Swati)} & \text{gloss} \\
\text{a.} & — & — & lú- & \text{CLASS 11 NOUN PREFIX} \\
\text{b.} & lí- & lì- & lí- & \text{CLASS 5 NOUN PREFIX} \\
\text{c.} & lí-tswáyì & lí-tswáj & lú-‘swáyì & \text{11 salt} \\
\text{d.} & lí-bíśí & lì-bíśì & lú-bíśì & \text{11 milk} \\
\text{e.} & lí-límí & lì-límì & lú-límì & \text{11 tongue}
\end{array}\]

1. 1. 5. 3. Phonology

Phuthi displays phonological borrowing from Sotho that ranges from ‘light’ (T&K category 2), e.g. new phonemes, to ‘moderate’ or ‘heavy’ (T&K category 4 or 5), e.g. loss of contrasts (such as pre-nasalised consonants, and labial-labial sequences), and addition of contrasts (such as two new vowel harmony types).

**New phonemes**

Phuthi has gained a small set of new phonemes from Sotho: consonants [ʒ, η, t\(^{48}\)]\(^{48}\) (17a-f) and vowels [i, u, e, o], as well as an expanded set of syllable nuclei [m, n, l, j, l]\(^{49}\). This kind of contact effect is expected at the ‘slightly more intense’ T&K category 2 stage. Most borrowed segments occur in lexical items readily identifiable as Sotho-origin (17).

\(^{47}\) The Nguni languages Southern Transvaal Ndebele (Wilkes, Skhosana and Jiyane 1995) and Northern Transvaal Ndebele (Ziervogel 1959)—like Phuthi—have transferred Class 11 items into Class 5. Interestingly, the Xhosa spoken in the far northern Transkei (Matatiele, Sterkspruit, and surrounding areas—own field research), and in pockets in southern Lesotho, also lacks Class 11. Since this variety of Xhosa is roughly contiguous to and even overlaps with Phuthi-speaking areas, the trigger for Phuthi’s loss of Class 11 is not entirely unambiguous, although the evidence for the loss in both Xhosa and Phuthi still points towards Sotho as the model.

\(^{48}\) Like Sotho, this Phuthi [ŋ] is a ‘genuine’ /ŋ/ phoneme, not a reduction from the cluster [ŋg] as in Swati (and some Zulu dialects).

\(^{49}\) Non-vocalic syllable nuclei are catalogued and exemplified in Chapter 2 §2.1.5.
It has been shown under ‘lexicon’ above (§1.1.5.1) that the superclose vowel qualities [i u] originate in Sotho items. As well as merely loaning these vowel qualities into Nguni stems (or possibly retaining them as a substratum effect), there are numerous examples of entire items that have been borrowed from Sotho containing [i u]. All but a very few of these come almost unmodified from Sotho.

The raised mid vowels [e o] occur phonemically in Sotho, but also occur as the raised counterparts of [ɛ ɔ] in harmony contexts. In Phuthi, disharmonic [e o] occur (outside of harmony conditions) mostly in Sotho loan items (a-c). However, they have been nativised (d-f) as a phonological reflex of the grammatical categories AUXILIARY VERB and ADVERB, where these words end in mid vowels (even though this violates the harmony conditions, cf. §1.1.5.3 ‘phonology’ below; also cf. Chapter 2 §2.1.6). They also occur independently\(^{51}\) of Sotho in a few lexical items (g-h).

\(^{50}\) There is variation between [tɬh] and [ɬ], within and across speakers, in both Sotho (Derek Gowlett, p.c., 2003) and Phuthi. For certain items, only one variant is deemed acceptable. The details of these variations have not been fully documented.

\(^{51}\) The ‘close’ (that is, [+ATR]) vowel qualities in the Phuthi data here are also independent of the Xhosa and Swati cognates, which are predictably ‘lax’ (that is, [-ATR]).
d. làmìlajé (ká-3énù) today

e. sèlè -sé presently, already (aux.)

f. -èsè (-kè) ever (aux.)

g. í-lhòlò !hùlù hip bone

h. lí-tsétsè li-tsétsè flea

**Loss of contrasts: no pre-nasalized consonants**

Phuthi has undergone loss of certain phonological constraints, prolonged contact with the Sotho languages being the most likely cause. This type of loss is expected in T&K’s category 4, ‘strong cultural pressure’. Two examples of loss are provided: firstly, Phuthi has taken what for an Nguni language is an unprecedented step: all non-click nasal clusters\(^{52}\) (voiced and voiceless) have been reduced to plain oral consonants, making it the only Nguni language to have done so\(^{53}\). This amounts to loss of a phonological distinction: there are now no consonants bearing nasal contours. The inventory of possible onset types has been simplified by forbidding NC sequences, as exemplified here with the /Nd/ and /Nt/ sequences, in comparison with other major Nguni languages and with Sotho.

<table>
<thead>
<tr>
<th>Subfamily</th>
<th>Language</th>
<th>NC sequence</th>
<th>examples</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nguni</td>
<td>Phuthi</td>
<td>dz</td>
<td>tì-dzàbà</td>
<td>news</td>
</tr>
<tr>
<td>swati</td>
<td>ndz</td>
<td>tìn-dzàbà</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zulu</td>
<td>nd</td>
<td>ízi n-dàbà</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sotho</td>
<td>t</td>
<td>dì-tàbà</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subfamily</th>
<th>Language</th>
<th>NC sequence</th>
<th>examples</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nguni</td>
<td>Phuthi</td>
<td>tsh</td>
<td>í-tshàbà</td>
<td>mountain</td>
</tr>
<tr>
<td>swati</td>
<td>ntsh</td>
<td>íntsàbà</td>
<td>mountain</td>
<td></td>
</tr>
<tr>
<td>Zulu</td>
<td>nt</td>
<td>íntàbà</td>
<td>mountain</td>
<td></td>
</tr>
<tr>
<td>Sotho</td>
<td>th</td>
<td>thàbà</td>
<td>mountain</td>
<td></td>
</tr>
</tbody>
</table>

\(^{52}\) Pre-nasalised clicks do not reduce: \[\eta \eta ', \eta \eta '\], demonstrating the independence of click subsystems that is common in click inventories in Nguni.

Although it cannot be demonstrated conclusively that this reduction of /NC/ is due solely to Sotho and not to Phuthi-internal diachronic changes, the striking generalisation continues to be that none of the Sotho languages tolerate nasal clusters, and all of the other Nguni languages do.\textsuperscript{54}

Secondly, Phuthi has acquired the Sotho ban on certain segment sequences (cf. Chapter 2 §2.1.4): *mVm, *mVb across stem boundaries (20a-b); also on *lii, *lul (20c-d). In fact, the latter pattern has been extended to instances which occur at prefix-stem boundaries, both in native Nguni (20e) and in loaned Sotho items (20f).

\begin{tabular}{|l|l|l|l|}
\hline
(20) & Phuthi & Sotho & Nguni (Swati) & gloss \\
\hline
-m-m- & -m-m- & -m-b- & \\
\hline
a. m̃-m̃sǐ & m̃-m̃sǐ & ūñ-b̃sǐ & ruler \\
~ m̃-b̃sǐ & & & \\
b. kú-b̃sà & hù-b̃sà & kú-búsà & to rule \\
\hline
-l-l- & -l-l- & -lVl- & \\
\hline
c. kú-phúmélà & hù-tswe̱llà & kù-phūmélèlà & to succeed \\
d. kú-tfúkúllà & hù-lúkúllà & kù-tfúkúlulà & to free, deliver \\
\hline
l-l- & l-l- & lVl- & \\
\hline
e. ̱l̃-làgà & l̃-tsàtsí & l̃-làngà & sun \\
f. ̱l̃-l̃mì & l̃-l̃mì & l̃-lw̃mì & tongue \\
\hline
\end{tabular}

**Acquisition of contrast: two new vowel harmonies**

Although both harmony types in Phuthi are innovations—and not borrowings—unlike any harmony system in southern Africa, they were made possible in the grammar by the acquisition of new phonological vowel features, [ATR] and [RTR] (retracted tongue root).\textsuperscript{55}

\textsuperscript{54} Although the sequence -N-C- does exist in the Sotho languages, it does not constitute a prenasalised consonant, but rather a syllabic nasal, e.g. <ntja> [ntjá] ‘dog’. Even in Southern Transvaal Ndebele (Wilkes, Skhosana and Jiyane 1995) which has begun to reduce the contexts in which nasal clusters occur, /NC/ is still common.

\textsuperscript{55} An analysis requiring ATR and RTR features is proposed in Chapter 2 §2.1.6: the pattern
innovative manipulation of borrowed distinctive features is characteristic of T&K’s heaviest categories on the borrowing scale: (4) ‘strong cultural pressure’ and (5) ‘very strong cultural pressure’.

**[ATR] harmony:** several suffixes appear with superclose vowels [i u] if the verb stem ends in a superclose vowel (21a-b); otherwise these suffixes contain non-superclose vowels (21c-f) (cf. Chapter 2 §2.1.6.1).

(21) **Root-controlled progressive [ATR] harmony**

<table>
<thead>
<tr>
<th></th>
<th>Root vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-bít-í-s-à</td>
<td>to help call</td>
</tr>
<tr>
<td>b. kú-kúp-új-l-à</td>
<td>to unroll</td>
</tr>
<tr>
<td>c. kú-lúm-ís-à</td>
<td>to help cultivate</td>
</tr>
<tr>
<td>d. kú-bút-ís-à</td>
<td>to cause to ask</td>
</tr>
<tr>
<td>e. kú-sét-ís-à</td>
<td>to cause to drink</td>
</tr>
<tr>
<td>f. kú-bón-ís-à</td>
<td>to show</td>
</tr>
</tbody>
</table>

**[RTR] harmony:** all sequences of mid-vowels [ε ɔ] adjacent to the right edge of words remain [RTR], as in (22a-e); non-adjacent mid-vowels [e o] surface as [ATR], as in (22f-i) (cf. Chapter 2 §2.1.6.2).

(22) **Edge-controlled regressive [RTR] harmony**

<table>
<thead>
<tr>
<th></th>
<th>Root vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. bá-sé1-è</td>
<td>they should drink</td>
</tr>
<tr>
<td>b. bá-sé1-énè</td>
<td>they have drunk</td>
</tr>
<tr>
<td>c. bá-bón-è</td>
<td>they should see</td>
</tr>
<tr>
<td>d. bá-bón-él-è</td>
<td>they have seen for e. o.</td>
</tr>
<tr>
<td>e. bá-bón-él-én-è</td>
<td>they have seen for e. o.</td>
</tr>
</tbody>
</table>

is considerably more complex than indicated here. Suffice to say that Phuthi has acquired new vowel phonemes, /e o i u/, whose featurally distinct characterisation must include features such as [ATR] and [RTR], or possibly scalar vowel height features, such as [open₁], [open₂] (proposed for Sotho and other languages in Clements 1991).
1. 1. 5. 4. Syntax

Because the syntactic configurations of Nguni and Sotho languages are so similar, differences in this arena are hard to identify. One possibility is the sequence of noun and demonstrative (dem.) pronoun. Sotho is strictly Noun+Dem; Nguni languages are flexible: Noun+Dem or Dem+Noun. But Phuthi breaks down along dialect lines: Mpapa Phuthi (in the heart of southern Lesotho) allows only the Sotho order; Sigxodo Phuthi (in the bilingual Xhosa and Sotho border area) allows either order. Thus—unsurprisingly—the Sotho contact effect in this part of the syntax is felt in the Phuthi dialect more affected by Sotho; and it is not felt in the dialect which is also in contact with another Nguni language. This minor reordering effect is low on T&K’s scale: category 2 (‘slightly more intense contact’).

<table>
<thead>
<tr>
<th>(23)</th>
<th>Language</th>
<th>order</th>
<th>example</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Sotho</td>
<td>Noun + Dem</td>
<td>múthû ēù (~ énwà)</td>
<td>this person</td>
</tr>
<tr>
<td>b.</td>
<td>Mpapa Phuthi</td>
<td>Noun + Dem</td>
<td>mútfù ūŋ</td>
<td>this person</td>
</tr>
<tr>
<td>c.</td>
<td>Sigxodo Phuthi</td>
<td>Noun + Dem</td>
<td>múthû ūŋ</td>
<td>this person</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Dem + Noun</td>
<td>ūŋ múthû</td>
<td>this person</td>
</tr>
<tr>
<td>d.</td>
<td>Swati (as in Xhosa)</td>
<td>Noun + Dem</td>
<td>ēmúntfû ūŋ</td>
<td>this person</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Dem + Noun</td>
<td>ūŋ múntfû</td>
<td>this person</td>
</tr>
</tbody>
</table>

Besides this pattern, the syntax of Phuthi and other regional Nguni and Sotho contact languages is essentially isomorphic.

I conclude from the examples examined in this section that Phuthi has experienced the range of borrowing in (24).
Types of borrowing reflected in Phuthi

a. heavy lexical borrowing, including content and non-core items (T&K category 1), core items, function words and derivational affixes (category 2);

b. minor syntactic borrowing, including new noun-demonstrative ordering in one dialect (category 2);

c. fairly heavy morphological borrowing, including inflectional affixes (category 4);

d. considerable phonological borrowing, including new vowel and consonant phonemes (category 2), loss of contrast in prenasalised consonants, and feature addition that has made innovated vowel harmony possible (category 4).

It seems that Phuthi bears witness to heaviest contact in the lexical and phonology components—up to category 4 (T&K’s (1988:75) ‘strong cultural pressure: moderate structural borrowing’). But the backdrop to all of this borrowing is the fact that Phuthi and Sotho and all the other Nguni languages are typologically similar to begin with. We can infer from T&K that some of the apparently deeper borrowing examples are not surprising, given precisely this closeness of fit (1988:73-4).

1.1.6. Obsolescence

I have demonstrated the following contact-induced changes in Phuthi: in §1.1.3, that the language has had a long contact history with geographically contiguous Bantu languages, most recently with Sotho; in §1.1.4, that Phuthi has sustained fairly heavy loaning from Sotho at all levels of the language. At the extreme end of the spectrum of contact-induced change lies language death (in most cases: language shift). Phuthi is clearly still alive, given the description of the community in §1.1.2, yet for how much longer, and in what form, is not clear. I now examine whether current Phuthi speech communities share some of the characteristics of obsolescing languages.

Of the several types of possible language death (Campbell & Muntzel 1989:181ff), Phuthi obsolescence could only fall into the category of ‘gradual death’, given the present situation. That is, ‘sudden death’ and ‘radical death’ (wiping out of speakers by political act or natural disaster) are inapplicable, as is the latinate pattern of ‘bottom-to-top death’56. ‘Gradual death’ is manifest

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56 This is incremental loss of familiar registers until a language survives only in elevated ritual contexts (Campbell & Muntzel 1989:181).
in a number of ways, including shrinking numbers of speakers, a shrinking range of functional
domains of communication, and diminished competence on the part of speakers (Brenzinger &
Dimmendaal 1992). Further, the ‘locus of language contact’ (Sasse 1992:61) is the bilingualism
that crucially characterises these speakers. Their incomplete knowledge of the language reduces
them to semi-speakers, who form the ‘locus of decay’—ranging across a continuum of
competence. Broadly, semi-speakers can be split into two groups: (1) ‘rusty speakers’, who
maintain a fairly good knowledge of the grammar, but suffer from severe memory gaps in
lexicon and elsewhere; and (2) ‘rememberers’, or ‘pathological’ semi-speakers, for whom
language transmission has been fundamentally interrupted.

Focusing first on the speakers themselves, while there are no recorded demographics for
Phuthi speech communities (although I offered a very unscientific estimate of 20 000 speakers, in
total, §1.1.2)—either currently, or across generations—the abiding impression is that the speech
communities are slowly shrinking. Children of middle-age Phuthi speakers in Gcina and in
Mfingci (in the Transkei) either do not speak at all, or are ‘rememberers’ of just the barest
elements of lexicon and phrases of greeting. Some can generate Phuthi-sounding sentences by
manipulating some of the productive Phuthi-to-Sotho or Phuthi-to-Xhosa sound changes. Under
examination, however, this is not a code they control natively at all. It is true, to be fair, that
Gcina and Mfingci are two of the smaller Phuthi communities; ancestors of the present residents
had fled west across the Telle River after the 1879 uprisings (§1.1.3).

Significant numbers of young people (especially men) appear to leave their Phuthi birth
places (e.g. Mpapa) and migrate northwards to the cities of Maseru or Johannesburg in search of
work. Phuthi seems to command little prestige in the face of other southern African languages,
including Sotho and even Tsotsitaal/Isicamtho/Flaaitaal. Speakers returning to rural Phuthi
communities appear to prefer to function in Sotho, although there is overlap between those who
cannot use Phuthi and those who do not want to. On multiple occasions I witnessed even adult
siblings who had grown up together—or close friends—all of whom command fluent Phuthi,
now using almost exclusively Sotho with one another. On being questioned, such speakers
appeared perplexed as to why they were not speaking Phuthi with one another.

Most Phuthi-speakers in the robust Sigxodo and Mpapa communities control the
language fluently. But they are losing competence in certain conversational domains, and losing
functionality in some domains altogether. The pan-southern African institution of grandmothers narrating folktales to grandchildren no longer happens in either Mpapa or Sigxodo in the medium of Phuthi, as far as could be ascertained (yet some speakers in their 20s recall their grandparents narrating these tales, which occurred within very recent memory). I did record a number of tales, narrated in Phuthi by both young and old speakers, yet all agreed that they were merely translating into Phuthi stories they already knew in Sotho! Most interjections and phatic speech items were in Sotho, just as they are in everyday Phuthi speech (25).

(25)  Sotho (in Phuthi)    Phuthi    gloss
a. hílik! —   wow!

b. hé múnnà! *hé fó!   hey man! / oh boy! (lit. ‘hey man!’)

c. bánnà! *báfó!   hey man / oh boy! (lit. ‘men!’)

Narrators would sometimes correct themselves as they spoke (26).

(26)  Phuthi (Sigxodo) gloss
...lazama kulega...
‘...he tried [Xh.] to try [Ph.]…’
Xh. stem  Ph. stem

At other times they would correct their own narration as we transcribed a passage (27a), substituting less appropriate with more appropriate Phuthi equivalents (27b).

(27)  Phuthi (Mpapa) gloss
a. yena utoyakohweletsa tinyamatana tɔˈle  ‘he would go and call [SS.] all the animals’
   [SS. stem]

b. Phuthi corrected to:  ...utoyakobita...  ‘he would go and call Nguni stem]…’
   [Nguni stem]

At the same time, the narrating of tales even in Sotho appears to have receded greatly, so it is not clear that this is solely a manifestation of Phuthi’s shrinking.

Even in more pedestrian discourse domains, some fluent speakers sometimes have to think for a while before they can retrieve the Phuthi equivalent of a Sotho item. My two principal
Mpapa consultants (both in their twenties) disagreed on certain items, though they had attended the same school, and lived just a valley apart: Mongoli [muŋodj] vs. Hlaela (28).

(28)  

<table>
<thead>
<tr>
<th>Hlaela Phuthi</th>
<th>Mongoli Phuthi</th>
<th>Sotho</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>lí- lhègû-nyànà</td>
<td>lí-!hèkû-nyànà</td>
<td>lí-!hèkû-nyànà</td>
<td>small old man</td>
</tr>
</tbody>
</table>

The Hlaela Phuthi speaker’s lexical item, with the alveolateral click and voiced [g], has the expected Nguni properties; the Mongoli Phuthi speaker’s item is lifted directly out of Sotho (and minimally reconfigured so that its tone pattern is correct for Phuthi). Despite the thorough fluency of both speakers, and their general agreement, they had conflicting intuitions not only for some lexical items, but in certain details of the phonology (such as the weak vowel harmony requirements on word-medial mid-vowels in reduplicative stems, cf. Chapter 2 §2.1.6.5); thus, although I would certainly not characterise these consultants as being anywhere near semi-speakers, gaps in the lexicon and small cracks in their intuitions are beginning to show.

This level of variation is also quite distinct from ‘rustier’ semi-speakers I met—usually having grown up at the fringes of a Phuthi community[57]—who would show much more serious cracks (e.g. lacking systematic patterns of depressor-induced H-tone shift).

All Phuthi speakers I met commanded at least Sotho as well as Phuthi. This bilingualism sets the stage for language shift, but does not guarantee it. A language such as Basque, whose speakers have become widely bilingual in the 20th century (Intxausti 1990), remains spoken by nearly 600 000 people in the Basque provinces of Spain and France (Gordon 2005). However even Basque, which is institutionalised in many ways that Phuthi is not (Basque has an orthography and a literature; it is widely taught in schools and used in the media), is showing signs (José Ignacio Hualde, p.c., 1997) of moving towards the inevitable longterm endpoint of ‘total isomorphism’ (Sasse 1992:61) that is evident in obsolescing languages.

Both Mpapa and Sigxodo Phuthi appear to be quite far along the road towards total structural isomorphism with Sotho. They are replete with phrase structure that is isomorphic with Sotho categories (even though Nguni and Sotho phrase structure is not highly divergent to begin

[57] For example at ‘Tamblok’, at the turn-off to Tosing (and ultimately Mpapa) from the tar road running south and east in the Quthing district of Lesotho.
with). When the two dialects do diverge, Mpapa Phuthi imitates Sotho more closely; Sigxodo often imitates Xhosa more closely.

For example, in Mpapa, expressing *have* involves the Sotho double-*with* construction, *-na li-* (cf. Chapter 2 §2.2.5). In Sigxodo, the Phuthi construction is the general Nguni (here: Swati) single *with* morpheme *-ŋa-*.

(29)  

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Sigxodo Phuthi</th>
<th>Swati</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.  gi-ŋа лě-jhά</td>
<td>ки-на лí-ŋфά</td>
<td>gi-нè-jhά</td>
<td>Ѳи-нè-ңжива</td>
<td>I have a dog</td>
</tr>
<tr>
<td>b.  gi-ŋа лě-мфвàngа</td>
<td>ки-на лí-ңвàngа</td>
<td>gi-нè-мфвàngа</td>
<td>Ѳи-нè-ңфвàngа</td>
<td>I have a child</td>
</tr>
</tbody>
</table>

The vehicle for Phuthi’s drift towards isomorphism, and replacement of self with Sotho components, may be code-switching, instantiating Myers-Scotton’s (1992:33) observation that at least some languages die by pervasive addition and substitution of the the second language’s grammar in the form of the mechanism of codeswitching (CS). She posits that CS is one important mechanism of ‘deep borrowing’. CS—involving temporary loans—is quite evident in daily Phuthi speech in the form of noun and verb roots, but it was uncommon to observe CS islands larger than a stem (root with suffixes).

Borrowing is at the extreme end of the CS continuum: it is, as it were, code-switching-made-permanent (Myers-Scotton 1992). In the *have* examples above, the non-native pattern (in Mpapa) has already been nativised: speakers must use this pattern; in other cases the borrowings have not been fully stabilised. Interestingly—and *contra* obsolescence—it was clear to me that despite the variation, and CS and borrowing, in most cases native speakers maintain strong intuitions about what is native and what is not. Randomly taking a Sotho lexical item, and even modifying it with the cognate Phuthi consonant, will often elicit a firm answer: ‘No, that is not Phuthi’.

The extent of Phuthi borrowing in several modules of the grammar has been illustrated in §1.1.5.1-§1.1.5.4. The extent of CS in regular speech has not been quantified yet. This deep

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58 Both Sotho words given here may take an optional H tone on the ultima (Derek Gowlett, p.c. 2003). This boundary tone (rising intonation on the ultima) is seen sporadically in Phuthi.

38
borrowing is, however, the normal reaction of a language under siege, overshadowed by a dominant language (mostly Sotho), as predicted by T&K (1988:38).

The nature of borrowing in Phuthi does appear to be changing. Frequently, speakers no longer segmentally nativise loans. I observed, for example, non-nativised causative suffixes, where the Phuthi counterpart may be used, but apparently did not occur to speakers first (the Phuthi tone pattern is unaffected).

(30) non-nativised Sotho loan nativised Sotho loan Sotho gloss
ú-yá-tépêlj-êts-à ú-yá-tépêlj-is-à ú-á-tépêlj-êts-à s/he is helping to do something slowly

We can conclude from this discussion that Phuthi is showing early signs of incipient obsolescence, such as high isomorphism, heavy borrowing and some attrition, but that the language is not yet at the point where we expect massive shift and the ‘tip’ (Rouchdy 1989) to imminent death.

1.1.7. Classification

Phuthi is not listed separately as a language in any of the major classifications of Bantu languages. Guthrie (1967-1971) lists ‘Phuti’ [sic] as a dialect or alternate name of Xhosa. Guthrie (1967-1971) also lists 22 other name variants for Xhosa as well, including some which are transparently ethnonyms (e.g. ‘Khoe’), names of places (e.g. ‘Caffraria’, ‘Tsolo’), or even merely authors who have worked on Xhosa (‘Pahl’, ‘Pienaar’)! Thus, the status of the classification and language listing is to be gravelly questioned, at least in parts. The list is also given at http://linguistics.berkeley.edu/CBOLD/Lgs/LgsbyGN.html.
specifically, Phuthi is clearly a *Tekela* Nguni language, as Ownby (1985) and Msimang (1989) correctly observe. I briefly examine the classification of the language in this section.

Sotho and Nguni are two linguistically distinct clusters within the southeastern Bantu language subgroup. An uncontroversial (but not exhaustive) chart indicating these clusters is given in (31).

\[(31)\]

```
Southeastern Bantu
   /     \
  /       \
Sotho    Nguni
 /       /     \
 Tswana Pedi S. Sotho Tekela Zunda
 /
 Phuthi Swati Zulu Xhosa Ndebele
```

Guthrie (1967:62-63) and Doke (1954) both indicate such a (sub)tree with their classifications\(^{60}\): Swati is coordinate with the other Nguni branches. Phuthi, however, is not usually included in Bantu classifications such as Guthrie (1967-1971) or Heine (1973).

Part of the confusion over the position of Phuthi arises straightforwardly from the paucity of systematic data on the language, as well as from the rather limited attempts to assert core criteria for what constitutes an Nguni or Sotho language. Only Ownby (1985) has explicitly proposed a classification of a larger set of (twelve) Nguni languages including Phuthi\(^ {61}\). She

\(^{60}\) Doke (1954:23-24) provides more Nguni varieties than given here, and in slightly more convoluted relationships (without providing convincing comparative historical data that would support his taxonomy): both Ndebele varieties (Southern, Northern) are given as dialects of *Zulu*; other Tekela varieties are listed (including Bhaca, and an opaque referent: ‘Old Mfengu’). Both Doke (1954) and Guthrie (1967) seem to rely exclusively on Mzamane (1949) for Phuthi.

\(^{61}\) Ownby (1985) spells this as ‘Phuti’ throughout, which erroneous spelling has been perpetuated in the references to contemporary Phuthi in the media and in early Pan South African Language Board (PANSALB) documents, reflecting the perceptual reflex of an Nguni accent
relies primarily on lexicostatistic evidence, based on modified 100- and 200-word lists, but also examines archeological evidence and oral traditions (unfortunately no light is shed on Phuthi from these last two areas).

There are two problems with Ownby (1985). Firstly, the Phuthi word list contains a number of errors, and lacks information on vowel qualities that in certain cases crucially distinguish between native and loaned material (though the hybridity can be so deep that it is impossible even then to assign a lexical source as unambiguously Sotho or Nguni, as seen in §1.1.5.1 (10,12)). Secondly, the percentage differences that she claims distinguish levels of relationship among the Nguni languages are very small, and if just a few words in the lists were incorrect, or if arbitrary choices are made in the case of synonyms (which Phuthi is replete with, cf. §1.1.5.1 (12-14), a somewhat different classification would be called for. This highlights, of course, a rather more general problem with the lexicostatistic method employed than with this particular work alone. Either way, Ownby’s data and analysis do not controvert the basic claim that Phuthi is in most ways—including lexically—a Nguni language.

1.1.7.1. Lexicostatistical comparison

The genetic closeness of the Sotho and Nguni languages complicates the task of vocabulary comparison: although one can establish regular three-way sound correspondences among Sotho, Phuthi, and other Nguni languages, it is not always transparent who has borrowed what from whom. Core Phuthi vocabulary is thus difficult to assess, because Sotho and Nguni share such a high percentage of lexical material—more than 96% according to Heine’s (1973) lexicostatistical report. My own modified, 100-word Phuthi list based on Swadesh (1971:283), and reproduced in Appendix C) reveals the following preliminary results, where ultimate cognacy is not the issue, but rather ‘most recent source’. The table in (32) indicates stems that are clearly (a) Nguni, contrasted with (b) Nguni stems which have Sotho (superclose) vowel qualities superimposed in them, or (c) stems which are clearly Sotho. Finally, in (d), there are stems which could be from either Sotho or Nguni, because they obey the same sound correspondences, viewed from either direction.

asymmetry (cf. Downing, in press): only the first of two stem consonants are contrastively aspiratable; in a CVCV stem, the second voiceless consonant always agrees in aspiration value with the first (cf. Khumalo 1987). Cf. fn. 59 for erroneous language names in Guthrie (1967-71).
### Table 1: Phuthi cognacy with Nguni, Sotho:

<table>
<thead>
<tr>
<th>STEM type</th>
<th>% of core vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. general Nguni stems</td>
<td>48%</td>
</tr>
<tr>
<td>b. Nguni stems, with Sotho vowels</td>
<td>9%</td>
</tr>
<tr>
<td>c. stems loaned from Sotho</td>
<td>23%</td>
</tr>
<tr>
<td>d. indeterminate Sotho / Nguni stems</td>
<td>20%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>

This table indicates that 57% of the sample is native Nguni material: 48% is genetically inherited (32a), and 9% (32b) are Nguni stems modified with Sotho superclose vowels. Of the remaining 43% (32c,d), 23% are unambiguous loans and 20% are possible loans.

These facts are quite remarkable, given the predicted amount of vocabulary that members of Nguni and Sotho should share. In a lexicostatistic classification of the whole range of Bantu languages, using a modified Swadesh 100-word list, Heine (1973) has proposed that Sotho and Nguni languages form a subset of an Eastern Highlands group, with the following ranges of shared lexicon: within the Sotho-Tswana languages, 77%; within the Nguni languages, 86-91%; across the Sotho-Tswana and Nguni subgroups, 65%. Yet the data used for my table in (32) above shows that only 57% of the Phuthi lexicon is unambiguously inherited Nguni material. A further 20% is possibly native Nguni. Thus, a potential total of only 77% is shared by Phuthi and at least some of the other Nguni languages (no distinction has been made between which languages which material is shared with).

A range of 57-77% shared lexicon would place Phuthi—by Heine’s calculus—well below the Nguni membership cut-off point, but at a higher level of cognacy than between Sotho-Tswana and Nguni. Although lexicostatistical analysis is fundamentally flawed in its inability to control for borrowed material or degrees of cognacy, and is known to be only very weakly predictive of time depth of genetic relationship (in its application under glottochronology), in this case it does appear to locate Phuthi correctly in the middle ground between ‘pure’ Nguni and the weaker overlap with the Sotho-Tswana languages.

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Heine (1973) does not distinguish between Zunda and Tekela branches of Nguni. He also does not include any reference to Phuthi, perhaps lacking access to such data.
However, the Nguni vocabulary overlap of 86-91% suggests a time divergence—according to Swadesh (1971:284)—of 3.1 to 5.0 centuries since its members dispersed, whereas the (maximum) amount of Phuthi/Nguni shared material is 77%, which predicts 8.6 centuries of divergence. This seems highly unlikely (and reconfirms the inappropriateness of using lexicostatistics for glottochronological purposes), since Phuthi and Swati will be shown in §1.1.7.2 and §1.1.7.3 to be closest to one another within Nguni, exclusively sharing significant differences (indicated above) distinct from the other Nguni languages (Xhosa, Zulu, Ndebele).

1. 1. 7. 2. What makes Phuthi an Nguni language (and not Sotho)

A number of classifications of Nguni languages exist. Acknowledging a wide variety of criteria they employ, I suggest simply the following (non-exhaustive subset of) criteria crucial to defining a language as Nguni (33a-h); these criteria cut across the modules of the grammar, not relying merely on a single diagnostic (such as lexicon).

(33)  

<table>
<thead>
<tr>
<th>Nguni-ness criteria</th>
<th>Module of the grammar</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. shared Nguni vocabulary</td>
<td>lexicon</td>
</tr>
<tr>
<td>b. H-toned noun prefixes&lt;sup&gt;64&lt;/sup&gt;</td>
<td>phonology / morphology</td>
</tr>
<tr>
<td>c. breathy-voiced obstruents</td>
<td>phonology: inventory</td>
</tr>
<tr>
<td>d. prenasalised voiced stops</td>
<td>phonology: inventory</td>
</tr>
<tr>
<td>e. antepenult H-tone target</td>
<td>phonology: tone process</td>
</tr>
<tr>
<td>f. class-specific copulative prefixes</td>
<td>morphology</td>
</tr>
<tr>
<td>g. 5 vowel phonemes&lt;sup&gt;65&lt;/sup&gt;</td>
<td>phonology: inventory</td>
</tr>
</tbody>
</table>

For example, Doke who classifies Nguni (1954:23-24) and who examines a wide range of Nguni properties (1954:91-118), does not explicitly induce defining characteristics of Nguni-ness. Ziervogel (1955:74-79), quoted in Doke (1984), classifies Southeastern Bantu languages. In Ziervogel (1959:13), quoting his (1955) work, he lists Phuthi in a Tekela subgroup, along with two sister branches: ‘Swazi’, ‘Bhaca’. Swazi is curiously subdivided into ‘North, South, Central, East’. Phuthi is even more puzzlingly subdivided into ‘Phuthi proper’ and ‘Bulani’ (currently a clan name for many Phuthi speakers). The present author is uncertain how such a classification was arrived at.

The tonally H specification of Nguni prefixes entails a single, H syllable (the H ‘sponsor’)—aligned to the left-edge—which will extend rightwards deeper into the prefix, and into a noun stem, under certain conditions (thus, the prefix may commence with a single H syllable, or both prefix syllables may be H (there is no typological implication from the number of surface-H syllables). The discussion is resumed in discussions in Chapter 4 §4.1.4.7, Chapter 5 §5.6, and Chapter 7 §7.5.

The five Nguni vowel phonemes usually display seven allophones: mid vowel phonemes /e o/ each have one lax [ɛ ɔ] and one tense [e o] counterpart, conditioned by a right-to-left
Sotho languages, on the other hand, can be characterised by the matching criteria in (34).

(34) Sotho-ness criteria
a. shared Sotho vocabulary
b. toneless\(^{66}\) noun prefixes
c. absence of breathy (and voiced) obstruents
d. no prenasalised stops
e. H tone spreads just once (rightwards target of H stem = σ2)
f. a single, universal copulative prefix
g. 9 vowel phonemes (often with 11 allophones), notably superclose /i ʊ/
h. (mostly) /CV-/ noun prefixes.

Phuthi fulfils the characteristics of Nguni-ness (33a,b,c,e,f). It fails criteria (33d,g,h), falling clearly into the Sotho patterns (34d,g,h). This is demonstrated in the bulleted points below, and in (35-41).

- (a) 57-77% of the Phuthi lexicon is inherited as Nguni (cf. Table 1 (32); Appendix C).
- (b) H-toned noun prefixes: all Phuthi noun prefixes bear a H tone\(^{67}\) (35).

(35) Phuthi Noun Prefixes are High

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>Sotho</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mù-tfù</td>
<td>úmú-ntfù</td>
<td>mù-thù</td>
<td>person</td>
</tr>
<tr>
<td>b. ébá-tfù</td>
<td>bá-ntfù</td>
<td>bà-thù</td>
<td>people</td>
</tr>
<tr>
<td>c. sí-kɔlб</td>
<td>sí-ˈkɔlб</td>
<td>sì-kɔlб</td>
<td>school</td>
</tr>
<tr>
<td>d. tí-kɔlб</td>
<td>tí-ˈkɔlб</td>
<td>dì-kɔlб</td>
<td>schools</td>
</tr>
</tbody>
</table>

- (c) The phoneme inventory contains 20 breathy voiced consonants\(^{68}\) (36).

\(^{66}\) By contrast with Nguni, Sotho noun class prefixes have no H tone; they are referred to here as ‘toneless’ (but in the descriptive literature, e.g. the Dokean tradition, simply as ‘low’).

\(^{67}\) The H tone extends (‘spreads’ or ‘shifts’) under certain conditions (cf. Chapter 4 §4.1-§4.3; Chapter 5 §5.1-§5.3, and especially §5.6); the prefix forms given here are surface-true for 2-σ toneless (that is, not H) stems.

\(^{68}\) See Chapter 2 §2.1.1.1 (1) for a full segment inventory, and §2.1.2 for details on the place of articulation distribution between [ʣ] and [ʥ]. The discussion of voice (both modal and
Breathy (depressor) consonants in Phuthi

\[
\begin{array}{cccccccc}
\text{b} & \text{d} & \text{dz} & \sim & \text{dv} & \text{dʒ} & \text{dl} & \text{g} & \text{lg} & \text{!g} & \text{!l} \\
\text{v} & \text{z} & \text{y} & \text{fi} \\
\text{r} & \text{l} \\
\text{m} & \text{n} & \text{ɲ} \\
\text{w} & \text{y}
\end{array}
\]

Sotho has no modally voiced obstruents, except in loans\(^{69}\) (cf. discussion of voice in Chapter 7 §7.2).

- (d) Prenasalised voiced stops: general Nguni pre-nasalised voiced stop sequence NC corresponds to a voiced (non-prenasalised) stop in Phuthi, and a voiceless stop in Sotho (37).

(37) **Nguni NC reflex in Phuthi**

<table>
<thead>
<tr>
<th>Xhosa</th>
<th>Phuthi</th>
<th>Sotho</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ímbizá</td>
<td>íbhítá</td>
<td>pítsá</td>
</tr>
<tr>
<td>b. úkù-khùmbúlá</td>
<td>kú-khùbhúlá</td>
<td>hú-húpúlá</td>
</tr>
<tr>
<td>c. índábà</td>
<td>ídzábà</td>
<td>tàbà</td>
</tr>
<tr>
<td>d. úkù-thándà</td>
<td>kú-tshádzà</td>
<td>hú-rátà</td>
</tr>
<tr>
<td>e. úkù-ngénà</td>
<td>kú-génà</td>
<td>hú-kénà</td>
</tr>
<tr>
<td>f. úkù-lángázà</td>
<td>kú-lágátà</td>
<td>hú-lákátsà</td>
</tr>
</tbody>
</table>

- (e) Antepenult H-tone target: a H-tone spreads (Phuthi) or shifts (Swati) to the antepenultimate syllable of a word\(^{70}\) (in Sotho a H-tone spreads just one syllable).

breathy) is resumed in Chapter 7, especially §7.2.1.1, and footnotes 5, 22.

\(^{69}\) The liquid [l] has a lightly closed stop allophone, [d], which occurs before superclose vowels [i u], cf. Chapter 2 §2.1.3. In addition, lightly imploded /ɓ/ (here <b>) is voiced (but not modal). The case is made in Chapter 7 §7.2.1.1, footnote 22, that [voice] is not an active feature in Phuthi, since (almost) all voiced consonants and vowels are sonorant.

\(^{70}\) There are a variety of conditions on this surface distribution of H which cannot be examined here (cf. footnote 67 above, for further references). The mora of the H-‘sponsor’, that is, the source of the H tone, is underlined, but just in this data set (general sponsor-marking begins only in Chapter 4).
(38) Phuthi antepenult target vs. Sotho σ2 target

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>Sotho</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. bá-yá-límélànà</td>
<td>bá-yá-límélànà</td>
<td>bá-á-límélànà</td>
<td>they cultivate for e. o.</td>
</tr>
<tr>
<td>b. sì-yà-bónisélànà</td>
<td>sì-yà-bónisélànà</td>
<td>ri-à-bóŋtshintšànà</td>
<td>we show for e. o.</td>
</tr>
</tbody>
</table>

- (f) Copulative prefixes: they do vary according noun class (39), but there is no distinct segmental prefix for every noun class, unlike in Zunda Nguni.

(39) Segmental copula prefix shapes

<table>
<thead>
<tr>
<th>Class</th>
<th>Phuthi</th>
<th>Swati</th>
<th>Sotho</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 3</td>
<td>gú-</td>
<td>ηú-</td>
<td>kí-</td>
</tr>
<tr>
<td>2, 6</td>
<td>gé-</td>
<td>ηé-</td>
<td>kí-</td>
</tr>
<tr>
<td>4, 9</td>
<td>yí-</td>
<td>yí-</td>
<td>kí-</td>
</tr>
</tbody>
</table>

- (g) Vowel phonemes: contra the general Nguni pattern, Phuthi has 9 vowel phonemes, including /i û/, as in Sotho (40).

(40) Phuthi vowel inventory

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>Sotho</th>
</tr>
</thead>
<tbody>
<tr>
<td>i û</td>
<td>—</td>
<td>i û</td>
</tr>
<tr>
<td>i u</td>
<td>i u</td>
<td>i u</td>
</tr>
<tr>
<td>e o</td>
<td>—</td>
<td>e o</td>
</tr>
<tr>
<td>e o</td>
<td>e o</td>
<td>e o</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
</tbody>
</table>

- (g) VCV-prefix shape: Contra the general Nguni pattern, Phuthi noun prefixes are mostly /CV-/, as they are in Sotho (41a-e), but there are exceptions: Classes 1a,2,6,9 in (41h-k).

(41) Noun Prefix shape

<table>
<thead>
<tr>
<th>Class</th>
<th>Phuthi (CV-)</th>
<th>Zulu (VCV-)</th>
<th>Sotho (CV-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 1, 3</td>
<td>mú-</td>
<td>ùmú- ~ ùŋ-</td>
<td>mú-</td>
</tr>
<tr>
<td>b. 4</td>
<td>mí-</td>
<td>imí-</td>
<td>mí-</td>
</tr>
<tr>
<td>c. 5</td>
<td>lí-</td>
<td>īlí-</td>
<td>ī-</td>
</tr>
<tr>
<td>d. 7</td>
<td>sí-</td>
<td>īsí-</td>
<td>sí-</td>
</tr>
<tr>
<td>e. 8, 10</td>
<td>tí-</td>
<td>īzí(N)-</td>
<td>dį(N)</td>
</tr>
</tbody>
</table>

---

71 The full set of copula shapes—segmental and phonational (depressor)—is given in Chapter 2 §2.2.1.7 and Chapter 7 §7.5.

72 The noun stems—not given—to accompany these examples (41a-k) are assumed to be toneless (at least two syllables: low-low -σσ#, cf. data patterns in Chapter 5 §5.6).
(41h-k) are exceptional for three different reasons: the Phuthi prefix in (41h) is too short (zero prefix, that is, segmentally empty); there is a fixed vowel e- in the exceptional VCV- prefix template (41i-j); the Phuthi prefix is just V- in (41k), not VN- (which Class 9 frequently is in Southern Africa), nor CV- (which Class 9 rarely is in any Bantu language).73

1. 1. 7. 3. What makes Phuthi Tekela (and not Zunda)

The shibboleth of Tekela-ness is plain (or ejected, but definitely not aspirated) alveolar [t(ʰ)], which corresponds to Zunda Nguni [z]. Zunda and Tekela languages are commonly grouped as in (31) above, based on Doke (1954).

The ‘tekela’ (or ‘tekeza’74) label has been used in a variety of ways—cf. Ownby (1985:28ff) and references therein, Bill (1995:506)—in order to refer to a subset of the Nguni languages which have (in the most reduced definition) the phoneme /t/ where others have /z/. Swati has come to be identified as the principal Tekela language (probably because it is the only one on South Africa’s list of official languages, but also because it is the only one with a stable orthography and published literature; several others, such as Lala (Van Dyk 1960), Bhaca (Hallowes 1942, Jordan 1942), Northern Ndebele,75 Southern Ndebele (Wilkes et al 1995), Hlubi

73 Tsonga is an exception to this (Baumbach 1987): Class 9 noun prefix is yi-.
74 Sometimes ‘tekela’/‘tekeza’ (meaning ‘to speak an Nguni language which has substituted ‘z’ with ‘t’) is used interchangeably with ‘tshefuya’, which identifies the salient replacement of -l- with -y- in these language varieties (e.g. the Phuthi perfective is -iye, contra Zunda—and even Swati—-ile). I refer in this work to the Swati/Phuthi/Bhaca/Lala etc. set of languages as ‘tekela’, cf. discussion of the terms ‘tekeza/tekela’ in Ownby (1985), to follow in this section.
75 This variety is still usually called ‘Northern Transvaal Ndebele (as distinct from the Ndebele spoken further to the North in Zimbabwe, which is closest to standard Zulu). Likewise, Southern Ndebele is still commonly called ‘Southern Transvaal Ndebele’. Msimang (1989) picks a specific variety of Northern Ndebele, naming it Sumayela Ndebele. The ‘Transvaal’ descriptor may disappear anyway, given that there is no longer a province of South Africa named Transvaal.
(Pahl 1983, Msimang 1989), Nhlangwini (Zotwana 1981), have received limited attention in the descriptive literature, but no theoretical treatment of any Tekela language has taken place. Tekela languages are compared as a set of languages in Msimang (1989)

Ownby’s (1985:154) final classification of Nguni has three primary branches: pre-Northern Ndebele, pre-Phut[h]i, and Nkangala (which last branch subsumes all of the remaining Nguni languages). The Tekela languages are not considered to be a unit at all, but are dispersed among several nodes on the family tree. ‘Tekela-ness’ is considered a property that in the course of linguistic drift has been shared among some Nguni and some non-Nguni southeastern Bantu languages (Ownby 1985:39). Phuthi is thus not grouped with any other Tekela languages, but found—like Northern Ndebele—to be somewhat more distantly related to the rest of the Nguni cluster. Ownby’s conclusion on Tekela may well be the most integrated there is: Tekela-ness is a distributed property. Yet such a conclusion fails to recognise the obvious phonological unity attested in Phuthi and Swati (and likely the other Tekela languages too, including Bhaca, Lala and so on).

This dissertation on Phuthi reveals certain undocumented properties that are shared uniquely among Phuthi and Swati (and for which data on the other Tekela languages is not available). I suggest, therefore, the following subset of criteria for identifying Phuthi as Tekela Nguni, along with Swati (42).

(42) Tekela Nguni criteria

<table>
<thead>
<tr>
<th>a. affricated coronal consonants</th>
<th>b. independent breathy phonation</th>
</tr>
</thead>
<tbody>
<tr>
<td>phonology</td>
<td>morphology (new)</td>
</tr>
<tr>
<td>c. /VCV-/ noun prefixes in class 2, 6</td>
<td></td>
</tr>
<tr>
<td>morphology</td>
<td></td>
</tr>
</tbody>
</table>

By ‘independent’ I intend breathy phonation not only implemented lexically as the inherent property of a consonant, but also lexically in syllables without a voiced onset, and also breathy phonation implemented grammatically as an independent morpheme (e.g. as the copula in Phuthi (cf. Chapter 2 §2.2.1.7, §2.2.2.1, §2.2.3.2, §2.2.3.4), and in Swati.

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76 Much of the Phuthi data in Msimang (1989) contains significant internal inconsistencies, and should be treated with great circumspection.

77 Not only is this Tekela genetic unity salient in the factors enumerated in (42a-c), but it will also be considered further in Chapter §7.6.2 (footnote 93), where Phuthi and Swati are shown to share very low-level innovations.

78 By ‘independent’ I intend breathy phonation not only implemented lexically as the inherent property of a consonant, but also lexically in syllables without a voiced onset, and also breathy phonation implemented grammatically as an independent morpheme (e.g. as the copula in Phuthi (cf. Chapter 2 §2.2.1.7, §2.2.2.1, §2.2.3.2, §2.2.3.4), and in Swati.
• (a) affricated coronal consonants

As in Swati, Phuthi /dz/ ~ /dy/ and /tsʰ/ ~ /tf/ are affricated coronal consonants, with allophones that depend on the quality of the vowel that follows. Labialised [tf] and [dy] occur before round vocalic segments [ɔ o u w], as in (43); the non-labial allophones occur elsewhere.

(43) Labialised vs. non-labialised coronal affricates

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>other Nguni (Xhosa)</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-tshádzà</td>
<td>kú-tshádzà</td>
<td>úkú-thándà</td>
<td>to love</td>
</tr>
<tr>
<td>b. kú-tfwálà</td>
<td>kú-tfwálà</td>
<td>úkú-thwálà</td>
<td>to carry on the head</td>
</tr>
<tr>
<td>c. lí-dvá</td>
<td>lí-dvá</td>
<td>lí-dvá</td>
<td>knee</td>
</tr>
</tbody>
</table>

• (b) independent breathy phonation

Uniquely among the Nguni languages (and highly marked, universally, as a property of a grammar), Phuthi and Swati employ breathy phonation—or depression—as an independent feature, not necessarily tied to the voicing status of consonants. Thus breathiness/depression can occur as a lexical feature in certain items in both Swati and Phuthi (contra Rycroft 1980:10), and as a grammatical morpheme; copulatives, for example, are optionally formed this way in the weak (‘nasal’) classes (1, 3, 4, 5, 9), and obligatorily in all others (44).

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79 Cf. fuller discussion in Chapter 2 §2.1.2.
80 Although this is usually indicated simply as [tf], the heterorganic labialised coronal affricate is also aspirated, thus, more accurately [tʰf].
81 Significantly, [tf] and [dy] do not occur before the superclose round vowel [u]. Unlike in Swati, Phuthi affricated coronals do not labialise to [tf dy] in a derived environment such as the passive (cf. Chapter 2 § 2.12). Further, the coronals labialise only in Mpapa Phuthi, and not in Sigxodo (Zingxondo / Seqoto), Magwayi (Makoae) or Qacha. Coronal-bearing data in Mzamane (1949) for Matatiele Phuthi is inconsistent in this case.
82 Cf. Chapter 7 §7.2 for a discussion of breathiness vs. depression.
83 Rycroft (1981:11) points out that some features of breathy copulas do occur in Natal Zulu, and more restrictedly in other Nguni dialects. Almost all of these features are absent in the Nguni languages most geographically proximate to Phuthi: most dialects of Xhosa and Zululand Zulu. Thus, this evidence for close relationship of Phuthi and Swati can continue to be supported by these facts; Phuthi and Swati are inferred relic zones of a once geographically contiguous Tekela Nguni subfamily.
Breathiness independent of breathy consonants

<table>
<thead>
<tr>
<th>Class</th>
<th>Phuthi</th>
<th>Swati</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gûmútfù ~ mú-tfù</td>
<td>gûm-ntfù ~ nǐ-ntfù</td>
<td>s/he is a person</td>
</tr>
<tr>
<td>2</td>
<td>gèbátfù ~ bá-tfù</td>
<td>bá-ntfù</td>
<td>they are people</td>
</tr>
<tr>
<td>7</td>
<td>—</td>
<td>sì-kólê</td>
<td>it is a school</td>
</tr>
<tr>
<td>8</td>
<td>—</td>
<td>tì-kólê</td>
<td>they are schools</td>
</tr>
</tbody>
</table>

In addition, tonal depression (sometimes a manifestation of breathiness, other times grammatically triggered as depression *qua* depression *sans* breathiness) is superimposed in Swati on (among other structures) the penultimate syllable of toneless (low) stems in (a) the present tense indicative negative; (b) the perfective; (c) the imperative. In Phuthi breathy voice is superimposed on (among other structures) (a) the quantitative pronoun \[-$$\hat{\nu}$$\] \(^{84}\); (b) associative (‘possessive’) prefixes in the weak\(^{85}\) noun classes (1,3,4,6,9); (c) toneless subject prefixes in the past tense subjunctive (§7.6.2); and (d) the penult of the present tense indicative negative (possibly abstract tonal depression alone). Detailed results of this investigation are discussed in Chapter 7 §7.2 (general breathiness/ depression properties), §7.6.2 (grammatical deployment of breathy voice in certain paradigms, e.g. past subjunctive), §7.8.1 (grammatical deployment of depression in the present negative), §7.8.2 (lexical and grammatical deployment of breathy voice in particular lexical sets).

- (c) /VCV/ noun prefixes in class 2, 6, with fixed initial /e-/

Both Phuthi and Swati have the regionally odd phenomenon of one or two noun class prefixes (Class 2 in Phuthi; Class 6 in both languages) with the non-canonical shape VCV-, and both with an atypically fixed initial vowel e- (45).

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\(^{84}\) Cf. Chapter 2 §2.2.1.1, Chapter 7 §7.8.2.1.

\(^{85}\) Cf. Chapter 2 §2.2.1.1 (48), footnotes 106-107) for the distinction between ‘strong’ and ‘weak’, and Chapter 7 §7.8.2.3 for exemplification and further discussion.
1. 1. 7. 4. Unique Phuthi innovations

Besides the Nguni and (more narrowly) Tekela features that Phuthi displays, there is a large set of properties in Phuthi that are loaned from Sotho. A number of these have been examined in §1.1.5 above. There are also several Phuthi innovations, including the bullets below.

- Core lexical items not (narrowly)\(^{87}\) shared by other Nguni languages, including (46);

\[
\begin{array}{ll}
\text{Phuthi} & \text{gloss} \\
\text{a. mú-khùphà} & \text{bread} \\
\text{b. sí-phadʒé} & \text{tree}^{88} \\
\text{c. lí-qàyí} & \text{egg}^{89} \\
\text{d. í-lhwálà} & \text{louse}
\end{array}
\]

- Twin vowel harmonies (cf. §1.1.5.3 above);

- No vowel-initial verb stems, unlike all other Nguni languages: what are elsewhere vowel-initial stems are either supplied with a glide onset (47a-b), where the default inserted glide is coronal (but a labial glide emerges where the place-of-articulation features from the vowel in the following onsetless syllable are labial); or these stems

---

\(^{86}\) /èbá-/ is not the standard Swati Class 2 prefix, but native speakers acknowledge that it is used in speech. The stems (not supplied) in these prefix examples would have toneless \(\sigma_1\).

\(^{87}\) I say ‘narrowly’, because there are semantic variations. Xhosa has *um-khupha* ‘steam bread’ (that is, a specific type of bread), cf. (46a); Swati has *ímpândżé* ‘root’ (cf. 46b).

\(^{88}\) Outside Nguni, Sotho has cognate *sì-fátè* ‘tree’, but—as in most cases—it is not clear whether Sotho loaned this from Phuthi, or the other way around.

\(^{89}\) Mabille-Dieterlen [Paroz] 1961 glosses the word *leqai* as a ‘*hloompha*’ (Nguni: *hlonipha*) word for ‘testicle’, which may conceivably be cognate to the Phuthi item. (*Hloompha* (or *hlonipha*) indicates a linguistic code of respect, emerging in the context of the male or female initiation right-of-passage, or the female marriage avoidance code—now apparently marginal in any Sotho context). In Guma (1971:48,72), however, *leqai* is glossed as ‘uninitiated man or boy’—seemingly much more tenuously connected, if at all, to Phuthi <*tiqayî*>.
occur without the initial vowel that occurs elsewhere in Nguni (47c,d); and vowel stems that display stem-initial allomorphy (between vowel and zero) lack any trace of this ‘latent’ initial vowel -i- (the italic vowels in 47g-h (vs. 47e-f) should display): this allomorphy in the Phuthi verb paradigm has been levelled. (Discussion of the absence of vowel verbs is resumed in Chapter 2 §2.2.4.4 and of potentially latent -i- verbs in §2.2.4.5).

(47) No vowel-initial stems

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-yáti</td>
<td>kw-ááti</td>
<td>to know</td>
</tr>
<tr>
<td>b. kú-wótèlà</td>
<td>kw-étèlà</td>
<td>to become drowsy</td>
</tr>
<tr>
<td>c. kú-phúlà</td>
<td>kw-éphúlā</td>
<td>to break</td>
</tr>
<tr>
<td>d. kú-dìlà</td>
<td>kw-énçàlā</td>
<td>to unroll a mat, prepare a bed</td>
</tr>
<tr>
<td>e. kú-tà</td>
<td>kú-tà</td>
<td>to come</td>
</tr>
<tr>
<td>f. kû-yá</td>
<td>kû’ú-yá</td>
<td>to understand / hear / sense</td>
</tr>
<tr>
<td>but</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. gi-yà-tà</td>
<td>ṇjì-yè-tà</td>
<td>I come</td>
</tr>
<tr>
<td>h. gi-yà-yá</td>
<td>ṇjì-yé-yá</td>
<td>I understand / hear / sense</td>
</tr>
</tbody>
</table>

We conclude from this preliminary examination that:

- Phuthi is genetically definitely Nguni (and not Sotho);
- Phuthi is more closely related to Swati within Nguni than to its geographically contiguous Zunda neighbours, Zulu and Xhosa, who lie in the buffer zone between these two Tekela languages;
- it would be desirable to encode this degree of close genetic affiliation when classifying Swati and Phuthi;

90 The distribution of these solutions is significant: the general Nguni vowels that receive an inserted glide are ‘real’ vowels; the vowels that are ‘deleted’ and do not surface in Phuthi are dummy vowels: they do not have distinct tone properties. Downing (1998a,b) has shown that dummy initial vowels respond differently from non-dummy initial vowels to processes of morphological reduplication (dummy vowels cannot be used to fill out the reduplication template, whereas non-dummy vowels can).
• ‘Tekela’ may yet be a definable subgroup of Nguni, and may be more than the drifting linguistic property that Ownby (1985) suggests. This awaits further work.

1. 2. Scope of Dissertation

This dissertation attempts to provide insight into a large fragment of the Phuthi tone grammar, focusing in particular on the intersection of tone patterns with the presence of the (frequently, but not always) voice-triggered property of tone depression.

I provide an overview of the nominal (including adjective and relative), verbal, adverbial and conjunction morphology in Chapter 2.

Then, in the three chapters that follow, I lay out what I believe to be close to the full array of tone patterns that are possible in the language, exhaustively analysing each with the smallest possible set of theoretical principles (constraints) that will allow those patterns and only those patterns to be produced in the tone grammar (Chapters 4, 5, 6). In a single, lengthy chapter, I proceed in the same fashion to inventory the constraints and constraint rankings that necessarily and sufficiently account for the full range of tone and voice interactions (Chapter 7). Together these four analytic chapters provide the most detailed examination of tone/voice interaction that has been written for any Bantu language, to my knowledge, following in the meticulous tradition of voice/tone description in Khumalo (1982)91.

1. 2. 1. Methodology

Straightforwardly, my approach involved participant observation in two distinct Phuthi-speaking communities, with a small range of audio equipment to assist me.

1. 2. 1. 1. Field sites

I spent eight months from September 1994 to May 1995 investigating Phuthi. I first stayed for several months in Herschel (St. Teresa Mission), east of Aliwal North. Initially I was not certain that Phuthi was even a fully functional language any longer, and it took a number of

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91 Khumalo (1982) represents early autosegmental phonology (a theoretical tradition distinct from the present one), and his data set is fairly limited. His empirically driven theoretical aim for Zulu is essentially the same as mine for Phuthi.
weeks to find ‘real’ native speakers (not semi-speakers). When I did, one spring evening in October, I began work with two speakers\textsuperscript{92} from Sinxondo (Sotho Seqoto; Phuthi: Sigxodo; also sometimes known in Xhosa as Zingxondo), who were at high school in nearby Tlokweng, and at college in Bensonvale\textsuperscript{93}; I visited the Sigxodo community in late 1994 and at Easter 1995. From February to May 1995 I resided in Mpapa village, in southern Lesotho, south of Mount Moorosi, at the mercy and kindness of my friends and fellow villagers, who housed me and helped me in every way. There was a brief subsequent trip to both areas in January 1997.

The chance to live in a Phuthi community has given me far greater insight into the language than I believe I would have ever have had living in a city and working only with consultants in a campus environment. I am enormously privileged to have had this opportunity.

1.2.1.2. Materials

The field materials I gathered are as one would expect: (a) a folder of muddy notes with candle wax and spilt tea and the odd squashed insect on them; (b) a certain number of sound files stored on a laptop, analysed mostly in situ; (c) analog tape recordings; (d) digital audio tape (DAT) recordings, from the return visit in January 1997.

Primarily, I used the CECIL (DOS version) software from SIL (the Wycliff Bible Translators partner foundation: Summer Institute of Linguistics) as a tool for visually enhancing the pitch contours that I was eliciting. A set of sound files with much of the data in this dissertation can be accessed, in digital format, by contacting the author.

1.2.2. Empirical Tradition

This dissertation is written in the scholarly tradition of tone studies that is in part South African and in part North American. First, it attempts to follow in the long tradition of data-driven examination of southern Bantu languages dominated for a large portion of the 20th

\textsuperscript{92} Eric Moputla and Leemisa ‘Jubhasi’.

\textsuperscript{93} My profound and lasting gratitude is owed to Mr. Tholang Khoaelane, my first and most lasting field consultant, for his enormous patience, his insight into his own language, and most especially his friendship. It was a providential moment when I met Mr. Khoaelane one hot afternoon at Bensonvale College, outside Sterkspruit, in October 1994. Mr. Khoaelane’s commitment and devotion to his pursuit of advanced education and to the documentation of language in his own community are deeply impressive.
century by professors Clement M. Doke (Lamba, Zulu, Shona), Desmond T. Cole (Tswana, Ganda, comparative Bantu), Len W. Lanham (Southern Bushman Khoesan, comparative Nguni), Derek F. Gowlett\(^\text{94}\) (Sotho, Lozi), Sophonia M. Mofokeng (Sotho)\(^\text{95}\), Derek Fivaz (Shona), James Mzilikazi Khumalo (Zulu), Patrick Dickens (Qhalarzi; !Xû Bushman), Andrew van der Spuy (Zulu) and Anthony Traill (Khoesan, Bantu)\(^\text{96}\), all scholars in Linguistics and African Languages at the University of the Witwatersrand (Wits), in Johannesburg. In addition, there were very productive ties with scholars working on Bantu tone at certain other South African universities\(^\text{97}\), and in England, perhaps chief among whom was David Rycroft at the School of Oriental and African Studies. A small set of scholars across the 20th century have specialised in work on Tekela Nguni languages (Hallowes 1942, Jordan 1942, Rycroft 1980b, 1981, Mzamane 1949, Van Dyk 1960, Msimang 1989, Taljaard 1997). Some of these languages are at the extreme

\(^{94}\) Gowlett was trained at Wits, and taught there from 1961 to 1980, but moved to the University of Cape Town (1984-1999), where his expertise on Sotho and Lozi were injected into the tail-end of the descriptive field tradition of Lestrade, Fortune, Cole, Westphal and others working on both Khoesan and Bantu languages. This expertise is reflected in Gowlett (2003).

\(^{95}\) Mofokeng is known in the Bantu linguistic world only for his coauthored work with Doke on Sotho (1957), but he made a significant literary contribution, before dying young of TB.

\(^{96}\) Traill is most famous for his work in Khoesan (especially !Xóõ), but has also done important instrumental work (cf. Chapter 7 §7.1) on Nguni languages (Zulu, Swati) and Tsonga.

\(^{97}\) There is certainly a much wider set of Southern African scholars who have worked and are working on Bantu than these mentioned, but few are specifically devoted to tone work. Other well-known South African Bantuists who have done work on tone have included Ernst O. J. Westphal (Cape Town, on Khoesan, Xhosa, Venda), George Fortune (Cape Town, on Shona), John S. Claughton (Rhodes, on Xhosa), Rosalie Finlayson (UNISA, on Xhosa), Sizwe Satyo (UNISA and Cape Town, on Xhosa), Anthony Davey (UNISA, on Xhosa, Swati), Jack Cope (University of Natal, on Zulu), Richard Bailey (University of Durban-Westville, on Copi). Sadly, in the South Africa of the early 21st century, the descriptive (including tonal) tradition of work on Southern African languages seems moribund, with the strongest departments of African languages at Wits, UNISA and Cape Town, all but totally eclipsed for now. Yet there are a dozen or more basic descriptive language projects waiting to be done in South Africa, Lesotho and Swaziland (the territory of the Nguni-speaking peoples), including work on all Tekela dialects/languages, even the relatively well-studied Swati. As Richard Bailey (p.c., 1990) has observed: researchers since A. T. Bryant (1929) in the 1930s have remarked that various ‘marginal’ languages in South Africa were about to die, and yet 60 (now 77) years later they still have not. There are no interesting descriptions of non-standard languages like Mpondo and Cele (not to mention the broad swathe of Northern Sotho ‘dialects’). It must earnestly be hoped that the South African descriptive tradition reemerges (optimally married to theoretical insights from the North American and European work on tone since the 1980s), as the work of cataloguing and analysing tone phenomena in the subcontinent is so very far from anything nearing satisfactory.
taxonomic margins of Nguni, including Pai (Taljard 1997) and in many ways Phuthi too (Mzamane 1949, Msimang 1989, and the present work).

But as rich as this tradition is, it was mostly not well-grounded in theoretical analysis that could and would reveal some of the most interesting and most puzzling data. Without doubt the grounding for almost all work done on Bantu tone emerges from the United States, beginning in the early 1970s, in an initially very small field dominated at first by professors Charles W. Kisseberth (Illinois) and Larry M. Hyman (first Southern California, then Berkeley), John Goldsmith (Chicago) and G. Nick Clements (Cornell; then CNRS, France); a range of currently leading Bantu theoreticians emerged from the University of Illinois in the 1980s and 1990s, including David Odden, Farida Cassimjee, Laura J. Downing and Jay Nash, as well as others in the USA (such as Lee Bickmore, SUNY). Finally, there has been a very small set of scholars who have combined theoretical training in the USA with sustained work ‘on the ground’ in Southern Africa, including Robert K. Herbert (at Wits in the early 1990s) and Charles W. Kisseberth.

European scholarship has occupied a niche bridging the descriptive and theoretical domains in the Bantu realm: ground-breaking work on tone descriptions (usually with a strongly historical orientation) emerged with Belgian, French and British scholars, including Meeussen (1954, 1980), Carter (1971, 1972). Recently, Denis Creissels has contributed important monographs on tone in Southern Bantu, including Swati (1996) and Tswana (1998).

In the field of tone studies, for example, the South African tradition suffered from what David Odden (p.c., 1993, Ohio State University) has called ‘bisyllabism’: the pre-generative (structuralist) almost exclusive focus on inventory contrast did not typically prompt researchers to go beyond the contrast of H and L tones to see what nonlocal patterns these tones set up across words and across phrases. Many of the cited examples are just two syllables long, far too short to show the full set of tone parameter settings in most Bantu paradigms. It will become clear in Chapters 4 to 7 of this work that longer stems are critical for the full range of surface tone patterns, in order to reveal what the tone parameter settings in most Bantu paradigms are, e.g. in the present subjunctive (Chapter 6 §6.2.2.2), it becomes clear only with 4-σ stems (á-lá-bá-tís-é ‘s/he should delay’, á-sé-bá-tís-é ‘s/he should use’) that the almost universal toneless/H stem contrast has been completely neutralised, that the source of the H is truly the prefix syllable, and that the antepenult is still the regular rightwards expansion target for H tone extension (or ‘spread’).

Nash has not continued actively in the field of Bantu tone, but his dissertation marks what may be the highest point of theory and data integration in an analysis that is driven by the phenomena in a single Bantu language (Nash 1992); it is an extraordinary 1457-page work, unequalled in the field, that exhaustively examines every key aspect of segmental and tonal phonology and morphology in Ruwund.
It is hoped that the present work retains something of the insight from the Southern African empirical and American theoretical traditions, both of which the author has been fortunate to have been a student in.

1.2.3. Theoretical Topics

A range of theoretical topics—to be broached more properly in Chapter 3—emerges from the Phuthi data. These topics have relevance beyond Nguni languages, or even Bantu; a limited attempt is made in this work to draw the connections with theoretical tone work on languages in other parts of the Bantu (especially Southern bantu) realm, cf. Chapters 2 and 3.

Fundamentally, there is the question of whether the framework supported in this dissertation is necessitated by the empirical material (§1.2.3.1). Then there are two central theoretical issues that emerge in the work: the representation of tone and the conflict between tone types (§1.2.3.2), and the distributed manifestation of prominence (§1.2.3.3). The nature of the theoretical machinery assumed, proposed or rejected, is properly examined in Chapter 3, and once all data has been presented in chapters 4 to 7, the theoretical implications are considered in Chapter 8.

1.2.3.1. Feature framework

The dissertation is presented in the nascent framework of Optimal Domains Theory (ODT), a variation of Optimality Theory (cf. further discussion in Chapter 3 §3.3), which claims that domain structure is explicitly encoded in phonological representation. Every active feature in a grammar is parsed by a feature domain. This dissertation constitutes perhaps the second attempt at a fully-developed application of the ODT framework, following the detailed development of tone constraints presented in Cassimjee (1995, 1998).

The dissertation will demonstrate that the tonal patterns encountered in Phuthi cannot be straightforwardly explained in a non-domains-explicit framework such as any form of autosegmental theory (cf. Chapter 7 §7.2, Chapter 8). The strongest evidence for the explicitness of feature domain edges is adduced by the depression feature (argued to be the L feature, itself) that interferes nonlocally with the construction of H domains (§7.2ff), realigning zones of lowness leftwards to a morpheme edge (§7.3), and forcing a H domain to minimally overexpand
rightwards in order not to exclude a head position (Chapter 3 §3.3.5, Chapter 7 §7.4). This overexpansion will be seen to arise from a tone feature conflict (§1.2.3.2) at the head position (cf. §1.2.3.3 below), where the notion of head is both derived and distributed.

Issues around the role of locality are examined in Chapter 3 §3.2, §3.3.4.1, in anticipation of a substantial discussion in Chapter 7 §7.2 and Chapter 8 §8.3.5.

1.2.3.2. Tone representation and conflict

Once the assumption had been lifted\(^{100}\) that every syllable in a two-tone language—such as typically found in Bantu—required full tone specification as high (H)\(^{101}\) or low (L), Bantu phonologists have been able to insightfully simplify the tone rules (later: constraints) needed to uniquely produce the full range of attested surface tone patterns. And this assumption is sustained through Chapters 4 to 6 of this work, where it is also clear that there is a H/toneless asymmetry, and that H is the only specified tone (qua tone) feature needed.

But in Chapter 7, once the facts of tonal depression—triggered mostly by segmental breathy voice—are revealed, it becomes clear that H vs. toneless cannot be the only tone contrast in Phuthi. Rather, it is the case that lexically, morphologically and grammatically defined zones of ‘tonelessness’ inside a word require a parsed feature of their own, argued in §7.2ff to be L. Hence, Phuthi will be seen to emerge as a language that requires a (mostly derived) three-way tonological contrast: H vs. L vs. toneless, even though the phonetic facts in and of themselves may not strongly support such a contrast.

Phuthi thus supports the H vs. toneless contrast in the non-depression grammar, but will be seen to require the second tonal contrast once the fuller range of tone/voice interactions are properly examined. Phuthi is thus a Bantu language with just two apparent surface tone contrasts, but with three underlying tone settings, contra the general claim for tone languages, and for Bantu in particular.

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\(^{100}\) Cf. Chapter 3 §3.2.2.3 for discussion of underspecification of tone features.

\(^{101}\) The claim that the specified Bantu tone (that is, the marked and active tone) must be H, and not L, has been robustly confirmed particularly in the last 20 years (cf. Chapter 3 references in previous footnote above). Occasionally, L has been argued to be the specified tone, e.g. for the Congolese/Angolan Bantu language, Ruwund (Nash 1992).
The antagonistic H and L features will be seen to explicitly clash in a variety of contexts, both lexically and in derived domains in the language. I will show in Chapter 7 that the antagonistic clashing configuration of a single entity attempting to be both H and L simultaneously—has multiple instantiations in the language (and, therefore, in the theoretical constraint grammar)\(^\text{102}\). Fundamentally, a syllable will typically refuse to support both H and L tones at the same time (§7.2.4); a H domain accepts only the smallest number of nested L domains necessary (§7.4.3.3); a morpheme such as the OP that is part-way to fully depressed repels a H tone (§5.4, §7.6.3); H domain fusion is blocked if it would entail acquiring an additional nested L domain, by means of a higher order conjoint anti-express constraint (§7.8.1.10, footnotes 198-200); an anti-clash condition applies to the stem in a grammatical paradigm such as the negative (§7.8.1.5), preventing the parsing of a grammatical L with a lexical H. In other words, the single observation of featural conflict is instantiated in multiple theoretical constraints, independently ranked with respect to one another. That is, a single grammatical pattern is distributed across the constraint grammar in a disjunctive way.

While it is unsurprising that H tone exists independent of any segmental trigger, it will be shown in Chapter 7 §7.8.1 that the L tone, too, must be invoked not only lexically (by a segmental breathy consonant sponsor), but also grammatically quite independent of segmental specifications (that is, independent of segmental breathiness). That is, tone depression is shown in this work to be a truly prosodically autonomous phonological property.

Ultimately, both of the tone types, H and L, will be seen to require two subtypes: one lexical, one grammatical (it will be seen in Chapter 6 §6.2.1.1 that there are two distinct instantiations of H, with independent alignment parameters). This duplication of both H and L tone types is quite abstract, but the evidence for both is felt to be robust.

1.2.3.3. Distributed prominence

The issue of prosodic prominence will emerge in several places in this dissertation. While it is superficially clear that Phuthi lacks stressed syllables, if stress is phonological prominence realised by some phonetic complex of pitch/loudness/duration, Phuthi will be seen to reflect

\(^{102}\) The parameters of this conflict in the constraint grammar are laid out in Chapter 3 §3.3.3.
word-prominence with a nuanced (in part, paradigm-specific) interaction of tone and voice settings reflecting partial metrical properties (e.g. a right-aligned trochee)\textsuperscript{103}.

It will be seen that the general phrasal target for rightwards H tone realignment in non-grammatical paradigms (e.g. the indicative) is the antepenult; phrase-medially the target is the penult syllable. But it will be seen that the antepenult-penult prominence position is marked in several distinct ways: as the rightwards H realignment target for lexical paradigms (Chapter 4 §4.1), as the locus that resists tone minimality (§4.2-§4.3), as the only non-depression locus of anti-fusion, that is, of fusion failure (Chapter §5.5), and as the locus of minimal inclusion (headedness) in a HD (Chapter 7 §7.4).

In grammatical paradigms (e.g. subjunctive, short perfective, imperative), the phrasal prominence position varies among the last three syllables of a word, but essentially the same cluster of prominence-related properties holds as in the non-grammatical paradigms.

Thus, a distributed notion of headedness will emerge: head position (the rightwards H target) will become critical in the examination of tone depression and L domains (§7.4), where \textsc{Head} is a position ‘derived’ by a recursive subset of constraints.

The Phuthi tone/voice discussed in Chapter 7, resumed in Chapter 8 (§8.2.2, 8.2.3), will shed light on the theoretical interaction of featural tone and metrical structure.

### 1.3. Structure of the Dissertation

The dissertation is structured so that each chapter is relatively self-contained. Nevertheless, the body of tone and voice constraints in each section builds on each preceding section. There is an introduction to Phuthi grammar in Chapter 2, including a range of phonological and morphological phenomena (mainly segmental). Chapter 3 contains a brief theoretical outline. The arguments and data are presented in Chapters 4 through 7: Chapters 4 through 6 deal with the non-depression tone grammar: Chapter 4 considers single lexical tones, that is, one H tone per word; Chapter 5 considers the interaction of multiple (lexical) H tones in a

\textsuperscript{103} Cf. the discussion of headship parameters anticipated in Chapter 3 §3.3.5, where it will be suggested that feature implementation ‘on the surface’ in Phuthi will crucially fall out of successful expression of a feature in its parsing domain (that is, domain scope and domain express will be not automatically coextensive).
single word; Chapter 6 examines grammatically-triggered H tone, that is, tone invoked according
to paradigm-specific parameters. Finally, Chapter 7 considers the full range of interaction
between tone and voice. The arguments and insights are summarised in Chapter 8.

At the end of every section in every chapter there is a summary of the constraint grammar
thus far (built cumulatively in Chapters 4 and 5, re-started as the grammatical tone grammar in
Chapter 6, re-started as the tone/voice constraint grammar in Chapter 7). Constraint tableaux are
presented throughout to demonstrate the interaction of the proposed constraints.

A set of appendices is provided at the end of the work: Appendix A contains a wide range
of tone paradigms; Appendix B contains a list of places where Phuthi is known to be spoken;
Appendix C contains the 100-word list used to reach the genetic claims of cognacy in the present
chapter (§1.1.7.1); Appendix D contains a small lexicon (English-Phuthi; Phuthi-English) of
approximately 1500 words.

Because the work is long, it is divided into two volumes as follows: Volume 1
(containing Chapters 1 through 6); Volume 2 (containing Chapters 7 and 8, and the references
and appendices).

..........................

Finally, the present urgent state of Phuthi linguistic codification, literature and description
can best be captured by what may be the first recorded Tekela Nguni idiom (and cartoon!), from
Bhaca (Hallowes 1942:159): *isikhatsi sidliwe yinja*104 ‘time has been eaten by a dog’, that is,
*tempus fugit* ‘time flies’.

I hope that this dissertation may offer a little of the water that Mr. Gqada (quoted at the
head of this chapter) had in mind 58 years ago. His comment is never more appropriate than now:
the education of children remains a very high priority (and still very underresourced) in Southern
Africa. Further, this education is only marginally available to many Phuthi-speaking children in
South Africa and Lesotho, and is not available to anyone (yet) in the form of Phuthi
mother-tongue instruction. May that day come soon.

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104 In Mpapa Phuthi this would be rendered *ínako ídluwé yi ijhá* (in Sigxodo ...idliwé...).
Chapter 2

A Sketch of Phuthi Grammar

Phuthi has the phonological and morphological hallmarks of a Southern Bantu language, that is, of a language in the south-eastern Zone S, cf. Doke (1954:26-90) for general properties, Gowlett (2003). As has been shown in Chapter 1 §1.1.7 (35-40), Phuthi has more specifically a remarkable set of overlapping Sotho-Nguni properties, cf. Doke (1954:91-118) for Nguni, Doke (1954:119-153) for Sotho. Several of these properties are re-presented in this chapter, with an indication of an appropriate analysis (without pursuing this in any detail).

The grammar sketch is in two parts: §2.1 phonetics and phonology, and §2.2 morphology. Section §2.1 includes inventories of segments and tones (§2.1.1), and several segmental processes, including labialisation (§2.1.2), strengthening (§2.1.3), nasal assimilation and sonorant generation (§2.1.4), syllabification (§2.1.5), and two vowel harmonies (§2.1.6). Section §2.2 includes information on the morphological formation of nouns (§2.2.1), including an inventory of noun-generated prefixes, notes on locatives, diminutives and augmentatives, palatalisation, negative copulatives; pronouns (§2.2.2); adjectives and relatives (§2.2.3); verbs (§2.2.4), including notes on subject prefixes, object prefixes, root and stem shapes, vowel verbs, latent -i- verbs, productive verb extensions (including passive voice), tenses, imbricated perfectives, non-indicative moods, negative polarity, reduplication; conjunctives (and ‘have’) in (§2.2.5); adverbs (§2.2.6); and a short conclusion (§2.3).

2.1. Phonetics and Phonology

Phuthi has a rich inventory of segments and tones (§2.1.1), and displays a range of segmental processes: affrication and labialisation (§2.1.2); strengthening (§2.1.3); nasalisation (§2.1.4); syllabification (§2.1.5); and—most remarkably—two vowel harmonies (§2.1.6) that

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1 Five of the seven criteria given in Chapter 1 §1.1.7 are addressed in what follows, split up into phonology (criteria b,c) and morphology (criteria e,f,g).
2 This is intended as a sketch, not an exhaustive grammar of the language. While a wide variety of crucial noun and verb tone patterns are provided in this chapter, there are additional verb paradigms not examined (cf. §2.2.4.7, and footnotes there).
have no analogue elsewhere in Southern Bantu: a progressive root-controlled superclose height (or ATR) harmony, and a regressive edge-controlled mid-vowel tense/lax (or RTR) harmony.

2. 1. 1. INVENTORIES

Phuthi has 58 consonants, including 12 clicks (three places, four release types). This is far larger than a typologically mean (‘modal’) inventory for languages of the world, of 31 segments per language (Maddieson 1984:7), but the size is typical for a Nguni language, for example, Gowlett (2003) gives 60 simplex consonants\(^3\) for Xhosa, including 18 clicks (three places, six release types), and another 16 prenasalised stops\(^4\) and prenasalised affricates. Phuthi has no prenasalised non-clicks, a salient aberrance for a Nguni language (cf. Chapter 1 §1.1.7). The Phuthi and Xhosa (and other) Nguni inventories also contain a range of what can be argued to be complex phonemes with a labial-velar off-glide [w], but these are not listed separately\(^5\).

\(^3\) Two of these Xhosa consonants are very low frequency: modal (that is, non-breathy) [h] and voiced affricate [dz], a fact which cannot be inferred from the flat structure of standardly exposited inventories such as Maddieson (1984). Cf. comment on core-periphery structure in footnote 12. Phuthi has a similarly layered inventory.

\(^4\) It is hard to know how to treat pre-nasalised consonants, for inventory purposes, in any language such as Phuthi (or any Bantu language, or a San or Khoi language such as |Gui or ||Gana (Nakagawa 1995, 2006), if the nasal (pre)consonant is truly a series-generating phonological ‘accompaniment’. Xhosa does not really have 16 prenasalised stops in addition to its 42 modal consonants, but rather a nasal accompaniment [−continuant, +nasal] that can combine with any obstruent in the language (subject to other combinatorial restrictions on feature cooccurrence, such as an obligatory contour principle (OCP) effect on labiality: *[labial][labial], thus *mw); thus, the Xhosa consonant inventory could be presented as 42 non-click consonants + 18 clicks + 1 series-generating segmental onset feature [−continuant, +nasal]. One may elect analytically not to reduce the 18 clicks to 12 (or even 9) by removing the pre-nasal (accompaniment?), as clicks appear to operate in a part of the phonology that is opaque, sealed off from the rest of the grammar (cf. footnote 12 below on core/periphery).

\(^5\) The standard claim is that Bantu languages select strictly monosegmental onsets, because of their strict CV syllable structure. Thus, all of the following are monosegmental in Bantu: C, NC, Cw, NCw, and none require separate listing. The Phuthi heterorganic affricate [tf], treated in §2.1.2 below, stretches the notion ‘monosegmental’, given the non-homorganicity of the Phuthi affricate. (Monosegmentality is similarly stretched by way of excrecent velar stops in the labialised stop sequences [tkw, dgw], and their prenasalised counterparts [tkw, dgw], in Bantu languages like Rwanda (my research, 1992), Venda (my research, 1997), and Shona). Any Phuthi consonant can occur in the Cw sequence except any of the labials in column (i).
The consonants given in (1) are arranged in columns and rows. The columns primarily reflect place of articulation: (i) labial, (ii) alveolar, (iii) alveolar affricate, (iv) labialised alveolar affricate\(^6\), (v) palato-alveolar, (vi) laterally released alveolar, (vii) velar, (viii) velar affricate, (ix) glottal, (x) dental click, (xi) palatal click, (xii) lateral click. The rows primarily reflect release type: aspirated/ejected, voiceless/voiced, oral/nasal, stop/fricative/liquid/nasal/glide; specifically, they are: (1) voiceless (ejective) stops\(^7\), and clicks; (2) voiceless aspirated stops, and clicks; (3) voiced implosive; (4) breathy voiced stops, and clicks; (5) voiceless fricatives; (6) breathy voiced fricatives (though \(\text{\textipa{\text{j}}}\) is modal voiced)\(^8\); (7) liquids (trill, lateral); (8) breathy voiced liquids (trill, lateral); (9) nasals, and prenasalised clicks; (10) breathy voiced nasals; (11) glides; (12) breathy voiced glides. Breathy voiced consonants are given in boldface (rows 4, 6 (except \(\text{\textipa{\text{j}}}\)), 8, 10, 12).

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\(^6\) The distinction between columns (iii) and (iv) is allophonic, and is treated in §2.1.2.

\(^7\) The stops in row (1) are given as voiceless ejective. They are not always saliently ejective (though they are unambiguously ejective under emphasis), but they contrast unquestionably with voiceless aspirated stops. From here on, I omit the ejective marking per se; hence, all unaspirated stops are ejective (or modal).

\(^8\) Non-depressing (non-breathy) \(/\text{\textipa{\text{j}}}\)/ is transparently a loan phoneme from neighbouring Sotho in almost all words in which it occurs. Possible exceptions, that is, words that are not transparently from Sotho, include \textipa{kú-jěnúša} ‘to show’ (\(<\text{j}> = [\text{\textipa{\text{j}}}])\), or dialectally non-breathy \([\text{\textipa{\text{d}}}\text{\textipa{\text{j}}}])\). Sotho has no depressor consonants, not even depressed fricatives (Sotho really has no phonologically active voice contrast at all). \(/\text{\textipa{\text{j}}}\)/ thus violates the otherwise perfect correlation between voiced fricatives and depression in Phuthi, and thus signals itself as a loan sound.

I need to observe at the outset of this chapter that wherever ‘breathy’ is used to indicate voicing of a consonant or vowel, it subsumes (and explicitly entails) ‘depression’—that is, systematic pitch lowering. The opposite is not true: tonal depression does not entail breathiness (cf. the distinction between the breathy (and depressed) conjunctive ‘and’-prefix §2.2.5 and the frozen ‘and’-prefix in lexicalised conjunctive stems (132, and footnote 298). Cf. Chapter 7 §7.2 for discussion of the breath/depressed relationship. This dissertation does not examine the physiology of breathy voicing, but does draw heavily on the phonological presence of the depression feature (cf. the whole of Chapter 7).
Phuthi consonant inventory\(^9\)

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The listing of the segment inventory belies a non-uniformity of distribution: (a) some sounds are core Phuthi, e.g. \([bʰ; kʰ]\); (b) others are saliently Sotho in origin, and occur only in loan items, therefore are relatively low in frequency and distribution, e.g. \([p'; k' tʰ 3 kx' tʰl' tʰv' 1-d']\)^11. One could say that these latter sounds belong to the periphery of the inventory, in the sense of Itô

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\(^9\) /ʐ/ is in parentheses, because it has extremely low frequency; what is otherwise /ʐ/ elsewhere in Nguni is /t/ in Phuthi (and Swati). Thus, there ‘should be’ no /ʐ/, and yet a number of /ʐ/-bearing words do not seem to be loans (cf. (4ad) below, and footnote 24).

\(^{10}\) There was most likely a distinct set of prenasalised preglottalised clicks in the Phuthi past: [ŋ̅\(\tilde{\text{ŋ}}\)] [ŋ̅\(\tilde{\text{ŋ}}\) ŋ̅\(\tilde{\text{ŋ}}\)]. Where a homorganic nasal does precede a preglottalised click, the nasal is syllabic, that is, segmentally (and syllabically) distinct from the click itself, e.g. (ax) below [ sɪ-\(\tilde{\text{ŋ}}\)áɛnǐ] <sɪ-\(\tilde{\text{ŋ}}\)ánɛnǐ] ‘frog’. There is the troubling example [i-xwáŋ]\(|\text{êlēlə}\] <i-kgwāŋkceela> ‘scorpion’, where the stem is 3-\(σ\) (not 4-\(σ\)) because the nasal is not syllabic. This is likely the remnant of an earlier click system in the language with a richer set of click accompaniments or it is a borrowing of unknown source (cf. Xhosa únómádudwáne, Swati fecêle).

\(^{11}\) Some of the phonemes listed here (e.g. /p', k'/) also occur in lexical items that are originally Afrikaans or English but were borrowed via Sotho.

Some of the phonemes listed here are identifiably non-native not because they are featurally alien to Phuthi phonology, but because they violate a Phuthi phonological process, e.g. /tʰ ʐ/, which should affricate to [tsʰ ʐ] or should affricate and labialise to [tfʰ ʐ], cf. §2.1.2.
& Mester (1995). The distribution is even more nuanced, according to Phuthi morphological
category: [k’] is quite unmarked and general within affixes (ku-, ka-, -ek-, -akal-), but is highly
marked within roots (unless they are borrowed). None of these distributional asymmetries and
peculiarities can be adequately represented with the ‘flat’ structure in (1).

Phuthi has nine vowel phonemes, given in (2). The featural specification of these
vowels is discussed in §2.1.6 under vowel harmonies.

(2) Vowel inventory

\[\begin{array}{|c|c|}
\hline
i & u \\
\hline
\text{superclose high} & \\
\hline
e & o \\
\hline
\text{high mid (tense)} & \\
\hline
\varepsilon & \sigma \\
\hline
\text{low mid (lax)} & \\
\hline
a & \\
\hline
\text{low} & \\
\hline
\end{array}\]

This is the only Nguni inventory recorded as containing more than five phonemic vowels.

While the inventory matches the typical Sotho/Tswana vowel inventory, Phuthi has no raised

---

12 The core-periphery can be applied to various levels of a grammar. Phuthi is clearly
amenable to analysis of its phonological segment inventory along the lines of Itô & Mester’s
(1995) core-periphery model; but the phonological processes that will be revealed in chapters 4
to 7 will be seen to characterise all eligible words irrespective of etymological origin; thus,
ultimately, with respect to processes, the Phuthi lexicon does not reveal quite the same kind of
lexical layering as Itô & Mester demonstrate holds for Japanese, in that the tone grammar is not
sensitive to the etymological origin of any lexical item. The non-tone phonology, however, may
be partly sensitive to etymological origin (cf. comments in §2.1.2 below on the ineligibility of
non-Nguni origin superclose [u] for labialisation). On the other hand, it will be seen in Chapter 5
§5.6.2 and Chapter 6 that there are several subgrammatical systems in the language, where
constraints must be defined with reference to a specific cophonology. Although not set up along
the lines of core-periphery in those discussions, the cophonology model has parallels to the
core-periphery model in that it entails subgrammatical structure. Details of cophonologies are
found in §6.2.2.1, §6.2.2.2, §6.2.2.5, §6.3.1.2, §6.3.1.3, §6.3.1.4, §6.3.2, §6.3.3.1.

13 These affixes indicate: infinitive ku-; participial 3ps subject prefix (SP) ka-; two variants
of the neuter-stative verb extension (suffix): -ek-, -akal- (cf. §2.2.4).

14 But cf. comment that follows: the two sets of mid vowels [e e] and [o o] are mostly in
complementary distribution, predictable according to edge-driven right-to-left harmony, to be
discussed in §2.1.6 below. Thus, we may reduce the inventory to mostly a 7-vowel system.

15 Also cf. Gowlett (2003:613), Table 30.1.

16 I represent the low vowel as /a/ throughout, even though it is phonetically closer to [a]
than [a].

The vowels, too, are not evenly distributed, in two ways: (a) superclose vowels occur almost exclusively in Sotho-origin items, and in harmony processes set up by these root vowels (cf. §2.1.6 below); (b) the mid-vowel tense/lax distinction is almost entirely predictable; hence, Phuthi might be described as a 7-vowel language with certain disharmonic lexical exceptions.

Finally, by way of inventory, Phuthi has two contrastive tones, high and low, which are manifest as six surface shapes, as the data in (3) shows (relevant tones are given in bold).

(3) Surface tone shapes

<table>
<thead>
<tr>
<th>Level High</th>
<th>we give</th>
</tr>
</thead>
<tbody>
<tr>
<td>sì-yà-phá [sì-yàà-phá]</td>
<td>we give</td>
</tr>
<tr>
<td>bá-yá-tà [bá-yáá-tà]</td>
<td>they come</td>
</tr>
</tbody>
</table>

The only morpheme where supercloseness has been extended beyond the scope of the original lexical instantiation is the negative existential: ‘there is no...’, e.g. àkúkhò..., àyíkhò..., àtìkhò... Supercloseness as a separable phonological property is discussed further under harmony in §2.1.6, especially §2.1.6.2 footnote 65.

Disharmonic examples include kú-róbàlá *kú-róbálà ‘to sleep’; tí-lhòlô *tí-lhòlô ‘hip bone’; and cf. §2.1.6 below. There is also a weak morphological/lexical class, ‘adverbs’, characterised by suspension of mid-vowel harmony in word-final position (cf. §2.2.6). Sotho languages (Northern and Southern Sotho, Tswana) have also been described as 7-vowel languages with lexical and morphological exceptions, but the quantity and diversity of exceptions in the Sotho languages makes them a much stronger case for being 9-vowel systems (with 11 allophones, in some cases). This position for Southern Sotho was taken in the early 1980s in unpublished work by Derek Gowlett, who was at pains to demonstrate that the very significant range of ‘exceptions’ to the 7-vowel harmony system was so significant, and so morphologically and lexically disparate, that they could not legitimately constitute a single class of exceptions.

There are a few tonal minimal pairs in Phuthi: gií-té ‘I am naked’ vs. gií-t-e ‘I should come’; kú-xláata ‘to wash’ vs. kú-xlááta ‘to vomit’; lí-béelé ‘sorghum’ vs. lí-bééle ‘breast’.

‘Low (L)’ will take on a different status in Chapter 7, when the tonal reflex of breathiness (tone depression) will be uniquely represented by a feature Low (L). In the present chapter, ‘low’ refers to what will be analysed in Chapters 4 through 7 as ‘toneless’. From (4) below onwards, ‘low’ tone is represented as diacritically unmarked (as opposed to H, which is marked with an acute accent).

Starting below in (4), and then in all subsequent chapters (3 to 8), a long penult (usually phrase-final, cf. discussion in Chapter 4 §4.1, §4.5) is marked with two orthographic vowel
b. falling high: bá-phá [báà-phá]  they gave (remote past)
c. rising high: bá-yà-ći-phá [bá-yà-gi-phá]  they give me
d. rising falling high: gá-phá [gáà-phá]  I gave (remote past)
e. low-ish sì-yà-phá [sì-yàà-phá]  we give
f. low gì-yà-phá [gì-yàà-phá]  I give

Each surface shape is only relative, depending on the phrasal position: initially, the register is always higher; medially, a high tone is always less high if it follows a low (cf. discussion of downstep and downdrift in Chapter 5 §5.5). The details of phonetic tone shape are not marked in this work (but each mora on a long penult is marked separately as high or low).

The three inventories (consonants, vowels, tones) are exemplified by the data in (4a-bi)—first non-clicks (4a-aw), then clicks (4ax-bi)—with the target segment exemplified in bold; the Phuthi data is first given in near-phonetic form consistent with the inventory of symbols in (1), then in the slightly modified orthography (to be presented in (5) below) as will be used in the remainder of the dissertation; (phrase-)penult length is marked.

(4)  Inventory exemplification  
<table>
<thead>
<tr>
<th>phonetic form</th>
<th>orthography</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. k’ú-p’atààlå</td>
<td>kú-pátaala to pay</td>
</tr>
<tr>
<td>b. k’ú-t’àlàlå</td>
<td>kú-taala to fill up, get filled up, become full</td>
</tr>
</tbody>
</table>

symbols; that is, each moraic vowel is represented distinctly. Here, I offer the more detailed bimoraic penult representation in square parentheses (phonetic representation). In this chapter, in all data cited from Bantu languages other than Phuthi, penult length is not indicated, even if the general pattern in Xhosa and Swati (and some varieties of Sotho) is phrase-penult length, much as in Phuthi. The facts about H stems in all three languages (cf. Chapter 4,5,6, for Phuthi) and about depressor shift in Xhosa and Swati (cf. Chapter 7) are not always the same as for Phuthi, and the more detailed level of tone-marking required introduces unnecessary complications to the transcription of surface forms.

22 The orthography used here in (4-5) is a slightly augmented version of that used in Donnelly (1995b)—developed during fieldwork in Lesotho (Mpapa) and at the Lesotho/South African border (Sigxodo) in 1994/1995—and which is also the orthographic transcription used in Appendix D. Specifically, there are three departures here from the ‘standard’ orthography: (a) an acute accent as H tone diacritic; (b) subscript diaeresis indicates breathiness; (c) doubling of the penult vowel—or the length diacritic itself [́] where there is a geminate sonorant—indicates phonological length. Boldface identifies the phoneme being exemplified.
c. k’ú-ts’ààlà kú-tsaala to pull
d. k’ú-úk’útjèààlà kú-tjúkútjeela to throw at someone unaware
e. k’ú-úkú tlaama to tie up
f. k’ú-úkútshhì ká-ńtshi on the other hand, however
g. lí-phààsi lí-phaasi earth, ground
h. bú-tháátá bú-tháatá difficulty, problem
i. í-ts’hààgalá í-tshaagá pumpkin, melon, pip, seed
j. k’ú-úkúútjúla kú-tfuúla to be quiet
k. k’ú-úkútjhaaya kú-tjhaaya to hit
l. í-tlhàayú í-tlhaayú maize kernel, alphabet letter
m. lí-khàalá lí-khaala aloe plant
n. lí-kxhàalá lí-kgháalá crab
o. k’ú-baala kú-baala to read, learn
p. kú-baats’àà kú-bhaatsha to put on a blanket (as clothing)
q. t-dàawú t-daawú lion
r. lí-dzàawká lí-dzaakwá drunkard
s. lí-dvooolo lí-dvooolo knee
t. t’édëgé té jhè like this, in this way, for no obvious reason
u. k’ú-dlaa’lå kú-dlaåla to play
v. lí-gala lí-gala branch
w. ú-fáafí ú-fáafí woman, wife
x. lí-saagá lí-saagá cattle kraal / pen

---

23 This item does not have a long penult, suggesting that it remains two distinct words; the words do exist separately: té ‘so’, jhè ‘like this’. Nevertheless, the sequence is lexicalised in meaning and function. The surface form is disharmonic with respect to edge-driven mid-vowel harmony: té jhè (*tèjhè). Cf. §2.1.6.1; §2.2.6.5 (142m).
y. k’ú-fááp’à kú-sháápa to hit
z. k’ú-fáálà kú-hlaala to sit, stay, live
aa. mú-xááwú mú-kgáawú mercy
ab. k’ú-háreélà kú-háreela to tie up
ac. k’ú-yáálà kú-yaala to shut, close
ad. mú-zááålí mú-zwaalí boy
ae. k’ú-ýáálà kú-jáála to scatter, sow (seed, pollen)
af. k’ú-yiínà kú-griinya to bite on a surface
ag. k’ú-háákà kú-hhaáka to become stuck tightly
ah. lí-ráamá lí-ráamá cheek
ai. k’ú-táálà kú-táála to become full, become pregnant
aj. mú-táádí mú-táádí parent
ak. k’ú-zóólà kú-hoólá to roll up
al. láák’à lháákhà here
am.k’ú-máábhà kú-maábhà to hold
an. k’ú-nák’áánà kú-nákaana to think
ao. mú-jáágò mú-nyaago door
ap. k’ú-ŋóólà kú-ngóólà to write
aq. k’ú-mááttì kú-mhaáttì it is wet (non-referential subject)
ar. nëétì nhëétì only

/z/ has extremely low frequency in Phuthi. The hypothesis is that this phoneme must always be loaned, but words like mú-záálah ‘cousin’, mú-zwaalí ‘boy’, mú-zwaalí ‘young boy’, are unambivalently given by native speakers as ‘real Phuthi’, not borrowed from Sotho or Xhosa (even if mú-záálah is identical—other than predictable phonological details—to Xhosa úm-záálah, mú-zwaalí does not appear to have a readily identified cognate in Zunda Nguni). Crucially, examples (4ai) and (4aj) exemplify the predictable distribution of the single phoneme /l ~ d/, where the allophone [d] is not breathy, contra the surface form [d] of the phoneme /d/ (4q); cf. discussion in §2.1.3.
In all that follows, through Chapter 8, I utilise orthographic equivalents of phonetic symbols as in (5). The standard (emergent) orthography used in (Donnelly 1995b; Appendix D) has no graphic reflex of tone, nor of breathy voice—except where a consonant is overtly marked as breathy, e.g. <bh, mh>, cf. (5d); what is used in the remainder of the dissertation is, thus, a modified version of the orthography seen in (4), and clarified in (5), reflecting both tone and breathy voice.

I revert to the more detailed indication of vowel quality in §2.1.6, where the vowel harmonies are examined.
Orthographic equivalents

<table>
<thead>
<tr>
<th>Phonetic category</th>
<th>Phonetic</th>
<th>Orthography (here onwards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. voiceless stops and affricates are ejectives by default</td>
<td>[p’ t’ ts’ tʃ’ k’ kx’]</td>
<td>&lt; p t ts tʃ k kgh &gt;</td>
</tr>
<tr>
<td>b. fricatives</td>
<td>[ʃ ɬ x ʒ ɣ ŋ]</td>
<td>&lt; sh hl kg j gr gh &gt;</td>
</tr>
<tr>
<td>c. clicks</td>
<td>[ɨ ! û]</td>
<td>&lt; c q x &gt;</td>
</tr>
<tr>
<td>d. breathy voiced sonorants</td>
<td>[m n ŋ ! r ʋ j]</td>
<td>&lt; mh nh nyh lh rh wh yh &gt;</td>
</tr>
<tr>
<td>e. mid-vowel harmony is not indicated in the orthography</td>
<td>[e e o ɔ]</td>
<td>&lt; e o &gt;</td>
</tr>
<tr>
<td>f. non-high tone (low or toneless) not indicated in the orthography</td>
<td>[á à]</td>
<td>&lt; á a &gt;</td>
</tr>
</tbody>
</table>

The total segmental inventory for Phuthi is thus 67 segments (58 consonants + 9 vowels), very comparable to the 65 segments\(^{27}\) (60 consonants + 5 vowel phonemes) in Xhosa\(^{28}\).

2.1.2. Affrication and Labialisation

One segmental hallmark of Tekela languages is the affrication of aspirated coronal stops /tʰ d/ to /tʃʰ ʃz/, as in (6a). Swati (Donnelly 1994) and Phuthi, for which two Tekela languages this phenomenon is best documented, have a labialised subvariation of this affricated set in complementary distribution (6b): [tf ɗy]; this subset occurs only before round (labial) vowels and the round (labial) glide [w]; the non-labialised affricates (6a) occur before any non-round (non-labial) vowels.

(6)  Affricated coronals in Tekela Nguni

<table>
<thead>
<tr>
<th>Zunda</th>
<th>Tekela</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [th d]</td>
<td>[tʃʰ ʃz] / __ [i e e a]</td>
</tr>
<tr>
<td>b. [th d]</td>
<td>[tf ɗy] / __ [ɔ o u w]</td>
</tr>
</tbody>
</table>

---

\(^{27}\) Excluding labialised consonants [Cʷ], pre-nasalised [NC] and pre-nasalised labialised consonants [NCʷ].

\(^{28}\) Xhosa and Phuthi are approximately in a ‘trade-off relationship’ with reference to inventory complexity: impoverishment in the Phuthi click inventory compared to the Xhosa one (from 18 down to 12 clicks) corresponds to some extent to the vowel enrichment (by four phonemes) in Phuthi’s hybrid vowel system.
Affrication (without labialisation) from (6a) is demonstrated in (7a-f); affrication with labialisation is demonstrated in (7g-o). Affricated and labialised segments are given in boldface.

(7)  **Affricated and labialised coronals**

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Xhosa</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-tshi</td>
<td>ukú-thi</td>
<td>to say, do</td>
</tr>
<tr>
<td>b. kú-tshééga</td>
<td>úku-théNGa</td>
<td>to buy</td>
</tr>
<tr>
<td>c. kú-tsháádzá</td>
<td>úku-thánda</td>
<td>to love</td>
</tr>
<tr>
<td>d. mú-naadží</td>
<td>umní-nandí</td>
<td>something nice, niceness</td>
</tr>
<tr>
<td>e. tí-dzéevu</td>
<td>íní-ndévu</td>
<td>beard</td>
</tr>
<tr>
<td>f. í-dzawó</td>
<td>íníndawó</td>
<td>place</td>
</tr>
<tr>
<td>g. bú-tfoogo</td>
<td>ubú-thongo</td>
<td>sleep</td>
</tr>
<tr>
<td>h. í-tfó</td>
<td>ínto</td>
<td>thing</td>
</tr>
<tr>
<td>i. kú-tfüúma</td>
<td>úku-thúma</td>
<td>to send</td>
</tr>
<tr>
<td>j. múú-tfu</td>
<td>umní-ntu</td>
<td>person</td>
</tr>
<tr>
<td>k. mú-tfwaana</td>
<td>umní-ntwana</td>
<td>child</td>
</tr>
<tr>
<td>l. kú-tfwaala</td>
<td>ukú-thwala</td>
<td>to carry on the head</td>
</tr>
<tr>
<td>m. lí-dvólo</td>
<td>í-dólo</td>
<td>knee</td>
</tr>
<tr>
<td>n. kú-phédvuúla</td>
<td>uku-phénduula</td>
<td>to answer</td>
</tr>
<tr>
<td>o. múu-dýwá</td>
<td>umní-dáá</td>
<td>welt (Phuthi), line (Xhosa)</td>
</tr>
</tbody>
</table>

Two further observations are needed: first, the unaspirated (ejected) voiceless29 coronal 
[t"] does not trigger affrication, thus, aspirated release is crucial to this phenomenon: [t’i  t’u], *[ts’i tʃ’u], as in (8).

(8)  **Unaspirated coronals do not trigger affrication**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-tiibhá</td>
<td>body</td>
<td></td>
</tr>
<tr>
<td>b. kú-tcééka</td>
<td>to marry (a woman)</td>
<td></td>
</tr>
<tr>
<td>c. kú-ttáála</td>
<td>to become full, become pregnant</td>
<td></td>
</tr>
</tbody>
</table>

---

29 Aspiration is not a relevant contrast feature with voiced coronals, even though there is literally a contrast: breathy (aspirated) [d] vs. the lateral strengthened to (non-breathy, that is, unaspirated) [d].
d. í-t too lo          yesterday

e. mú-tuutú           minute, short while

Second, the Phuthi superclose round back vowel [u] strikingly does not trigger labialisation, thus [thur ú], *[tfu dvú], as in (9). It will be shown below that this is unsurprising, when we consider that superclose vowels in roots are always loans from Sotho, and labialisation will be seen not to be operative in loan stems or indeed any loan morphology (all stems in 9 are loaned from Sotho).

(9) Superclose round vowel does not trigger labialisation
    a. kú-thúúása        to help
    b. kú-thúúnya        to shoot
    c. f-thuúbha         stick
    d. f-thuúdó          teaching

This failure of superclose vowels to trigger labialisation (9) is particularly surprising given that [u] has even narrower aperture than labial [ọ ʊ]. If lip interference is the reason why articulator mistiming triggers labialisation in the general case, then the superclose vowel [u] should be an even more likely trigger segment. But this is clearly not the explanation for the [u] data.

Rather, words with superclose root vowels never trigger labialisation. This may be linked to the condition that such words are indexed etymologically as ‘Sotho-origin’, therefore ineligible for the labialisation pattern. If this is the case, then Sotho-origin items that do not participate in general segmental patterns may well have a (co-indexed) status as ‘periphery lexicon’, not core (after Itô & Mester 1995b).

There is further data which appears to support the distinct indexing of lexical items (including specific morphemes) as Sotho or Nguni. The intensive reversive suffix -ul/-l- and its counterpart stative -uluk/-lluk- are not productive at all in Nguni, but are semi-productive in
Sotho, and in Phuthi. The passive suffix, -w-, is fully productive in Phuthi, as in Sotho, Xhosa and probably all Bantu languages. Yet although this set of suffixes provides the potentially productive trigger environment for root-final labialisation of an aspirated coronal [tʰ d], all three suffixes (-ull-, -uluk- and -w-) fail to labialise any immediately preceding (and otherwise apparently eligible) aspirated root-final coronal or its affricated form [tsʰ d], as in (10). Thus, labialisation does not appear to be an active phonological pattern in the language any longer.

(10) **Labialisation failure stem-internally**

a. kú-khááṭsh-a to smear
b. kú-khááṭsh-w-a to be smeared *kú-khááṭf-w-a
c. kú-khátsh-úl:l-a to refresh *kú-kháf-túl:l-a
d. kú-khátsh-úl-uu:k-a to get refreshed *kú-kháf-úl-uu:k-a
e. kú-bhaatsh-a to put on a blanket (to wear)
f. kú-bhaatsh-w-a to be put on *kú-bhaatf-w-a
g. kú-bhatsh-úl:l-a to take off a blanket *kú-bfatf-úl:l-a
h. kú-bhatsh-úl-uu:k-a to get taken off *kú-bfatf-úl-uu:k-a

This unproductivity is not surprising with the reversion suffix (10c,d,g,h), since these examples are saliently loaned (in their productive form) from Sotho. The unproductivity of the passive is far more surprising, since this should not need to be loaned from Sotho as it occurs fully productively in Nguni. While the present tense passive is ambiguous as to whether it is natively Nguni or loaned (11a), the perfective passive seems in part loaned from Sotho in that it can have a superclose vowel quality, subject to the innovated superclose harmony pattern (cf. §2.1.6.1, even the present tense passive appears to be signalled as possibly non-native morphology in that it fails to activate labialisation.
(11) Passive morphology

<table>
<thead>
<tr>
<th></th>
<th>Phuthi</th>
<th>Sotho</th>
<th>Other Nguni (Xhosa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. present passive</td>
<td>-w-</td>
<td>-w-</td>
<td>-w-</td>
</tr>
<tr>
<td>b. perfective passive</td>
<td>-uw-</td>
<td>-(i)w-</td>
<td></td>
</tr>
</tbody>
</table>

The reversive and passive suffixes are the main morphological environments for potential stem-internal triggers of this labialisation process, but they suffice to make it clear that the generalisation in Phuthi, if we ignore etymological indexing, is that labialisation fails in a stem domain, or, labialisation fails root-finally. Thus, we must conclude that either (a) the pattern is restricted to non-derived environments such as being root-internal, or (b) the pattern is no longer productive. These two hypotheses can be distinguished with borrowed th-bearing roots (12a-d), tsh-bearing roots (12e-h) and d-bearing roots (12i-k) that fail to labialise root-internally before a labial vowel or glide; all data on record reflects roots clearly borrowed from Sotho. This borrowing hypothesis is confirmed by (12 l-q) where borrowed /th d/ also fail to affricate in the non-labialising environment.

(12) Unlabialised borrowed roots

<table>
<thead>
<tr>
<th>Phuthi (narrower transcription)</th>
<th>Sotho source (narrower transcription)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. í!̱!̱!̱!̱!̱!̱larynx</td>
<td>!̱!̱!̱!̱!̱Sotho</td>
</tr>
<tr>
<td>b. kú-thówúúka  to get down, travel (down)</td>
<td>hu-thóúha ~ hu-théúha</td>
</tr>
<tr>
<td>c. mú-kháthólíí Cátholic person</td>
<td>mu-kháthólíí³⁴</td>
</tr>
<tr>
<td>d. mú-súuthú Sotho person³⁵</td>
<td>mu-súthu</td>
</tr>
<tr>
<td>e. í-tshwéélé fishmoth</td>
<td>tshwélé</td>
</tr>
<tr>
<td>f. í-tshóomá³⁶ folktale, fairytale</td>
<td>tshúmó (and cf. Xh. íntsomí)</td>
</tr>
</tbody>
</table>

³⁰ The passive extension is introduced in §2.2.4.6, perfective morphology in §2.2.4.7.
³¹ Besides the reversive and passive suffixes, there is the fairly productive nominalising suffix -o [o], which also fails to trigger labialisation, e.g. í-tshéetsh-ó *í-tshéetf-ó ‘shout, harshness’, í-tshaadz-ó *í-tshaadv-ó ‘love, will’.
³² The non-productivity of the Phuthi pattern contrasts sharply with its closest genetic sister, Swati, where the pattern applies root-finally, e.g. to all passives.
³³ No items are borrowed from Sotho containing /d/ (Sotho has no native /d/ phoneme); rather, the Sotho source items contain /t/, which is voiced in the borrowing process.
³⁴ In both Phuthi and Sotho, the penult vowel in this word is superclose but does not cause strengthening of the /l/ to [d] as expected (cf. §2.1.3). Because of such phonetic details, the data set in (12) is transcribed more narrowly for both Phuthi and Sotho (vowels are given IPA values).
³⁵ (12d) supports the claim that labialisation is moribund: there is also a labialised form of this word (mú-súutfú), but it is reported to occur only in the speech of older people.
³⁶ I also have this recorded as í-tshoomú, with toneless penult syllable.
g. í-tshúumó³⁷ folktales, fairytales tshúmó
h. í-tshúhányeetsu suddenness tshuhanyetsó
i. í-xóóó rat xoóó
j. í-thudúulu rubbish dump thutubulu
k. mú-rútwana student mu-rútwana

Unlabialised borrowed roots
l. í-tháthári tartaric thathari
m. lí-théegá waist, hip theká
n. í-thipá knife thipá
o. í-daawú lion taú
p. í-phaadé skin spread on ground as bed phaté ~ phaté
q. mú-gíidí party mu-kíti

Thus, labialisation and affrication have ceased being productive processes. Instances of labialisation failure with aspirated³⁸ coronals can now all be attributed to the status of non-labialising roots being identifiable in the Phuthi grammar simply as loans.

The analysis of the affrication and labialisation phenomena in a generally current model of segmental feature geometry (such as Clements & Hume 1995) is as follows: (a) affrication is effected by the spreading of a vowel’s [+continuant] feature leftwards onto the preceding aspirated coronal stop; (b) labialisation is effected by spreading a labial feature leftwards off a labial (round) vowel or glide onto the preceding aspirated coronal stop. Such an analysis suggests two critical assumptions: (i) consonants and vowels share a set of place features, here, [labial] must characterise both labial consonants and round vowels/glides (Clements & Hume 1995:276-277); (ii) the two processes cannot be conflated into a single feature operation³⁹.

³⁷ The word is also rendered with a toneless root: í-tshuumo <í-tshuumo>.
³⁸ The crucial target for labialisation is still aspirated coronals. All the non-lablialising roots in (8a-e) are Nguni, thus labialisation here cannot be failing due to loan status, but must be rather due to insufficient phonological environment.
³⁹ There is contemporary evidence from Sigxodo Phuthi that supports the distinctiveness of the two processes in Phuthi as a whole. Sigxodo Phuthi behaves in one way as Mpapa Phuthi does in that coronals are affricated as expected. But Sigxodo Phuthi lacks the labialisation process. Thus, coronals followed by labial vowels ([o u]) are not labialised, nor are they affricated. Yet, in a few high-frequency items, notably the 1PP pronoun, the coronal has been affricated anyway, without being labialised: etshú (where the aspiration in [tsh] is salient), e.g. mú-thwana w-etsú ‘my child’; cf. Mpapa Phuthi mú-tfwána w-efú ‘my child’.

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because the lowest node that governs the articulator feature [labial] and the manner feature [+continuant] to the exclusion of all other material is [oral cavity]. But if [oral cavity] spreads, all place features—both consonant (C-place) and vowel (vocalic, V-place)—should spread, resulting in complete assimilation of the vowel onto (and replacing) the consonant.

An alternative model to viewing affricates as a sequence of [–continuant][+continuant] would be the Steriade (1993a,b, 1994) aperture representation model (cf. discussion of such a model in Chapter 7 §7.2 for the binding of depression to vowels), in which case—rather more opaque—an A_{max} vowel feature would need to trigger insertion of an A_f fricative release node to replace the preceding stop’s A_{max} Release node (it is not clear why exactly A_{max} would seek to be replaced by A_f, unless an accessible aperture degree hierarchy made some kind of overt link between aspirated release as A_{max} and the enhanced aspiration/friction encoded by A_f). The Steriade aperture architecture would need a special dispensation to admit heterorganic [tf ñy] as a single segment, given the high value placed universally on strictly monosegmental onsets, and given the explicit Steriade (1994) ban on more than one place feature per closure node (here: A_o).

There is a third kind of consonant weakening (in addition to the Tekela affrication and labialisation processes we have just seen) that is common not only to Nguni but to Sotho languages as well: palatalisation, where noun and verb stems bearing a (final) labial consonant dissipilate this labial to a palatal articulation, under the condition of a following labial (round) vowel or glide [o,u,w]. This process is even less phonologically active in Phuthi than the preceding affrication and labialisation data, but that is no surprise, given that palatalisation appears no longer to be productive anywhere in Southern Bantu (cf. Herbert 1977, 1990). As such, this morphologised phenomenon is exemplified under §2.2.1.6 below.

2.1.3. Strengthening

Phuthi has borrowed a segmental strengthening pattern from Sotho: liquid /l/ (segment vi-7 from (1) above) strengthens to non-breathy [d] when preceding either of the two superclose vowels. That is, a ‘strong’ property from a superclose vowel spreads leftwards to /l/ to generate [d] (13a-g,14a-d).

The pattern is still productive in Sotho ( unlike the labialisation in §2.1.2 above), because not only are Sotho-origin l-final verb roots strengthened to -d- preceding superclose agentive
suffix -\( i \) (13a-b) and passive suffix allomorph\(^{40} -yw-\) (14a-d), but non-Sotho Nguni items in Phuthi behave in the same fashion (13c-g). The data in (13-14) is arranged from unambiguously Sotho roots (13a-b,14a-d), through ambiguous roots\(^{41} (13c-d)\), to unambiguously Nguni roots (13e-f). (The transcription here is again my standard Phuthi orthography).

(13) Coronal lateral strengthening: agentive -\( i \)

a. kú-áhlúúl-a to judge mú-áhlúúl-\( i \) [múʔáhlúúdi] judge\(^{42} \)

b. kú-ngóól-a to write mú-ngóól-\( i \) [múŋóódi] writer

c. kú-máméél-a to listen mú-máméél-\( i \) [múmáméédi] listener

d. kú-táál-a to bear mú-táál-\( i \) [mútáádi] parent

e. kú-guul-a to be sick mú-guul-\( i \) [múguúdi] sick person

f. kú-yaal-a to close mú-yaal-\( i \) [múyaadí] doorkeeper

(14) Coronal lateral strengthening: perfective passive -yw-

a. kú-kgáy\( \tilde{\text{i}} \)l-a to chop up í-kgáy\( \tilde{\text{i}} \)l-\( ū \)w-e [í-kgáy\( \tilde{\text{i}} \)l\( ū \)wwe] it has been chopped up

b. kú-sí\( \tilde{\text{i}} \)l-a to grind í-sí\( \tilde{\text{i}} \)l-\( ū \)w-e [í-sí\( \tilde{\text{i}} \)l\( ū \)wwe] it has been ground

c. kú-múúla to beat í-múú-\( ū \)w-e [í-múú\( ū \)wwe] it has been beaten

d. kú-guula to be sick kú-guul-\( ū \)w-e [kú-guú\( ū \)we] there has been sickness\(^{43} \)

Such a spreading, active property could be [superclose] or an equivalent more standard vowel height feature, but then a superclose or [+high] [l] would need interpreting as [d], yet this

\(^{40}\) Unlike the agentive -\( i \) which is specified as superclose, the passive suffix superclose vowel quality is determined by the supercloseness of the root (cf. discussion of root-driven harmony in §2.1.6.1). The data examples in (14) are distinct from (13), because in (14) they each require a superclose root vowel.

\(^{41}\) (13c-d) have ambiguous Sotho/Nguni status because -mámêla occurs as an identical stem (tonally high) in both Sotho and Nguni (e.g. Xhosa, Swati) languages, and Phuthi -tâla is predictably cognate with Sotho -tswâla and Nguni -zâla (e.g. Xhosa) or -tâla (e.g. Swati).

\(^{42}\) Sotho -áhlûla can be preceded by an inserted default onset [?], which is not represented in the orthography. Phuthi can also tolerate an inserted labial glide [w] here, instead of [\( ? \)].

\(^{43}\) This construction reflects a general Southern Bantu phenomenon: impersonal subject kú-(Class 17) preceding a passivised verb (even a passivised intransitive verb, as is the case in this example), meaning ‘there has been X-ing going on’, where X is the (transitive/intransitive) verb.
is a non-standard configuration for a consonant, and there is no such convention; or, such a strong property could literally be some kind of aperture feature, after Clements (1991): [l] is more open, or [+open]; [d] is more closed, or [−open] (or [+closed]); but then the appropriate [open/closed] feature must emanate from the superclose vowels to the exclusion of all others; in the Clements (1991) model, [±open] is a privative feature, but multiply instantiatable in a tree structure to capture multiple vowel height systems such as found in Sotho. Thus, [−open] in the Clements configuration serves at three distinct ‘heights’ in the aperture tree, and has no unique absolute interpretation. Alternatively, Zoll (1996) has proposed that superclose vowels in Proto-Bantu had consonantal properties (C-place), and thus have typically played a significant role in altering—across the Bantu language continuum—immediately preceding consonants.

Whichever the featural configuration, /l/ has a strengthened allophone [d] in Phuthi. But, strikingly, strengthening never produces a geminate strengthened allophone *[dd], even when a geminate [ll] precedes a superclose vowel (15).

(15) No geminate *[dd]
   a. kú-kúp-ú:ḻ:l-a to unroll mú-kúp-ú:ḻ:l-ː one who unrolls
   b. kú-khátsh-ú:ḻ:l-a to refresh mú-khátsh-ú:ḻ:l-ː one who refreshes
   c. kú-yusé:ḻ:l-a to renew mú-yusé:ḻ:l-ː one who renews
   d. kú-yal:ḻ:l-a to shut in mú-yal:żą:l-ː one who shuts in

In every example in (15), based on the general strengthening pattern adduced in (13), we might expect .../l-ː to become *[dd]-ː, yet this never occurs. The geminacy of -l- ‘protects’ it from being eligible for strengthening; this is a kind of ‘linking condition’ (Goldsmith 1976). Thus, a principle akin to structure preservation that can access the sonority hierarchy (cf. §2.1.5) absolutely bans *[dd] (although tolerates -l-), preferring to violate strengthening, instead.

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44 Although Phuthi uses the same basic vowel inventory as Sotho, we will not need to invoke the gradient [±open] configuration, because there is no gradient stepwise raising.
45 Labialisation fails in this stem (tsh-ú, *tf-ú), as expected from the description in §2.1.2 above: labialisation is not triggered stem-externally.
46 ‘One who shuts in’ refers to, for example, a shepherd shutting animals in a kraal at night.
47 Strengthening may be violated only partially: [llː] is produced auditorily as [ldjː], which suggests partial (incomplete) strengthening of the second portion of the geminate.
2.1.4. Nasal Assimilation and Sonorant Gemination

This is a second pattern borrowed from Sotho into Phuthi: a sequence of two labial consonants separated by [u], specifically -mub- or -mum-, is reduced to geminate -mm-. That is, potentially two things happen (not necessarily in this order): (a) the first syllable is reduced to a syllabic -m- (16a-c) through syncope of the prefix vowel [u]; (b) stem-initial [b] is fully assimilated to the preceding nasal [m], that is, [b] is nasalised (obviously not relevant if the sequence is -mum-). The first pattern is obligatory; the second is not fully obligatory: speakers will tolerate the unassimilated forms in the left column in (16a-c), though they disprefer the unassimilated form if the word is unambiguously a Sotho loan (16c). Speakers generally prefer the forms in the right of the two noun columns (16a-c), and they require that form if the Phuthi unassimilated sequence would otherwise be -mum-48.

(16) Nasal assimilation of labial stops

<table>
<thead>
<tr>
<th>no assimilation</th>
<th>assimilation</th>
<th>gloss</th>
<th>cognate verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mí-búlúúg-í</td>
<td>mí-múlúúg-í</td>
<td>one who saves, Saviour</td>
<td>kú-búlúúga to save</td>
</tr>
<tr>
<td>b. mí-baal-í</td>
<td>mí-maal-í</td>
<td>reader</td>
<td>kú-baalá to read, count</td>
</tr>
<tr>
<td>c. mí-búusó</td>
<td>mí-múusó</td>
<td>government, ruler</td>
<td>kú-búúsá to govern, rule</td>
</tr>
<tr>
<td>d. —</td>
<td>mí-máméél-í</td>
<td>listener</td>
<td>kú-mámééla to listen</td>
</tr>
</tbody>
</table>

It cannot be determined yet whether this pattern is fully productive in Phuthi, since all attested examples are either clearly Sotho (16c), or ambiguous as to etymological source (16a,b,d)—either Sotho or Nguni lexical roots, with tonal modification (and with consonant voicing in (16a)).

There is a second variation of this process that affects lateral sonorant [l] in the context [lil] and [lul]. Exactly as with [mum], the interconsonantal vowel deletes (17). Unlike the geminate nasal [mm], the lateral sequence is fully productive: it occurs in lexical items of Sotho

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48 For (16a-c), the unassimilated forms can even contain an unsyncopated prefix mú- (not reflected in the data), e.g. mú-búusó. But (16d) can only be mm- as m-commencing stems require syncope.
(17a) or Nguni (17b,c) origin. It also occurs across any morpheme boundary, including prefix-stem (17a-c), which is unprecedented in Nguni and Sotho languages.

(17)  Geminating lateral [l]

<table>
<thead>
<tr>
<th></th>
<th>no assimilation</th>
<th>assimilation</th>
<th>gloss</th>
<th>Sotho</th>
<th>Nguni (Xhosa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>lí-líimí</td>
<td>lí-líimí</td>
<td>tongue,</td>
<td>li-lími</td>
<td>(l)ú-lwími / (l)í-lwími</td>
</tr>
<tr>
<td>b.</td>
<td>lí-laaga</td>
<td>lí-laaga</td>
<td>sun, day</td>
<td>(li-tsatsí)</td>
<td>í-langa</td>
</tr>
<tr>
<td>c.</td>
<td>lí-leebhé</td>
<td>lí-leebhé</td>
<td>plough</td>
<td>mo-húmá</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>*kú-tfúk-úlul-a</td>
<td>kú-tfúk-úl-a</td>
<td>to set free</td>
<td>hu-luk-úl-a</td>
<td>uk-othuk-úlul-a</td>
</tr>
<tr>
<td>e.</td>
<td>*kú-ypš-éleel-a</td>
<td>kú-ypš-éel-a</td>
<td>to renew</td>
<td>hu-bú-élets-a</td>
<td>úku-ypš-élel-a</td>
</tr>
<tr>
<td>f.</td>
<td>*kú-yal-éela</td>
<td>kú-yal-él-a</td>
<td>to close in</td>
<td>hu-kwal-1-a</td>
<td>uku-yal-él-a</td>
</tr>
</tbody>
</table>

2.1.5. Syllabification

Syllables in Phuthi are generally CV, that is, a monosegmental onset followed by a nuclear monophthong. This is the general Bantu pattern and is almost strictly adhered to in this language too. Monosegmentality is not violated by prenasalised (e.g. mb, ndz, ng) or postlabialised (e.g. tsw, tw, kw) consonants. A Steriade (1993a,b, 1994) model of aperture representation would consider [nasal] attached to the A₀ closure position for prenasalised segments, and [labial] attached to the Aₚₐₙₓ release node in postlabialised segments. A Clements & Hume (1995) feature model would consider (post)labialised segments to contain a primary [coronal] place specification in the C-place node, and a secondary [labial] place specification in the V-place tree. Contrary to what seems the case, the labialised forms [tf 了一口气] must, thus, be monosegmental, though with the wrinkle that the labial portion is a strengthened⁴⁹ approximant offglide, not a distinct segment.

The other apparent exception to the CV syllable shape is syllabic consonants which lack a distinct onset. Phuthi confirms the the sonority sequencing principle (Sievers 1881, Jespersen 1913, Clements 1990, Blevins 1995): syllables are consistently sonority peaks preceded by lower

⁴⁹ This process of strengthening a glide (secondary articulation at V-place) to an obstruent (primary articulation at C-place) Clements (1989) refers to as ‘promotion’.
sonority onsets. The parametric cutoff point for parsable syllable nuclei in Phuthi is the full class of sonorants\[^{50}\]: \[m n \eta l\]\[^{51}\] can all be nuclei (18), in addition to the set of nine nuclear vowels.

(18) **Non-vocalic nuclei**

a. m:\textipa{má} & mother \\
b. m:\textipa{moo}yá & wind, spirit \\
c. kú-\textipa{na} & to always do something (auxiliary) \\
d. ú-\textipa{na} & his/her mother \\
e. \textipa{ngato}ótší & as if \\
f. hlaang & near\[^{52}\] \\
g. mú-:\textipa{l}o & fire \\
h. kú-phúm-\textipa{él}:a & to succeed

Finally, there is a very small set of exceptional nuclei that are not even sonorant: \[\textipa{3} \textipa{b}\]. These are both found in Class 14 nouns (general prefix = \textipa{bú}-), where the prefix and stem have fused, but the language faithfully implements the Nguni requirement that a canonical noun class prefix should be a full syllable. Hence the initial consonant is made syllabic (19a-c). This

\[^{50}\] Phuthi offers no evidence that its syllable peaks discriminate between syllabic nasals and syllabic liquids, cf. the ranking of syllabic segments in Clements (1990:294). It is to be noted that Phuthi (like Sotho) violates the strong tendency claimed in Bell (1978:171), quoted in Clements (1990:327): ‘The formation of syllabic liquids may be strongly disfavored where nonreduced vowel syncope is the process of origin, but not disfavored under reduced vowel syncope’. Phuthi (and Sotho) have a syllabic liquid \[\textipa{l}\] whose origin is the syncope of the nonreduced vowels \[i u\].

\[^{51}\] It is only coincidence, perhaps, that there is no example of nuclear \[r\] in Phuthi. Or it reflects the Sotho distribution: the only non-ideophone \[\textipa{r}\] in Southern Sotho (the donor language for most \[r\] examples in Phuthi) is the marginal variant \textipa{rre} \sim \textipa{ré} \textipa{rre} \sim \textipa{ré} ‘my father’, \textipa{rrae} \textipa{rrae} ‘his father’.

\[^{52}\] This is a two-syllable word, but with a very unusual shape: this is the only instance in the material gathered for this work where the final syllable is non-vocalic: the syllabic nasal \[\eta\] is not followed by a (recoverable) vowel. But this word behaves consistently as a two-syllable item (to be used in a number of examples in Chapter 7 §7.4.1.3). It appears to belong to a lexical register that is receding with older speakers.

\[^{53}\] Noun Class 1a is not canonical; in Tekela Nguni languages, including Swati and Phuthi, it frequently has a segmentally empty prefix.
contrasts with the equivalents in Sotho (no syllabic or identifiable segmental prefix) and Xhosa (syllabic and segmental prefix).

(19) Rare nuclei

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Sotho</th>
<th>Xhosa</th>
<th>Proto-SE Bantu</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ʼjwaalá</td>
<td>jwalá</td>
<td>útywálá</td>
<td>*bú-alá</td>
<td>beer</td>
</tr>
<tr>
<td>b. ʼjwáání</td>
<td>jwáń</td>
<td>útywáńi</td>
<td>*bú-áni</td>
<td>grass</td>
</tr>
<tr>
<td>c. ʼbooyá</td>
<td>boyá</td>
<td>úboyá</td>
<td>*bú-oyá</td>
<td>skin, fur, wool</td>
</tr>
</tbody>
</table>

2.1.6. Vowel Harmonies

It has already been observed in Chapter 1 §1.1.5.3 that Phuthi displays two types of vowel harmony\(^{55}\), both of which have no exact analogue elsewhere in the Southeastern Bantu region:

(a) a progressive (left-to-right) pattern, where the two highest vowel heights from (2)—[i ū] and [i u]—alternate; (b) a regressive (right-to-left) pattern, where the middle two vowel heights alternate: [e o] and [e ɔ].

The two patterns do not interact. The triggering conditions are distinct: (a) the left-to-right pattern is triggered by a superclose vowel in the morphological root, which requires a superclose suffix vowel ($\S\!2.1.6.1$); (b) the right-to-left pattern is triggered by a specific locus: edge-adjacency ($\S\!2.1.6.2$). The trigger loci reflect two distinct types of positional prominence, in the characterising of Beckman (1997, 1998): root syllable, and edge.

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54 Assuming the genetic unity of Guthrie’s (1967-1971) Zone S (= Southeastern Bantu), I assume these plausible intermediate proto-forms, based on his ‘common Bantu’ stems: *-yàdá, *-yánį, *-yoýá.

55 There are three further types of harmony that involve whole segment replacements, but that are only weakly attested: (i) imbrication ($\S\!2.2.4.8$) involves iteratively spreading -e leftwards from the perfective suffix of certain verbs leftwards into the stem, replacing locally adjacent -a-vowels; (ii) certain formatives anticipatorily replace an i vowel with u preceding another u, e.g. negative copulative asi- > asu- preceding Class 1/1a/3 gu-:: asu-gu-:: ‘it is not...’ ($\S\!2.2.1.7$, foonote 164); also $\S\!2.2.6.3$ (138e) where a is replaced anticipatorily by o: kha-bo- > kho-bo-:: ‘at the place of...’; (iii) there is a single example of a labial consonant conditioning vowel rounding from i to u in $\S\!2.2.6.3$ (139c): bhi-li... > bhułu... ‘in front of...’.
2. 1. 6. 1. Root-controlled progressive superclose harmony

Superclose stem vowels require all adjacent suffixes (not prefixes) containing a high vowel to be superclose too. That is, the harmony pattern is progressive: left to right. The harmony is not sensitive to morphological class, as reflected for verbs in (20-21) and underived nominal stems in (22).

A number of verb suffixes contain high vowels: causative (20b), intensive (20c), negative (20d), reversive (20e), reversive stative (20f), perfective (20g), perfective passive (20h). Suffixes can also be sequenced (two or more), and they remain harmonic (20i-j), unless a non-high vowel interrupts the superclose sequence (20k-l), in which case the root-propagation of supercloseness ceases.

(In the data sets below, I transcribe phonetic vowel qualities more closely than subsequently in this chapter and the dissertation), including the distinct mid-vowel qualities: \[e \sim \varepsilon\] vs. \[e \sim o\]. Superclose vowels are already distinctly marked).

(20) **Superclose suffix vowel: stems with /i/**

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>gloss</th>
<th>suffix type(^{56})</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-b̥í̆t-a</td>
<td>to call</td>
<td>—</td>
</tr>
<tr>
<td>b. kú-b̥í̆t-í̆s-a</td>
<td>to help/make call</td>
<td>causative</td>
</tr>
<tr>
<td>c. kú-b̥í̆t-í̆š̃s-a</td>
<td>to call intensively</td>
<td>intensive</td>
</tr>
<tr>
<td>d. abá-b̥í̆t-í̆</td>
<td>they are not calling</td>
<td>present negative</td>
</tr>
<tr>
<td>e. kú-b̥í̆t-ú̆l-l-a</td>
<td>to be disrespectful to one’s name</td>
<td>reversive</td>
</tr>
<tr>
<td>f. kú-b̥í̆t-ú̆l-ú̆k-a</td>
<td>to get disrespected (w.r.t. name)</td>
<td>reversive stative</td>
</tr>
<tr>
<td>g. bá-b̥í̆t-í̆y̆e</td>
<td>they have called</td>
<td>perfective</td>
</tr>
<tr>
<td>h. bá-b̥í̆t-ú̆w̌̃w̌̃e</td>
<td>they have been called</td>
<td>perfective passive</td>
</tr>
<tr>
<td>i. bá-b̥í̆t-í̆š̃s-ú̆w̌̃w̌̃e</td>
<td>they have been called intensively</td>
<td>intensive + perfective passive</td>
</tr>
<tr>
<td>j. bá-b̥í̆t-ú̆l-í̆y̆e</td>
<td>they have been disrespectful</td>
<td>reversive + perfective</td>
</tr>
</tbody>
</table>

*(w.r.t name)*

*but*

k. bá-ya-b̥í̆t-él-iis-a | they help call for | applied + causative |
| *báyabí̆télí̆jí̆sá*   |                      |                     |
| l. bá-ya-b̥í̆t-án-iis-a | they help call each other | reciprocal + causative |
| *báyabí̆tání̆jí̆sá*   |                      |                     |

---

\(^{56}\) These suffix labels indicate types of verb extension formally introduced in §2.2.4.6.
Precisely the same range of data (with the same harmonic vowel configuration) is available if the root vowel is superclose /u/. (21b-g) confirm the left-to-right propagation of supercloseness that targets all adjacent high vowels; (21h-i) confirm that any non-high vowel interrupts the superclose sequence, in which case the root-source propagation of supercloseness ceases.

(21) **Superclose suffix vowel: stems with /u/**

a. kú-thú̬s-a to help
b. kú-thú̬s-fjís-a to cause to help

c. kú-thú̬s-fjís-a to help intensively

d. abá-thú̬s-j they are not helping
e. bá-thú̬s-fjýe they have helped
f. bá-thú̬s-ú̬we they have been helped

g. bá-thú̬s-fjís-ú̬we they have been helped intensively

**but**

h. bá-ya-thús-él-iis-a they cause to help for

* báythú̬séIjísá

i. bá-ya-thús-án-iis-a they cause each other to get help

* báythú̬sánIjísá

This harmony pattern is confirmed by data from underived noun stems (22a-e) and adjective stem (22f), where supercloseness is consistent across the entire root domain.

(22) **Supercloseness is coherent in underived stems: noun stems with /i/ or /u/**

a. mú-phú̄thí Phuthi person
b. abú̄ú̄ti brother; polite address form to age-mate
c. aú̄ú̄sí sister; polite address form to age-mate
d. í-tháthári tartaric
e. í-bhú̄ú̄tí goat57
f. -bíñí two58

---

57 This word provides good evidence that the Phuthi superclose harmony is a general property of the stem (let alone the suffixes that follow), and that it is independent of the Sotho or Nguni source items: the Sotho equivalent is pulí ‘goat’ (with non-superclose first vowel); the Xhosa word is imbúzi ‘goat’ (with no superclose vowels, of course).

58 As in (22e) above, this word has harmonised its stem domain, independent of its Sotho
The harmony seen in (20-22) can be modelled straightforwardly as root-triggered Advanced Tongue Root—[ATR]—that propagates rightwards to adjacent [+hi] target vowels. The [+hi, ATR] feature combination together represents supercloseness. The theoretical assumption for this analysis is of a privative\(^ {59}\) [ATR] feature; and in §2.1.6.2 below the opposite gesture—Retracted Tongue Root—[RTR] to follow in). Both [ATR] and [RTR] will be considered privative.

The data below in (23-24) confirms that non-superclose high vowels /i u/ fail to trigger supercloseness on any high vowel suffixes\(^ {60}\); on the contrary, all suffix high vowels are high and unsuperclose, analysed as defaultly [RTR].

(23) Non-superclose high suffix vowel: stems with /i/

<table>
<thead>
<tr>
<th>Stem</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-džín-a</td>
<td>to dress, put on clothes</td>
</tr>
<tr>
<td>b. kú-džín-íís-a</td>
<td>to help dress</td>
</tr>
<tr>
<td>c. kú-džín-ísís-a</td>
<td>to dress intensively</td>
</tr>
<tr>
<td>d. abá-džín-í</td>
<td>they are not getting dressed</td>
</tr>
<tr>
<td>e. kú-džín-úl-í</td>
<td>to get undressed</td>
</tr>
<tr>
<td>f. bá-džín-ííye</td>
<td>they have gotten dressed</td>
</tr>
<tr>
<td>g. tí-džín-úúwe</td>
<td>they(^ {61}) have been put on</td>
</tr>
<tr>
<td>h. tí-džín-ísís-uüwe</td>
<td>they have been intensively put on</td>
</tr>
<tr>
<td>i. bá-džín-úl-ííye</td>
<td>they have gotten undressed</td>
</tr>
<tr>
<td>j. bá-ya-džín-él-iísa</td>
<td>they help dress for</td>
</tr>
</tbody>
</table>

The subject prefix (SP) in these examples (23g-h, 24g-h) has been changed to tí- (Cl. 10), to indicate a word such as tí-phaahlo ‘clothes’.

\(^{59}\) Privativity continues to be the assumption in the analysis of tone systems that follows in Chapters 4 through 7, cf. discussion in Chapter 3, and Chapter 7 footnote 23.

\(^{60}\) The same pattern is true of any stem domain where there is more than one high vowel: the supercloseness is always harmonic, also for non-verb stems such as nouns and adjectives—either superclose [ATR], as in (22) above, or non-superclose [RTR], as in lí-kgúúmi ‘firewood’, í-hlítííyɔ ‘heart’, lí-tíbuulu ‘first born child’ (ct. Sotho, with mixed supercloseness values: lí-tsíbúlu); adjective -ncíincí ‘small’.

\(^{61}\) The subject prefix (SP) in these examples (23g-h, 24g-h) has been changed to tí- (Cl. 10), to indicate a word such as tí-phaahlo ‘clothes’.
(24) Non-superclose high suffix vowel: stems with /u/
   a. kú-kgubha to dig —
   b. kú-kgúbhiisa to cause to dig causative
   c. kú-kgúbhisísa to dig intensively intensive
   d. abá-kgúúb-i they are not digging present negative
   e. kú-kgub-úl-a to dig up reverse
   f. bá-kgúb-iíye they have dug up perfective
   g. tí-kgúj-uwu they have been dug up perfective passive
   h. tí-kgúj-isís-uwe they have been intensively dug intensive + perfective passive
   i. bá-kgubhuí-liiye they have dug up reverse + perfective
   j. bá-yá-kgubhelíisa they help to dig for applied + causative

Finally, non-high vowels pattern with (23-24) above, that is, there is no evidence of supercloseness on the suffix high vowels at all. Brief data is provided from roots with mid vowels /e/ (25), /o/ (26), and /a/ (27).

(25) Non-superclose (non-high) suffix vowel: stem with /e/
   a. kú-yeet-a to make, do —
   b. kú-yét-iis-a to help make causative
   c. bá-yét-iíye they have made perfective
   d. tí-yét-uwu they have been made perfective passive

(26) Non-superclose (non-high) suffix vowel: stem with /o/
   a. kú-khóókh-a to take out —
   b. kú-khókh-iís-a to help take out causative
   c. bá-khókh-ííye they have taken out perfective
   d. bá-khókh-úúw they have been taken out perfective passive

62 The change in stem consonant, from <bh> [b] to <jh> [dʒ] is historically systematic (called palatalisation): as in almost all other Bantu languages of southern Africa, non-root-initial labial consonants in the stem are altered to coronals of some sort in the presence of the concatenated (labial) passive suffix -(V)w-. As with -dzin- in (23g-h) above, the SP in this example has been changed to Cl. 10 tí-, to indicate a word such as tí-pháadzé (also recorded as tí-phaadzé) ‘trees’. Cf. §2.2.1.6 for discussion of palatalisation.
(27) Non-superclose (non-high) suffix vowel: stem with /a/

a. kú-yaal-a  to close  —  

b. kú-yal-íisa  to help close  causative  

c. bá-yal-íiyɐ  they have closed  perfective  

d. tí-yal-ůuwe  they have been closed  perfective passive  

The harmony trigger is not the entire root domain per se, since roots can be bisyllabic (even trisyllabic, though only rarely in a morphologically irreducible form), and there is no necessary root-internal vowel correspondence. It is demonstrated in (28) that the harmony trigger position is the rightmost vowel in the root. Thus, the right edge of the root is positionally prominent.

(28) Superclose ATR harmony triggered by rightmost vowel

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>kú-kgáyįįl-a</td>
<td>to chop up, grind</td>
</tr>
<tr>
<td>b.</td>
<td>kú-kgáyįįl-iįs-a</td>
<td>to make chop up, grind</td>
</tr>
<tr>
<td></td>
<td>*kú-kgáyįįl-iis-a</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>kú-lįkėél-a</td>
<td>to stand aside</td>
</tr>
<tr>
<td>d.</td>
<td>kú-lįkėl-iis-a</td>
<td>to make stand aside</td>
</tr>
<tr>
<td></td>
<td>*kú-lįkėl-iįs-a</td>
<td></td>
</tr>
</tbody>
</table>

The superclose harmony pattern has thus been robustly confirmed with the harmonising (20-22) superclose data, and the harmonising non-superclose data (23-27). The root right-edge condition on the harmony trigger has been made clear (28). There are no examples of disharmonic stems that violate this superclose harmony pattern.

Harmony is not generally sensitive to morphological domain in its application. But the noun locative poses a slightly variation on the harmony in verb suffixes examined in (20-21,23-27) above. Although noun stems bearing a superclose vowel at the right edge select superclose /ɪ/ in the locative suffix {-iįŋi} (29a-f), non-superclose vowels (high or non-high)

---

63 That is, a root may contain vowels of different heights, e.g. [+low][+high, ATR] in (28a), and [+high, ATR][-high, -low] in (28c).
trigger a distinct allomorph {-eni} (30a-e). The locative allomorphs {-i̯n̥i ~ -eni} are still phonologically conditioned (cf. §2.2.1.4 below), but the non-superclose allomorph contains a mid vowel, and the final vowel is also distinct.

(29) **Superclose locative suffix vowel**

a. émaa-lį blood é-ma-l-i̯nį to the blood  
b. mú-lįtįsį tail é-mú-lįts-i̯nį to the tail  
c. múu-sį smoke é-mu-s-i̯nį to the smoke  
d. lí-búrų farmer éli-búrw-i̯nį to the farmer  
e. f-dąawų lion é-dąaw-i̯nį to the lion  
f. lí-xheegų old man é-lí-xhégw-i̯nį to the old man

(30) **Non-superclose (non-high) locative suffix vowel**

a. lí-líimí tongue é-li-lím-ééni to the tongue  
b. f-phuuphu maize meal (flour) é-phúphw-ééni to the maize meal  
c. lí-beelé sorghum é-li-bel-ééni to the sorghum  
d. lí-ngóoló letter é-li-ngólw-ééni to the letter  
e. f-dzaaba matter, news é-dzaab-ééni to the matter

2. 1. 6. 2. Morphological extension of supercloseness

Supercloseness as a phonological property in Phuthi has thus far been identified as explicitly Sotho in origin, since Nguni languages have no superclose vowels. In §2.1.6.1 we have seen supercloseness extended beyond its original lexical (non-harmonising) occurrence in Sotho to a harmony system in Phuthi. We now see data where Phuthi has analogically extended supercloseness from a single Sotho prefix (reflected etymologically faithfully in Class 10 di̯-) to an entire prefix set in the Phuthi present negative existential (31) ‘there is no X’ / ‘X is not there’, wherever there are class-based inflectional prefixes that contain either of the two eligible high vowels /i u/ (that is, in Classes 3,4,5,7,8,9,10,14,15,17); in other words, /i/ becomes superclose everywhere, not only in the Class 10 form (likely to have been superclose.
historically). Even /ul/, which is never superclose in any other prefix form, becomes superclose in this construction (in Classes 3,14,15).

(31) Present negative existential

<table>
<thead>
<tr>
<th>Class</th>
<th>Phuthi</th>
<th>Sotho</th>
<th>Swati</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>akáákho</td>
<td>haáyo</td>
<td>akékho</td>
</tr>
<tr>
<td>2</td>
<td>abáákho</td>
<td>habáyo</td>
<td>abákho</td>
</tr>
<tr>
<td>1a</td>
<td>akáákho</td>
<td>haáyo</td>
<td>akékho</td>
</tr>
<tr>
<td>2b</td>
<td>abáákho</td>
<td>habáyo</td>
<td>abákho</td>
</tr>
<tr>
<td>3</td>
<td>awúúkho</td>
<td>haúyo</td>
<td>awúkho</td>
</tr>
<tr>
<td>4</td>
<td>ayííkho</td>
<td>haíyo</td>
<td>ayíkho</td>
</tr>
<tr>
<td>5</td>
<td>alííkho</td>
<td>halíyo</td>
<td>alíkho</td>
</tr>
<tr>
<td>6</td>
<td>akáákho</td>
<td>haáyo</td>
<td>akékho</td>
</tr>
<tr>
<td>7</td>
<td>asííkho</td>
<td>hasíyo</td>
<td>asíkho</td>
</tr>
<tr>
<td>8</td>
<td>atííkho</td>
<td>halíyo</td>
<td>atíkho</td>
</tr>
<tr>
<td>9</td>
<td>ayííkho</td>
<td>haíyo</td>
<td>ayíkho</td>
</tr>
<tr>
<td>10</td>
<td>atííkho</td>
<td>halíyo</td>
<td>atíkho</td>
</tr>
<tr>
<td>14</td>
<td>abúúkho</td>
<td>habúyo</td>
<td>abúkho</td>
</tr>
<tr>
<td>15</td>
<td>akúúkho</td>
<td>habúyo</td>
<td>akúkho</td>
</tr>
<tr>
<td>17</td>
<td>akúúkho</td>
<td>habúyo</td>
<td>akúkho</td>
</tr>
</tbody>
</table>

64 Class 1/1a akáákho is surprising, given that in all other Nguni languages it is akékho, which appears to reflect a vowel coalesced from *aka-i-kho; in such a form (and elsewhere), -i- is standardly assumed to reflect a form of the now lost second ‘to be’ verb which typically surfaces in Nguni participials; cf. the two verbs in Sotho: -li (for participial and grammatical ‘be’ constructions) vs. -ba (the general verb ‘be, become’). Phuthi akáákho likely reflects the analogical influence of Sotho haáyo, as part of the more extensive morphological levelling that Phuthi displays (perhaps as a result of language shift from Sotho into Phuthi). Just to confuse things further, the participial form of the negative existential does reflect the ‘hidden’ BE verb: ú-ntse á-g (*á-gaá-kho) ‘s/he is still not there’ / ‘s/he is no longer there’ (where -ntse is a (Sotho-origin) auxiliary verb that requires the complement to be in the participial), even though otherwise non-indicative negatives in Phuthi are always formed with -ga-, never with -ge- (unlike Xhosa, which has both). There is discussion of stem -kho in §2.2.6.3.

Class 5 alíkho unambiguously contains [l], not [d]; that is, the superclose vowel fails to cause strengthening of the [l] (contra §2.1.3), much as the option in agentive -í when following geminate -íl- takes on a (partially) hardened flapped quality -íd-, cf. §2.1.3 footnote 47 above.
Thus, except for Class 2, 2b, 6 which are ineligible because their prefix contains only the vowel /a/, [supercloseness] has become a morphologised feature that indicates the present negative existential in Phuthi.

Supercloseness has also been extended to both syllables of one locative allomorph (32a), while the second allomorph (32b) retains an initial mid vowel, where the word-final vowel is high -i but not superclose.

(32)  Locative suffix allomorphs
   a. - ķnj   triggered by word-final [+high, ATR] syllable
   b. - eni   triggered by word-final [−superclose] syllable

2.1.6.3. Edge-controlled regressive harmony

The second harmony type is propagated leftwards, and is triggered not by any prominent morpheme (as is the case with superclose harmony, where the root is morphologically and prosodically prominent), but by a privileged structural position: the word right-edge.

Mid-vowels /e o/ at the right edge of a word, and in a locally adjacent sequence to that right-edge mid vowel, surface as lax [ɛ ɔ], irrespective of the backness of the root vowel (33a-e); mid-vowels not adjacent to the right edge surface as tense [e o], as in (33f-i). This harmony pattern, as above for the superclose pattern, is not sensitive to morphology (save the wrinkle of diminutive suffixes to be discussed in §2.1.6.4 below). The data is drawn below from the subjunctive (33a,c), the perfective indicative (33b,d,e), and the infinitive (33f-i).

---

65 (32a-b) suggests that [superclose] may be a unitary feature, given that the triggering vowel set in (32b) cannot be defined as ‘any vowel which is not [+high, ATR]’, and yet this is what is required. Reconfiguring supercloseness as [+superclose] would be contra §2.1.6.1, where supercloseness is encoded as [+hi, ATR].

66 This harmony pattern is first observed (albeit it incompletely) in Bourquin (1927), who correctly observes that the Mischlaute [mixed sounds] ĵ and ĵ occur only at the end of a word, or in two immediately successive syllables at the end of a word.

67 The notion of edge-adjacency is briefly reconsidered in §2.1.6.3 below.
(33) Regressive [RTR] harmony: verbs

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>bá-yéét-ε</td>
<td>they should make</td>
</tr>
<tr>
<td>b</td>
<td>bá-yéét-εεε</td>
<td>they have made e.o.</td>
</tr>
<tr>
<td>c</td>
<td>bá-khókh-ε</td>
<td>they should take out</td>
</tr>
<tr>
<td>d</td>
<td>bá-khókh-éél-ε</td>
<td>they have taken out</td>
</tr>
<tr>
<td>e</td>
<td>bá-khókh-éél-εεε</td>
<td>they have taken out for e. o.</td>
</tr>
<tr>
<td>f</td>
<td>kú-yeet-a</td>
<td>to make</td>
</tr>
<tr>
<td>g</td>
<td>kú-khókh-a</td>
<td>to expel</td>
</tr>
<tr>
<td>h</td>
<td>kú-khókh-éél-a</td>
<td>to expel for</td>
</tr>
<tr>
<td>i</td>
<td>kú-khókh-éél-aan-a</td>
<td>to expel for each other</td>
</tr>
</tbody>
</table>

These harmony patterns are confirmed by data from nouns in (34a-h), and the adjectival\(^{69}\) stems (34i-j).

(34) Regressive [RTR] harmony: nouns, adjectives

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>í-yéet-ç</td>
<td>deed, doing, making</td>
</tr>
<tr>
<td>b</td>
<td>í-khókh-ç</td>
<td>taking out</td>
</tr>
<tr>
<td>c</td>
<td>bú-khókh-ç</td>
<td>pot scrapings</td>
</tr>
<tr>
<td>d</td>
<td>lí-béélé</td>
<td>breast</td>
</tr>
<tr>
<td>e</td>
<td>ceeceé</td>
<td>grandmother</td>
</tr>
<tr>
<td>f</td>
<td>í-yoomó</td>
<td>cow(^{70})</td>
</tr>
<tr>
<td>g</td>
<td>í-tóoló</td>
<td>yesterday</td>
</tr>
<tr>
<td>h</td>
<td>mú-looom</td>
<td>mouth</td>
</tr>
<tr>
<td>i</td>
<td>-neke</td>
<td>nine</td>
</tr>
<tr>
<td>j</td>
<td>-kghóorpó</td>
<td>cruel</td>
</tr>
</tbody>
</table>

---

\(^{68}\) The data in (33b) and (33e) below contains an imbricated perfective, that is, an -e- vowel that in the perfective replaces a verb extension vowel -a-, in this case from the reciprocal suffix -an-. Imbrication is discussed further in \S2.2.4.8.

\(^{69}\) Strictly speaking, these are relative stems, not adjective stems (cf. \S2.2.3).

\(^{70}\) This word is alternatively given as í-w.čom.δ ‘cow’, with no clearly distinct distributional properties. In fact, it is often produced as something in between: í-y.čom.δ.
That is, the mid-vowel harmony pattern is entirely dependent on prosodic position relative to the right edge of the word. A straightforward analysis characterises the lax edge-adjacent mid vowels as [RTR] (retracted tongue root), and the tense non-edge-adjacent mid vowels as [ATR]. That is, the right edge position would attract a [RTR] feature to a [−high, −low] vowel, which would expand leftwards to all eligible mid vowel targets; all non-edge-adjacent mid vowels would by [ATR] by default. Apart from the given assumption in this work of general feature privativity (informal characterisations of [±high] vowel features notwithstanding), there is a good theoretical reason not to characterise the superclose and mid-vowel harmonies with [±ATR]: such an analysis would require both values of [ATR] to be defaults, one in each of the two harmony patterns71, which claim would be theoretically uninterpretable.

2. 1. 6. 4. Weak edge-controlled harmony: domain mismatch

There is a set of forms that appear to mismatch the prosodic word right-edge with the harmony word right-edge, resulting in systematic apparent disharmony: these forms contain one of three suffixes: (a) diminutive suffix -nyana, (b) augmentative suffix -kati72 (and cf. §2.2.1.5), (c) hedging relative suffix -ákga (cf. discussion under §2.2.3.3, with adjectives and relatives).

Specifically, the domain for mid-vowel harmony needs to be able to inspect the word right-edge, from the data seen in (33-34). But when the diminutive or augmentative is suffixed, the ‘right edge’ for harmony remains the pre-suffix word, in (35) below. Van der Hulst & Van de

71 Specifically, in §2.1.6.1 above, [−ATR] is the default value for [+high] vowels, in the absence of a superclose vowel harmony trigger. In the present section, since [ATR] is the privative default for non-edge-adjacent mid vowels, in an equipollent system this would be [+ATR]. But a single feature cannot have both + and − settings as default. The solution to this must entail privativity of tongue root features, as assumed in the present discussion: [ATR] vs. [RTR]; these unary features are assumed by perhaps the majority of contemporary theorists— including Van der Hulst & Van de Weijer (1995:501-502)—to characterise tongue root contrasts. There is an alternative analysis that considers vowel height to be represented as multiply stackable privative or binary [open] features, after Clements (1991), but this would require interpreting the ATR/RTR in a system such as Phuthi as being a height issue, not a tongue root issue. This may yet well be the insightful strategy to pursue, given that Bantu languages do not display robust ATR/RTR systems as found in non-Bantu Niger-Congo languages (such as Yoruba).

72 There are two possible forms of the augmentative: -kaati, as given here, or tone-bearing -káatif (with superclose final vowel); cf. §2.2.1.5.
Weijer (1995:501-502) point out that such mismatches of prosodic word to harmony word are not uncommon. They draw a distinction between affix types (following Booij & Rubach 1984); in those terms, -nyana, -kati and -akga are non-cohering suffixes, since they fail to cohere to the stem harmony domain. In fact, it is the case that the harmonic domain universally is frequently not the prosodic word, but a morphologically specified domain, in which case the potential for diminutive disharmonic forms in (35) is not entirely unexpected cross-linguistically.

(35) Diminutive and augmentative as non-cohering suffixes
a. í-hlokó head
b. í-hlókó-nyaana tiny head (diminutive) *í-hlókó-nyaana

c. í-hlókó-kaati huge head (augmentative) *í-hlókó-kaati

d. sí-kóló school

e. sí-kóló-nyaana tiny school (diminutive) *sí-kóló-nyaana

f. sí-kóló-kaati huge school (augmentative) *sí-kóló-kaati

g. lí-qhwelé piece of string

h. lí-qhwelé-nyaana tiny piece of string (diminutive) *lí-qhwelé-nyaana

i. lí-qhwelé-kaati huge piece of string (augmentative) *lí-qhwelé-kaati

j. í-kéréke church

k. í-kéréke-nyaana tiny church (diminutive) *í-kéréke-nyaana

l. í-kéréke-kaati huge church (augmentative) *í-kéréke-kaati

The harmony word-edge in (35) is thus the right edge of the pre-suffix stem; for harmony purposes, the diminutive and augmentative suffixes are invisible. Yet these suffixes are certainly not independent words; the long penult syllable in every example in (35) confirms that in each case there is just a single prosodic word.

---

73 Even if reduplicated to emphasis the smallness or bigness of the head noun, the diminutive and augmentative still fail to prevent the parsing of the noun right edge to the left of the suffix sequence, e.g. í-tfó-nyáná-nyaana ‘very tiny thing’. Cf. §2.2.3.3 for discussion of the properties of the relative hedging suffix, -ákga.

74 This word is loaned from Afrikaans kerk, via Sotho kéré (or kéréké).

75 Cf. Chapter 4 §4.1. for discussion of the redundant length properties of phrase-penults.
The disharmony in (35) above is seen to be optional\(^76\) in locative forms (36) derived from the augmentative and diminutive words in (35). In each case, the underived (non-augmentative/diminutive) forms display regular mid-vowel harmony (36a,f,k,p); that is, the locative suffix is certainly a cohering suffix.

But for some speakers the augmentative/diminutive forms\(^77\) can be disharmonic (non-cohering) with respect to the prosodic word right-edge (36b,d,g,i,l,n,q,s). For other speakers they can also optionally be harmonic (cohering) with respect to the prosodic word-edge (36c,e,h,j,m,o,r,t). In the disharmonic (non-cohering) forms, the locative prefix \(e\)- is also disharmonic with respect to the prosodic word edge, but harmonic with respect to the stem mid-vowel quality (lax)\(^78\).

(36) Optional edge-controlled harmony in locatives derived from diminutives / augmentatives

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(\text{é-hlókó-eeni} ) in/on/at a head</td>
<td>cohering suffix</td>
</tr>
<tr>
<td>b.</td>
<td>(\text{é-hlókó-nyán-eeni} ) in/on/at a tiny head (dim.)</td>
<td>non-cohering suffixes</td>
</tr>
<tr>
<td>c.</td>
<td>(\text{é-hlókó-nyán-eeni} ) in/on/at a tiny head (dim.)</td>
<td>cohering suffixes</td>
</tr>
<tr>
<td>d.</td>
<td>(\text{é-hlókó-kát-eeni} ) in/on/at a huge head (aug.)</td>
<td>non-cohering suffixes</td>
</tr>
<tr>
<td>e.</td>
<td>(\text{é-hlókó-kát-eeni} ) in/on/at a huge head (aug.)</td>
<td>cohering suffixes</td>
</tr>
<tr>
<td>f.</td>
<td>(\text{é-sí-kólw-eeni} ) in/on/at a school</td>
<td>cohering suffix</td>
</tr>
<tr>
<td>g.</td>
<td>(\text{é-sí-kóló-nyán-eeni} ) in/on/at a tiny school (dim.)</td>
<td>non-cohering suffixes</td>
</tr>
<tr>
<td>h.</td>
<td>(\text{é-sí-kóló-nyán-eeni} ) in/on/at a tiny school (dim.)</td>
<td>cohering suffixes</td>
</tr>
</tbody>
</table>

\(^76\) The precise conditions of harmony are not clear here; some speakers accept the harmonic (cohering) diminutive and augmentative forms in the locative; others do not. The production context of all these forms is that they occur in regular speech with low frequency, unlike the non-locative diminutive and augmentative forms in (35) above.

\(^77\) I have no data on potential disharmony from the hedging relative -\(\text{ákga} \) (cf. §2.2.3.3). I would expect it to behave like -\(\text{nyana} \) and -\(\text{kati} \).

\(^78\) The locative prefix \(\text{é} \)- is actually variable with respect to its [ATR]/[RTR] status, even preceding stems bearing lax vowels (lax because of non-cohering diminutive or augmentative suffixes): I also elicited the locative prefix as disharmonic with respect to the disharmonic stem domain, that is, with the default non-edge-adjacent [ATR] quality [e], e.g. \(\text{é-hlókó-nyán-eeni} \), \(\text{é-kérké-nyán-eeni} \). This suggests that the stem boundary plays a role in interrupting (dis)harmony.

Similarly, Class 2b \(\text{bó} \)- is invariably [ATR], as suggested by \(\text{bó-\ýkeeké} \)* \(\text{bó-\ýkeeké} \) ‘grandmother, old woman’, where syllabic [\(\text{ŋ}\)] is predicted to be transparent to harmony, and by \(\text{bó-ny\ýc\ýc} \)* \(\text{bó-ny\ýc\ýc} \) ‘(your) mothers [taboo]’, where the prefix is saliently disharmonic with the stem.
The diminutive and augmentative suffixes become weakly non-cohering (that is, optionally cohering) only when they occur in combination with the locative suffix. This would seem to be the case as the locative itself is always cohering (cf. the non-diminutive/augmentative data in (36a,f,k,p).

Thus, the distribution of morphology in terms of harmonically cohering status is as given schematically in (37), where subscript C indicates cohering morphology, and NC indicates non-cohering morphology. The status of the root and prefix is by default cohering; the root always behaves as if it is at the right-edge of the prosodic word (37a-c), unless there is a cohering morpheme further to the right (e.g. the locative), in which case it is still cohering. Cohering-ness is inherited from right to left. The prefix inherits its own cohering-ness from the root domain.\footnote{In those instances where the prefix is always [ATR] é- despite the stem containing lax mid vowels (preceding a non-cohering diminutive/augmentative suffix), as noted in the previous footnote, it is still cohering with reference to the basic harmony pattern set up at the word right-edge, but it is non-cohering with reference to the [RTR] root domain: é-hlók-day-eeni, é-kéréké-nyán-eeni, that is, the sequence here is \{prefix\}-\{root\}-\{dim\}-\{loc\}.}

\begin{enumerate}
\item é-si-kóló-kát-eeni \quad \text{in/on/at a huge school (aug.)} \quad \text{non-cohering suffixes}
\item é-si-kóló-kát-eeni \quad \text{in/on/at a huge school (aug.)} \quad \text{cohering suffixes}
\item é-lí-qhwel-ééni \quad \text{in/on/at a piece of string} \quad \text{cohering suffix}
\item é-lí-qhwelé-nyán-eeni \quad \text{in/on/at a tiny piece of string (dim.)} \quad \text{non-cohering suffixes}
\item é-lí-qhwelé-nyán-eeni \quad \text{in/on/at a tiny piece of string (dim.)} \quad \text{cohering suffixes}
\item é-lí-qhwelé-kát-eeni \quad \text{in/on/at a huge piece of string (aug.)} \quad \text{non-cohering suffixes}
\item é-lí-qhwelé-kát-eeni \quad \text{in/on/at a huge piece of string (aug.)} \quad \text{cohering suffixes}
\item é-kérék-eeni \quad \text{in/on/at a church} \quad \text{cohering suffix}
\item é-kéréké-nyán-eeni \quad \text{in/on/at a tiny church (dim.)} \quad \text{non-cohering suffixes}
\item é-kéréké-nyán-eeni \quad \text{in/on/at a tiny church (dim.)} \quad \text{cohering suffixes}
\item é-kéréké-kát-eeni \quad \text{in/on/at a huge church (aug.)} \quad \text{non-cohering suffixes}
\item é-kéréké-kát-eeni \quad \text{in/on/at a huge church (aug.)} \quad \text{cohering suffixes}
\end{enumerate}

\begin{enumerate}[\text{(37)}]
\item \text{Schematic cohering status of suffixes}
\item a. \{prefix\}-\{root\} \quad \text{í-hlókə}
\item b. \{prefix\}-\{root\}-\{dim\} \quad \text{í-hlóká-nyaana}
\item c. \{prefix\}-\{root\}-\{aug\} \quad \text{í-hlókó-kaati}
\end{enumerate}
In all cases in (37), any right-aligned non-cohering suffix is excluded from the harmony domain: one suffix in (37b,c), two suffixes in (37e,g). In this way, the harmony domain mismatches the prosodic word domain, which in all cases remains salient according to phrase-penultimate length and H alignment to the antepenult. In other words, the redundant penult-lengthening process continues to signal the prosodic phrase-edge for tone purposes, as opposed to the prosodic domain edge for harmony purposes.

The general nature of mid-vowel harmony and the non-cohering status of the diminutive and augmentative suffixes is confirmed by the adjective data in (38).

(38) Mid vowel harmony and disharmony in an adjective stem
a. ít₅ thing
b. ít₅ lé-hlé a pretty thing (lit. ‘thing pretty’)
c. ít₅ lé-hlé-nyaana a somewhat pretty thing (lit. ‘thing pretty-tiny’) (dim.)
d. *ít₅ lé-hlé-nyaana
e. ít₅ lé-hlé-kaati a very pretty thing (lit. ‘thing pretty-huge’) (aug.)
f. *ít₅ lé-hlé-kaati

We may view the harmony in the words with non-cohering suffixes as weak harmony, given the optional nature of the harmony pattern in the longer diminutive+locative or augmentative+locative cases. Weak mid-vowel harmony is also found in verb stems, but unrelated to cohering or non-cohering suffixes, to which I now turn (§2.1.6.5).

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80 A small wrinkle here is that ‘phrase penult’—with reference to redundant lengthening (and thus the basis for tone lengthening)—is not word-penult where certain bound clitics are concerned, e.g. *khabhá té! ‘Just go!’

81 I use the toneless form of the augmentative here; there is an alternative H-tone form (cf. §2.2.1.5).
2. 1. 6. 5. Transparency, weak transparency and weak harmony

Syllabic approximants\(^{82}\) (chiefly, \([l]\)) are transparent to the mid-vowel harmonising feature (argued above to be \([RTR]\)), as shown in (39d,h); non-edge-adjacent mid vowels are defaultly \([ATR]\), as expected: \([e]\) in (39a,b), \([o]\) in (39e,f).

\[(39)\] Syllabic \([l]\) is transparent to the mid vowel harmony feature
\[\begin{array}{ll}
\text{a. kú-vegl-a} & \text{to come from, appear} \\
\text{b. kú-vegl-ł-a} & \text{to take a look at, keep an eye on} \\
\text{c. bá-vegl-ɛ} & \text{they should come from, appear} \\
\text{d. bá-vegl-ł-ɛ} & \text{they should take a look at, keep an eye on} \\
\text{e. kú-ngóól-a} & \text{to write} \\
\text{f. kú-ngól-ł-a} & \text{to write to} \\
\text{g. bá-ngóól-ɛ} & \text{they should write} \\
\text{h. bá-ngól-ł-ɛ} & \text{they should write to} \\
\end{array}\]

The transparency of syllabic \([l]\) is unsurprising, given that it can be straightforwardly argued to derive from the applicative suffix morpheme \([-el-]\) which contains a mid vowel, in (39b,d,f,h)\(^{83}\). Besides the syllabic \([l]\), no other nuclei vowels are opaque.

But it seems that \(-a-\) in a suffix is weakly transparent, in that mid vowel harmony sometimes passes ‘through’ a suffix \(-a-\), as in (40). The conditions under which this transparency is tolerated are not entirely clear. (40a-c) contain tense ([ATR]) mid vowels because these mid vowels are not edge-adjacent; (40d-f) contain lax ([RTR]) mid vowels, because these mid vowels are edge-adjacent. (40f) is the predicted surface form, in a word with the first two mid vowels

\(^{82}\) The syllabic nasals appear not to be testable for vowel feature transparency, since they invariably occur at the left edge of a stem, where the only pre-stem mid vowel is in a prefix and is fixed as \([ATR]\), e.g. Class 2b prefix bo- (cf. footnote 78).

\(^{83}\) Elsewhere, syllabic \([l]\) derives from the reversive suffix morpheme \([-ul-]\). The sequences \(*-el-ul-e > -el-l-e\) or \(*-el-ul-ə > -el-l-ə\) are not attested in my data set, so we cannot test the more interesting potential transparency of the syncopated high vowel \(-u-\) in these cases.
tense, and the third mid vowel lax because it alone is edge-adjacent; the two sets of mid vowels are separated by an opaque (non-harmonising) [a] vowel. But (40f) has an alternative, unpredicted form: (40g) where all mid vowels are lax ([RTR]). (40g) can only occur if -a- is transparent to the harmonising feature, or if harmony is computed at the stem level, and all eligible vowels (the mid vowels) in a stem domain harmonise.

(40) Weak transparency of suffix -a(n)-
   a. kú-khóókh-a to take out
   b. kú-khókh-éél-a to take out for
   c. kú-khókh-él-aan-a to take out for each other
   d. bá-khóókh-ε they should take out
   e. bá-khókh-εél-ε they should take out for
   f. bá-khókh-él-aan-ε they should take out for each other
   g. bá-khókh-él-aan-ε they should take out for each other

Similarly, the non-edge-adjacent tense mid vowel [ε] in (41f) is predicted not to alternate with the lax mid vowel in (41g), yet it does\textsuperscript{84}.

(41) Weak transparency of suffix -a(n)-
   a. kú-yụụl-a to open
   b. kú-yụl-éél-a to open for
   c. kú-yụl-él-aan-a to take out for each other
   d. bá-yụụl-ε they should open
   e. bá-yụl-εél-ε they should open for
   f. bá-yụl-él-aan-ε they should open for each other
   g. bá-yụl-él-aan-ε they should open for each other

\textsuperscript{84} Again, this is speaker-dependent, and the judgments are not always robust. This instability suggests a locus of potential language change. Further work is awaited on this topic.
High vowels (that is, non-/a/ non-mid vowels), however, are strictly opaque, not even weakly transparent (42b,d,f).

(42) **Non-/a/ suffix vowels are never transparent**  
  a. bá-khókh-iis-é they should help take out  
  b. *bá-khókh-iis-é  
  c. bá-khókh-él-iis-é they should help take out for  
  d. *bá-khókh-él-iis-é  
  e. bá-vul-él-iis-é they should help open for  
  f. *bá-vul-él-iis-é  

The weak harmony of /a/ in this morphological configuration is unsurprising in the sense that [a] must be able to support the [RTR] feature, and [a] is an [RTR] (or at least not an [ATR]) vowel, in general. Yet [a] has been shown not to participate in the edge-driven ATR/RTR harmony, in (33f-i) above—and supported by the range of cohering and non-cohering possibilities in (35, 36)—and thus should bear no form of contrastive tongue-root setting. If [a] can weakly support [RTR]—as suggested in (40g, 41g) but contra-indicated in (40f, 41f)—then it must be that Phuthi non-superclose high vowels /i u/ either cannot support [RTR] (42b,d,f), or that ATR/RTR is not the feature distinguishing superclose /i u/ from non-superclose high /i u/.

**2.2. Morphology**

Having briefly examined the inventory of Phuthi segments and tones, and seen essentially all segmental phonological processes in the language, we turn now to the contents of the morphological grammar, in preparation for the discussions to follow in Chapters 4 through 7.

Phuthi is a typical Bantu language morphologically, reflecting an anticipated range of nominal (§2.2.1-2.2.3), verbal (§2.2.4) and other morphological categories (§2.2.5-2.2.6). Specifically, I consider in the remainder of this chapter nouns (§2.2.1), pronouns (§2.2.2), adjectives and relatives (§2.2.3), verbs (§2.2.4), conjunctives (§2.2.5) and adverbials (§2.2.6).
2. 2. 1. Nouns

Nouns are examined under these sections: structure (§2.2.1.1); noun prefix allomorphy (§2.2.1.2); noun tone morphology (§2.2.1.3); locatives (§2.2.1.4); diminutives and augmentatives (§2.2.1.5); palatalisation (§2.2.1.6); noun copulatives (§2.2.1.7).

2. 2. 1. 1. Noun Structure

Every Phuthi noun consists minimally of the structure in (43a), or of the more elaborate nominal structure in (43b) if the noun carries one or more derivation nominal suffixes (e.g. the diminutive, augmentative), or of an even more complex DERIVATIONAL_SUFFIX and INFLECTIONAL_SUFFIX sequence if the noun is derived from a verb stem (43c); verb suffixes include any of the derivational/inflectional verb extensions (suffixes) detailed below in §2.2.3. The structure may contain two types of nominal suffixes—inflectional and derivational85 (43d)—or all three suffix types (43e). The structure is exemplified by underived stems (44a), derived diminutives (44b), deverbative agentives and deverbative agentive diminutives (44c: one to three suffixes), deverbative nominalised processes (44d), and deverbative process diminutives (44e).

(43) Nominal structure
   a. \{CLASS_PREFIX\}-\{ROOT\}
   b. \{CLASS_PREFIX\}-\{ROOT\}-\{NOUN_DERIV_SUFFIX\}*
   c. \{CLASS_PREFIX\}-\{ROOT\}-\{VERB_DERIVATIONAL_SUFFIX\}*-\{NOUN_DERIVATIONAL_SUFFIX\}*
   d. \{CLASS_PREFIX\}-\{ROOT\}-\{NOUN_INFLECTIONAL_SUFFIX\}*-\{NOUN_DERIVATIONAL_SUFFIX\}*
   e. \{CLASS_PREFIX\}-\{ROOT\}-\{VERB_DERIV_SUFFIX\}*-\{NOUN_INFLECT_SUFFIX\}*-\{NOUN_DERIV_SUFFIX\}*

(44) Nominal structure exemplified86
   f-tfį-nyána-nyaana ‘very tiny thing’

85 If this elaborated structure is correct, then this violates a claimed universal ordering on suffix sequences: derivational suffixes are claimed universally to be more proximately bound to the root than inflectional suffixes.
86 From this point on, I return to a broader (modified) orthography representation for Phuthi data, as indicated in §2.1.1 (5).

d. mú-bhi ̣ n-ó-nyaana ‘tiny amount of music’ (cf. mú-bhi ̣ n-ó ‘music’)\textsuperscript{87}, mú-yákh-ó-nyaana ‘tiny building’ (cf. mú-yáakh-ó ‘building’)

e. í-bón-ís-ó-nyaana ‘tiny show’ (cf. kú-bón-ís-a ‘to show’ < kú-bóón-a ‘to see’), í-tsheg-ís-ó-nyaana ‘tiny sale’ (cf. kú-tsheg-ís-a ‘to sell’ < kú-tsheég-a ‘to buy’)

The Phuthi noun prefix\textsuperscript{88} is overtly segmental, as indicated in the chart (45), except for Class 1a—typically aberrant in Bantu—whose prefix is $\emptyset$-. The prefix is canonically CV- in structure, except innovated VCV- prefixes in classes 2 and 6 with fixed underived\textsuperscript{89} initial mid-vowel e-, and V- prefix in Class 9 (also frequently aberrant in structure throughout the Bantu-speaking continuum). The language is notable within Nguni as lacking Class 11, which noun prefix should be lu-\textsuperscript{90}; it is also notable for having completely collapsed Class 8 and 10 (due the complete absence of -N- in the Class 10 prefix), cf. (45-47) where all prefixes are identical in both classes. All examples in (45) have the structure in (44a), that is, they lack morphological suffixes.

\textsuperscript{87} The -o suffix in (44d-e) is a common Bantu (here: Phuthi) deverbative nominal suffix indicating non-agentive (usually non-human) nouns.

\textsuperscript{88} Discussions of noun prefixes are resumed in Chapter 5 §5.6.1 and Chapter 7 §7.5.

\textsuperscript{89} In Nguni $V_1CV_2$- prefixes, $V_1$ is always an exact copy of $V_2$, except Swati Class 6 éma-, which Phuthi has extended to Class 2 éba-. Some Swati speakers are also reported to produce éba-, even though this is not recognised in the standard language (Joyce Sukumane, p.c., 1994).

\textsuperscript{90} Northern Xhosa dialects spoken in areas contiguous to Phuthi-speaking areas, including Herschel, Matatiele and southwestern Lesotho, also lack Class 11. Class 11*ûlu- nouns have been reassigned to Class 5 ë(li)-, e.g. ú(lu)-bísi ‘milk’ > ë(li)-bísi; and cf. §2.1.4 (17a) above: ù(lu)-lwími > ë(li)-lwími; and cf. (45): Class 5. Parenthetic (li) and (lu) are base prefixes that only reemerge in copulatives and locatives.
Noun prefixes

<table>
<thead>
<tr>
<th>NC</th>
<th>NC Pref</th>
<th>Example</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-</td>
<td>mú-tfwaana</td>
<td>child</td>
</tr>
<tr>
<td>2</td>
<td>éba-</td>
<td>ébá-tfwaana</td>
<td>children</td>
</tr>
<tr>
<td>1a</td>
<td>∅-(ú-)</td>
<td>ú-n:na</td>
<td>his/her mother</td>
</tr>
<tr>
<td>2b</td>
<td>bó-</td>
<td>bó-n:na</td>
<td>his/her mothers(^{92})</td>
</tr>
<tr>
<td>3</td>
<td>mú-</td>
<td>mú-miito</td>
<td>throat</td>
</tr>
<tr>
<td>4</td>
<td>mí-</td>
<td>mí-miito</td>
<td>throats</td>
</tr>
<tr>
<td>5</td>
<td>lí-</td>
<td>lí-tiipho</td>
<td>nail (fingernail, toenail)</td>
</tr>
<tr>
<td>6</td>
<td>ēma-</td>
<td>ēmá-tiipho</td>
<td>nails</td>
</tr>
<tr>
<td>7</td>
<td>sí-</td>
<td>sí-liimo</td>
<td>year</td>
</tr>
<tr>
<td>8</td>
<td>tí-</td>
<td>tí-liimo</td>
<td>years</td>
</tr>
<tr>
<td>9</td>
<td>í-</td>
<td>í-tshaaba</td>
<td>mountain(^{93})</td>
</tr>
<tr>
<td>10</td>
<td>tí-</td>
<td>tí-tshaaba</td>
<td>mountains</td>
</tr>
<tr>
<td>14</td>
<td>bů-</td>
<td>bů-tfú</td>
<td>humanity</td>
</tr>
<tr>
<td>15</td>
<td>ků-</td>
<td>ků-tfu</td>
<td>cultivating (to cultivate)</td>
</tr>
</tbody>
</table>

\(^{91}\) The first vowel in every noun prefix is underlined to indicate that the initial syllable is the source (‘sponsor’) of a lexical H tone (that extends once to the right, in the case of bisyllabic prefixes with these 2-σ toneless stems); cf. Chapter 4 §4.1.4.7 (62), §4.3.1 (94), §4.3.2.1 (95-98,100). This underlining convention (used briefly in §2.2.1.3, §2.2.1.4, §2.2.1.7, to indicate the status of noun prefix, according to morphosyntactic frame) is systematic from Chapter 4 on.

\(^{92}\) This is not as semantically ill-formed as one may think: older females, especially sisters to one’s mother, are regarded as ‘mothers’. The only Class 1a/2b bisyllabic (non-depressor-bearing) stem I have recorded is the one given in this table: ‘his/her mother’. There is also ú-nyoogo ‘your mother’, but it contains a depressor in the σ2 position (‘your mother’ is mostly used in a taboo register or the very familiar style, by children; these two nouns are atypical for Class 1a, in that they contain a prefix vowel (which, however, makes no difference for the copulative). Almost all examples in Class 1a lack a segmental or tonal prefix, e.g. ntoate ‘father’.

\(^{93}\) Doke (1954:235), based on Mzamane (1949), is certainly wrong that Class 9 and 10 have an optional homorganic nasal in their noun class prefixes and adjective prefixes. The only time that a (homorganic) nasal is attested here is in loan items, where the nasal is no longer part of the prefix at all, e.g. ímphó ‘gift’, that is, í-ṇmphó, *ímp-phó. The Class 8 and 10 prefixes are fully conflated in all forms (non-loaned ú-tfó ‘thing’ would be *ú-ṇthó (if loaned from Sotho).
A variety of other prefixes (46) are based on the noun class prefixes, including adjective\(^{94}\), relative, pronominal verb prefixes (subject prefix, object prefix), quantitative-1\(^{95}\), quantitative-2\(^{96}\), copula\(^{97}\), associative\(^{98}\), enumerative\(^{99}\).

\(^{94}\) Adjectives and relatives are discussed and exemplified in §2.2.1.7 below.
\(^{95}\) The first of the two quantitative stems (Quantitative-1) in Phuthi (and common as a category to the subcontinent) is -göhle, in phrase-final form. Quantitative prefixes are examined again in more detail in Chapter 7 §7.8.2.1 (312a,b). Cf. other Nguni -óñke.
\(^{96}\) This is the second of the two quantitative stems (Quantitative-2) common to Southern Bantu is -gédži (1ps and 2ps personal pronouns, including 3ps Class 1a) or -gódži (all other personal pronouns and classes), in phrase-final form. The prefixes are given here as breathy (depressed) throughout, but it is claimed later that the breathiness/depression is an independent enhancement feature targeting the penult (cf. §7.8.2.1), in which case it is redundant on the prefixes. There is some asymmetry in the way that I indicate breathy prefix onsets here: the onset of all prefixes has an orthographic breathy counterpart (either voiced obstruents <bh, hh>, sonorants <lh, mh>, except voiceless obstruents [s, t, k] which have no breathy orthographic counterpart because orthographic <sh, th, kh> already represent the distinct phonemes, /ʃ t k/ respectively (but cf. the following footnote for a suggestion to overcome this orthographic problem, and a comment on the de-cueing inherent in prefix allography). The representations [ʃ], [t] and [k] are not claimed to reflect contrastive breathiness, cf. discussion of relativised locality and the violation of strict locality, contra Ní Chiosáin & Padgett (1997, 2001), in Chapter 7 §7.2.6. Rather, the breathiness is implemented on the following vowel, as it is in all other prefixes where breathy voicing is present (cf. depression binding, §7.2.1.3), though where the prefix contains a voiced onset the onset, too, reflects displays. Enumeratives are instantiated in more detail in Chapter 7 §7.8.2.1 (312c,d).

\(^{97}\) The tone and voice properties of copula prefixes—because they invoke depression (breathiness)—are handled in a section of Chapter 7 §7.5 (134-135). Affirmative and negative copula prefixes are briefly catalogued and exemplified in §2.2.1.7. The copula, too, requires that the prefix onsets be rewritten to reflect morphological breathiness. There is a proposal (Donnelly, in press; cf. limited usage in Appendix D) to represent copula breathiness in the orthography with geminate voiceless consonants <ss tt kk>. If the breathy/non-breathy contrast is represented orthographically, there is a potential problem of prefix ‘de-cueing’: prefixes such as <mu- ba- li- si- ti- ku-> must be co-identified with allographic <nhu- bha- lhi- ssi- tti- kku->, which morphologically triggered allographic forms are a visually significant departure from the (non-digraph) non-breathy forms, especially because copula breathiness is now indicated graphically in two distinct ways (<h>, or graphic gemination). This graphic characterisation of breathiness in the copula may ultimately prove too costly a reduction in visual salience. Phuthi orthographers, if they exist one day, must resolve this.

\(^{98}\) Associate and enumerative prefixes are discussed further, in terms of their depressed status, in Chapter 7 §7.8.2.3 (316). The associative is briefly exemplified in §2.2.2.3; the enumerative is briefly exemplified in §2.2.2.5.

\(^{99}\) Cf. previous footnote, and §2.2.2.5.
### Noun-based prefixes

<table>
<thead>
<tr>
<th>NC #</th>
<th>Noun Class</th>
<th>Adjective</th>
<th>Relative</th>
<th>Subject Prefix</th>
<th>Object Prefix</th>
<th>Quantitative 1</th>
<th>Quantitative 2</th>
<th>Copula</th>
<th>Associative</th>
<th>Enumerative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-</td>
<td>lámu-</td>
<td>lá-</td>
<td>ú-</td>
<td>-mú-</td>
<td>wð-</td>
<td>á-yh-</td>
<td>gù- / mú-</td>
<td>wá-</td>
<td>whù-</td>
</tr>
<tr>
<td>2</td>
<td>éba-</td>
<td>lába-</td>
<td>lába-</td>
<td>bá-</td>
<td>-bá-</td>
<td>bá-bh-</td>
<td>gê- / bá-</td>
<td>bá-</td>
<td>ba-</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>Ø-</td>
<td>lámu-</td>
<td>lá-</td>
<td>ú-</td>
<td>-mú-</td>
<td>ú-wh-</td>
<td>gù-</td>
<td>wá-</td>
<td>whù-</td>
<td></td>
</tr>
<tr>
<td>2b</td>
<td>bó-</td>
<td>lába-</td>
<td>lába-</td>
<td>bá-</td>
<td>-bá-</td>
<td>bá-bh-</td>
<td>yhi-</td>
<td>wá-</td>
<td>whù-</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>mú-</td>
<td>lómu-</td>
<td>ló-</td>
<td>ú-</td>
<td>-mú-</td>
<td>ú-wh-</td>
<td>gù- / mú-</td>
<td>wá-</td>
<td>whù-</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>mí-</td>
<td>lemi-</td>
<td>lé-</td>
<td>f-</td>
<td>-yf-</td>
<td>yf-</td>
<td>yá-</td>
<td>yhi-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>lf-</td>
<td>léli-</td>
<td>léli-</td>
<td>lf-</td>
<td>-lh-</td>
<td>lh-lh-</td>
<td>lhí-</td>
<td>lá-</td>
<td>li-</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>éma-</td>
<td>láma-</td>
<td>lá-</td>
<td>-(w)á-</td>
<td>hñ-</td>
<td>á-hñ-</td>
<td>gé-</td>
<td>hhá-/wá-</td>
<td>whá-</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>sf-</td>
<td>lesi-</td>
<td>lési-</td>
<td>sf-</td>
<td>-sí-</td>
<td>sì-</td>
<td>sì-sí-</td>
<td>sá-</td>
<td>si-</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>tí-</td>
<td>léti-</td>
<td>léti-</td>
<td>tí-</td>
<td>-tí-</td>
<td>tí-tí-</td>
<td>tí-</td>
<td>tá-</td>
<td>ti-</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>í-</td>
<td>le-</td>
<td>le-</td>
<td>í-</td>
<td>-yí-</td>
<td>í-yí-</td>
<td>yí-yí-</td>
<td>yá-</td>
<td>yhi-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>tí-</td>
<td>léti-</td>
<td>léti-</td>
<td>tí-</td>
<td>-tí-</td>
<td>tí-tí-</td>
<td>tí-tí-</td>
<td>tá-</td>
<td>ti-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>bú-</td>
<td>lóbu-</td>
<td>lóbu-</td>
<td>bú-</td>
<td>-bú-</td>
<td>bá-bh-</td>
<td>bù-bh-</td>
<td>bá-</td>
<td>bu-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>kú-</td>
<td>lóku-</td>
<td>lóku-</td>
<td>kú-</td>
<td>-kú-</td>
<td>kú-kú-</td>
<td>kú-</td>
<td>kwá-</td>
<td>ku-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>kú-</td>
<td>lóku-</td>
<td>lóku-</td>
<td>kú-</td>
<td>-kú-</td>
<td>kú-kú-</td>
<td>kú-</td>
<td>ká-</td>
<td>ku-</td>
<td></td>
</tr>
</tbody>
</table>

There is a wider set of forms that invoke the quantitative shape in column vi (but without breathiness), including the absolute pronoun prefix (cf. §2.2.2.1), among others. The single-consonant quantitative prefix (column vi) is equivalent to the associative prefix (column ix), if the associative is considered to consist of a fixed morphological vowel -á- (the associative

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100 H tone is represented in these prefixes where it would be implemented in situ, without reference to any tone spread rules. Essentially, the first syllable of every prefix in the chart (except enumeratives in column x) is underlyingly H. I have not underlined the H tone sponsor syllables to avoid expository clutter; so á = a-, and so on. I use orthographic hñ- for [ñ-] (row 6).

101 Class 15 and 17 are nearly identical (the associative forms are distinct, cf. the demonstratives in (47)), but Class 17 has an incomplete set of forms. Class 15 forms are always verb infinitives; Class 17 nominal forms are always secondary (derived from other nouns, cf. discussion under locatives §2.2.1.4), or referentially non-specific (corresponding to phrases with expletive it/there subjects in English).
is presented here as a distinct prefix, in the long tradition of descriptive Bantu work); the quantitative-1 prefix shape (vi) is also (almost) equivalent to that of quantitative-2 (vii) if the initial syllable in quantitative-2 is ignored.

A full range of demonstrative pronoun prefixes is also based on the noun prefixes (47).

(47) **Demonstrative pronoun prefix**

<table>
<thead>
<tr>
<th>NC #</th>
<th>Noun Class</th>
<th>xi</th>
<th>xii</th>
<th>xiii</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st position (proximal)</td>
<td>2nd position (distal)</td>
<td>3rd position (ultra-distal)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>mú-</td>
<td>lḥó</td>
<td>lḥówo</td>
<td>lḥowá</td>
</tr>
<tr>
<td>2</td>
<td>éba-</td>
<td>lḥāaba</td>
<td>lḥāabo</td>
<td>lḥabá</td>
</tr>
<tr>
<td>1a</td>
<td>Ø-</td>
<td>lḥó</td>
<td>lḥówo</td>
<td>lḥowá</td>
</tr>
<tr>
<td>2b</td>
<td>bó-</td>
<td>lḥāaba</td>
<td>lḥāabo</td>
<td>lḥabá</td>
</tr>
<tr>
<td>3</td>
<td>mú-</td>
<td>lḥó</td>
<td>lḥówo</td>
<td>lḥowá</td>
</tr>
<tr>
<td>4</td>
<td>mí-</td>
<td>lḥé</td>
<td>lḥéyo</td>
<td>lḥeyá</td>
</tr>
<tr>
<td>5</td>
<td>lí-</td>
<td>lḥééli</td>
<td>lḥéelo</td>
<td>lḥelá</td>
</tr>
<tr>
<td>6</td>
<td>éma-</td>
<td>lḥá</td>
<td>lḥáwo</td>
<td>lḥawá</td>
</tr>
<tr>
<td>7</td>
<td>sí-</td>
<td>lḥéesi</td>
<td>lḥéeso</td>
<td>lḥesá</td>
</tr>
<tr>
<td>8</td>
<td>tí-</td>
<td>lḥéti</td>
<td>lḥéto</td>
<td>lḥetá</td>
</tr>
<tr>
<td>9</td>
<td>í-</td>
<td>lḥé</td>
<td>lḥéyo</td>
<td>lḥeyá</td>
</tr>
<tr>
<td>10</td>
<td>tí-</td>
<td>lḥéti</td>
<td>lḥéto</td>
<td>lḥetá</td>
</tr>
<tr>
<td>14</td>
<td>bú-</td>
<td>lḥoóbù</td>
<td>lḥóbo</td>
<td>lḥobá</td>
</tr>
<tr>
<td>15</td>
<td>kú-</td>
<td>lḥoóku</td>
<td>lḥóko</td>
<td>lḥokwá</td>
</tr>
<tr>
<td>17</td>
<td>(kú-)105</td>
<td>lḥáákha</td>
<td>lḥáakhó</td>
<td>lḥakhá</td>
</tr>
</tbody>
</table>

102 This initial syllable in quantitative-2 (column vii) has the segmental and tonal shape of the participial (cf. Chapter 6 §6.2.1.1).

103 Cf. §2.2.2.4 for discussion of demonstrative pronouns generally. Cf. §2.2.2.1, §2.2.6.3 for comment on behaviour and distribution of Class 17 forms in (47). Unlike some other Zone S Bantu languages (e.g. some forms of Sotho, Venda), Phuthi has no 4th position demonstrative.

104 All things being equal, one expects Class 14 2nd position to be */lhoóbwo* and 3rd position to be */lhoóbwáa*. The absence of desyllabified prefix-final [w] is due to a contour effect on labials, examined in §2.2.1.6.

105 Class 17 is structurally aberrant in that the demonstrative shapes are not predictable from the class prefix kú- (but kú- is an irregular noun class prefix, cf. discussion under locative...
It can be noted in the two charts above (46-47) that for most columns there is a distinction between two sets of morphological shapes among the prefixes, reflecting what is referred to in the Bantu literature (Meinhof 1932:40-41; Doke 1954) as ‘strong’ (48a) vs. ‘weak’ (48b,c) classes.

\[(48) \text{ Strong vs. weak / nasal noun classes in Phuthi} \]
\begin{enumerate}
\item strong (non-nasal) classes: eba- (2), li- (5), si- (7), ti- (8), ti- (10)\textsuperscript{107}, bu- (14), ku- (15/17)
\item weak classes: mu- (1, 3), Ø- (1a), mi- (4), ema- (6), i- (9)
\item (strictly) nasal classes: mu- (1, 3), mi- (4), ema- (6)
\end{enumerate}

Although elsewhere the distinction has been claimed as ‘non-nasal-bearing’ vs. ‘nasal-bearing’ class prefixes (48a vs. 48c), we cannot use the presence of a nasal consonant as a reliable guide in this work (a) because Phuthi has abandoned its nasal consonant in Class 9 \textit{i}-, and (b) because prefixless Class 1a would need to be included in the membership as a weakened (non-nasal-bearing) clone of Class 1. The simple bifurcation is between these two morphological sets: weak classes (1, 1a, 3, 4, 6, 9), and strong classes (2, 2b, 5, 7, 8, 10, 14, 15, 17).

The charts in (46-47) above distinguish between the two sets of classes in the following ways (49), where Roman numerals reflect the columns from (46-47); affixes are not tone-marked in these charts (rather, this is handled in the relevant sections of the morphology).

\textsuperscript{106} Remarkably, throughout the languages where this strong/weak division applies, Class 10 is grouped with the strong (non-weak, non-nasal) classes, even though its NC prefix sometimes includes a nasal consonant, e.g. Swati \textit{ti(N)-}, Xhosa \textit{i(z)ti(N)-}. This is because Class 9 and 10 are indistinguishable morphologically from each other in Proto-Bantu (Meeussen 1980); they are both reconstructed as \textit{*N-} (ibid.). The Southeastern Bantu (\textit{i}z\textit{i(N)-} (Zunda Nguni) / \textit{ti(N)-} (Tekela Nguni) / \textit{dij(N)-} (Sotho/Tswana) Class 10 prefix is in fact a pre-prefix, built onto the Class 9/10 \textit{N-}. Class 11 \textit{(u)lu-} (Zunda Nguni) / \textit{lu-} (Tekela Nguni, Tswana) is strong too, but is entirely absent from Phuthi (and Sotho), and from northern Xhosa dialects contiguous to the Phuthi-speaking regions. All other upper noun classes in Southeastern Bantu (e.g. the extended set in Venda: 16-18, 19, 20, 21) are strong too. Cf. §2.2.6.3 for discussion of Phuthi Classes 16-18, and also the productive locative ‘class’: 25.
### Distinction between strong and weak Phuthi noun classes

<table>
<thead>
<tr>
<th>Column #</th>
<th>Strong</th>
<th>Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>class prefixes do not contain a nasal consonant</td>
<td>class prefixes contain a nasal consonant, except Cl.1a, 9</td>
</tr>
<tr>
<td>ii</td>
<td>adjective prefixes are CVCV- and do not contain a nasal</td>
<td>adjective prefixes are CVNV-, or CVN- (where N is syllabic); except Cl.9 (la-), 10 (leti-).</td>
</tr>
<tr>
<td>iii</td>
<td>relative prefixes are CVCV-</td>
<td>relative prefixes are CV-</td>
</tr>
<tr>
<td>iv</td>
<td>subject prefixes are CV-</td>
<td>subject prefixes are V-</td>
</tr>
<tr>
<td>v</td>
<td>object prefixes do not contain a nasal or glide onset</td>
<td>object prefixes contain a nasal or glide onset</td>
</tr>
<tr>
<td>vi</td>
<td>quantitative-1 prefixes do not begin with a glide or laryngeal</td>
<td>quantitative-2 prefixes begin with a glide or laryngeal (hθ-)</td>
</tr>
<tr>
<td>vii</td>
<td>quantitative-1 prefixes do not begin with a glide or laryngeal</td>
<td>quantitative-2 prefixes begin with a glide or laryngeal (hθθ-)</td>
</tr>
<tr>
<td>viii</td>
<td>copulative prefix is only non-segmental (breathiness)</td>
<td>copulative has gV- preprefix or is glide-initial (except Cl.2b, which exceptionally takes yθi-)</td>
</tr>
<tr>
<td>ix</td>
<td>associative prefix is never glide-initial; and is not breathy</td>
<td>associative prefix is glide-initial; and is breathy</td>
</tr>
<tr>
<td>x</td>
<td>enumerative prefix is never glide-initial; and is not breathy</td>
<td>enumerative prefix is glide-initial; and is breathy</td>
</tr>
<tr>
<td>xi</td>
<td>1st position demonstrative is CVCV</td>
<td>1st position demonstrative is CV</td>
</tr>
<tr>
<td>xii</td>
<td>2nd position demonstrative does end in -Co (C is not a glide)</td>
<td>2nd position demonstrative ends in -wo or -yo</td>
</tr>
<tr>
<td>xiii</td>
<td>3rd position demonstrative ends in -Caa (C is not a glide)</td>
<td>3rd position demonstrative ends in -waa or -yaa</td>
</tr>
</tbody>
</table>

Noun classes and some associated prefixes are exemplified in (50b-o); (50a) indicates the structure of these sentences schematically (‘NC#’ = ‘noun class number’; ‘N.STEM’ = ‘noun stem’; ‘ADJ.STEM’ = ‘adjective stem’; ‘VB.STEM’ = ‘verb stem’; ‘REL.STEM’ = ‘relative stem’; ‘DEM’ = ‘demonstrative’\(^\text{108}\), ‘SP’ = ‘subject prefix’; ‘OP’ = ‘object prefix’). Each noun class is instantiated

\(^{108}\) The ordering exemplified here is Noun-Demonstrative, which typifies Mpapa Phuthi (and is typically the only ordering in Sotho); but Demonstrative-Noun is also possible, especially in
twice in the relevant sentence, once as the subject and once as the object: NP1 (noun, adjective, demonstrative, SP-) + V + NP2 (-OP-, noun, relative).

(50) Noun classes and prefixes exemplified

a. NC#-n_stem NC#_ADJ-adj_stem NC#_DEM SP_NC#-ya-OP_NC#-vb_stem NC#-n_stem NC#_REL-rel_stem

NC1-person NC1_ADJ-beautiful NC1_this SP_NC1-T/A-OP_NC1-look_for NC1-boy NC1_REL-good person beautiful this s/he him/her-look_for boy good
This beautiful person is looking for the good boy.

c. ébá-tfu lába-hlé lhába bá- ya- ba- fúna ébá-zwalí lábá-lugi[yé
NC2-person NC2_ADJ-beautiful NC2_this SP_NC2-T/A-OP2-look_for NC2-boy NC2_REL-good person beautiful these they them-look_for boy good
These beautiful people are looking for the good boys.

d. Ø-ṃmá lámu-hlé lhó ú- ya- mu- fúna Ø-ntaté lá-lugi[yé.
NC1a-lady NC1a_ADJ-beautiful NC1a_this SP_NC1a-T/A-OP_NC1a-look_for NC1a-man NC1a_REL-good person beautiful this s/he him/her-look_for man good
This beautiful lady is looking for the good gentleman.

e. bó-ṃmá lába-hlé lhába bá- ya- ba- fúna bó-ntaté lábá-lugi[yé.
NC2b-lady NC2b_ADJ-beautiful NC2b_these SP_NC2b-T/A-OP_NC2b-look_for NC2b-man NC2b_REL-good person beautiful these they them-look_for man good
These beautiful ladies are looking for the good gentlemen.

NC3-mongoose NC3_ADJ-pretty NC3_this SP_NC3-T/A-OP_NC3-look_for NC3-river NC3_REL-right mongoose pretty this s/he it-look_for river right
This pretty mongoose is looking for the right river.

g. mí-tjhállá lémi-hlé lhé í- ya- yi- fúna mí-labho lé-lugi[yé.
NC4-mongoose NC4_ADJ-pretty NC4_these SP_NC4-T/A-OP_NC4-look_for NC4-river NC4_REL-right mongoose pretty these they them-look_for river right
These pretty mongooses are looking for the right rivers.

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Sigxodo Phuthi (and is the default ordering in Xhosa); cf. discussion in Chapter 1 §1.1.5.4.
These pretty twins are looking for the right doctor.

This beautiful community (of prayer) is looking for the right (real) food.

These pretty singers are looking for the right dresses.

These pretty judges are looking for the right hearts.

This pretty judge is looking for the right heart.

These pretty singers are looking for the right dresses.

This pretty judge is looking for the right heart.

These pretty judges are looking for the right hearts.

This beautiful community (of prayer) is looking for the right (real) food.
This beautiful (act of) giving seeks the right (act of) respect(ing).

2. 2. 1. 2. Noun prefix allomorphy

In principle, all noun prefixes have an allomorph distinct from the default form supplied in (46, column i) which allomorph is phonologically conditioned by historically (now rare) vowel-initial roots, e.g. Class 6 em- (not ema-), Class 7 s- (not si-), Class 8 t- (not ti-), as in (51a-f). In some cases, the full prefix is rebuilt (51g-h) even at the expense of uniformity of exponence (since there are now two instantiations of each prefix); this would seem to indicate the low tolerance in the language for C- (as opposed to CV-) prefixes. The same happens with fused V-initial stems in Class 14 (regionally common): ‘beer’ (52a), ‘grass’ (52b), ‘wool/fur’ (52c), as introduced, with proto-forms, in §2.1.5 (19).

(51) Noun Prefix allomorphy: vowel syncope

a. ém-aadlə power, strength
b. *éma-aadlə
c. s-áádlə hand
d. *sí-aadlə
e. t-áádlə hands
f. *tí-aadlə
g. sí-saadlə [reconstructed full prefix]
h. tí-taadlə [reconstructed full prefix]

(52) Fused prefix-stem

Phuthi Proto-SE Bantu gloss
a. ūjwaalá *bú-alá beer¹⁰⁹
b. ūjwáaní *bú-áni grass
c. bboooyá *bú-oyá fur, wool

¹⁰⁹ In just these limited three cases, [3] <j> and [6] <b> can bear contrastive pitch information (contra Silverman 1997:110)—that is, tone—though only when morphologically assigned (by noun prefix, or by copula prefix). Prefixal [3] also bears contrastive phonation type
Historically vowel-initial stems are now very rare in Phuthi, due to glide-insertion and vowel-deletion processes, which have eliminated almost all vowel-initial stems, cf. Chapter 1 §1.1.7.4 (47). Vowel-initial stems in recently loaned items remained unintegrated into any of the three processes referred to: prefix allomorphy, glide-insertion, vowel-deletion. Rather, they trigger insertion of a default laryngeal consonant [ʔ], which serves to provide a weak onset at the stem left-edge (53a,d,g), but some productions of the citation form of such nouns lack the glottal stop, allowing a truly empty onset consonant (53b,e,h). The glottal stop onset precludes prefix reshaping in the form of glide-insertion or vowel-deletion (53c,f,i). All three words in (53) are transparently loaned from Sotho (right-hand column), which language also has optional glottal stop onsets\textsuperscript{110}; the second word is almost certainly from English, though not directly (likely via Sotho).

\begin{tabular}{ll}
(53) & \textbf{Glottal-stop onset with vowel stems} & \textbf{Sotho} \\
  a. & mú-ʔáhlúúl-ʔ & judge & mu-(ʔ)áhlúúl-ʔ \\
  b. & mú-áhlúúl-ʔ & & \\
  c. & *mw-áhlúúl-ʔ & & \\
  d. & í-ʔáwaara & hour & (ʔ)áwaara; (cf. Eng. hour); also SS.: hórá \\
  e. & í-áwaara & & \\
  f. & *y-áwaara & & \\
  g. & kú-ʔaráába & to answer & hu-(ʔ)aráába \\
  h. & kú-aráába & & \\
  i. & *kw-aráába & & \\
\end{tabular}

(breathy voice / depression), inserted on the copula prefix: \textit{jjwáalá} ‘it is beer’, \textit{jjwáani} ‘it is grass’. One would expect the same for the third word in this list, but implosive \textit{[b]} \textit{<b>} seems not to support breathiness, which is hardly surprising given the conflicting demands on airflow that would ensue (breathy pulmonic egressive vs. implosive glottalic ingressive). Rather, the copula is \textit{ḥbôoyá} ‘it is wool/fur’ with low (depressed) tone on the first syllable, but no breathiness. There is a set of alternative forms for ‘beer’ and ‘wool/fur’ (but not ‘grass’, somewhat inexplicably), where there is no syllabic prefix at all, but rather the prefix tone is retained inside the stem: \textit{jwáalá} ‘beer’, \textit{bôoyá}; these forms have the following corresponding copulatives: \textit{jwáalá} (with breathy rising-falling penult), \textit{bôoyá}. In addition, in Sigxodo, there is an alternant of the three which involves the generic copula prefix \textit{yr-}.

\textsuperscript{110} All three words reveal stems commencing with the vowel /a/, though no immediate significance is attached to the quality of this vowel (in the present data set, however, I have recorded no lexical items commencing with any of the other six (or eight) vowels).
2. 2. 1. 3. Noun tone morphology

There are prosodic properties specific to noun morphology (54).

(54) Noun-specific prosodic properties
  a. Every noun prefix carries a H tone specification in citation\(^{111}\) form;
  b. Every noun stem-syllable can be lexically specified independently (as H or toneless);

(54a) has already been demonstrated by examples with H noun prefixes in (45) above.
(54b) gives rise to \(2^n\) tone combinations for a noun of \(n\) syllables long. This is exemplified in
with a complete set of monosyllabic stems (55) and bisyllabic stems (56), given both without and
with their prefix tone present (as post-negative and citation forms, respectively).

(55) Monosyllabic stems

<table>
<thead>
<tr>
<th>stem tone</th>
<th>post-negative(^{112})</th>
<th>citation</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø</td>
<td>...muu-tfu</td>
<td>müü-tfu</td>
<td>person</td>
</tr>
<tr>
<td>H</td>
<td>...muu-sí</td>
<td>müu-sí</td>
<td>smoke</td>
</tr>
</tbody>
</table>

(56) Bisyllabic stems

<table>
<thead>
<tr>
<th>stem tone</th>
<th>post-negative</th>
<th>citation</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ØØ</td>
<td>...mu-tfwaana</td>
<td>mü-tfwaana</td>
<td>child</td>
</tr>
<tr>
<td>ØH</td>
<td>...mu-hlaabá</td>
<td>mü-hlaabá</td>
<td>ground, soil</td>
</tr>
<tr>
<td>HØ</td>
<td>...mu-tááli</td>
<td>mü-tááli</td>
<td>parent</td>
</tr>
<tr>
<td>HH</td>
<td>...mu-khóotí</td>
<td>mü-khóotí</td>
<td>friend(^{114})</td>
</tr>
</tbody>
</table>

\(^{111}\) That is, in ‘non-post-negative’ form (cf. footnote 113 below). The morphosyntactically
specified prefixal H is underlined just in these sections (§2.2.1.3, §2.2.1.4), to make the
underlying tonal status of the prefix clear, according to morphosyntactic frame. Systematic
diacritic underlining of underlyingly H syllables commences only in Chapter 4 §4.1.4.7 (62),
§4.3.1 (94), §4.3.2.1 (95-98,100).

\(^{112}\) ‘Ø’ indicates what in other works may be referred to what is analysed in the content
chapters (4 through 7) as ‘toneless’.

\(^{113}\) Post-negative nouns display no prefix H tone, in the absence of which the stem tones are
salient; the post-negative syntactic frame is triggered by a preceding negative verb without
definite direct object (i.e. without object prefix or full object noun phrase), e.g. akábóni... ‘S/he
doesn’t see (any)...’. Citation form nouns do display the prefix H.

\(^{114}\) Penult phonetic falling tone (as a manifestation of H) was demonstrated in §2.1.1 (3b);
the details are discussed in Chapter 5 §5.3.
As already seen in §2.1.6.4, §2.2.1.1 (43b,44b), noun suffixes are not typically specified for H tone, except one variation of the augmentative (cf. §2.2.1.5 below). Diminutive, double diminutive and augmentative are exemplified in §2.2.1.5 (61-64).

2. 2. 1. 4. Locatives

The pan-Bantu category, locative\textsuperscript{115}, is realised uncontroversially in Phuthi as a morphological variation of the citation form noun. There are three types of locative: (a) general (with non-human complement), indicated by obligatory prefix \textit{e}- and (mostly obligatory) suffix \textit{-eni} / \textit{-i} \textsuperscript{116} (subject to vowel harmonic selection, as seen in §2.1.6.1 (22,30) above); (b) human locatives\textsuperscript{117}, with obligatory prefix \textit{ku}- (no suffix) and human complement; (c) human \textit{chez}-locatives, where the locative indicates ‘at the place of X’. All three types of locative are highly productive.

In the locative construction, the locative prefix itself (any of the three) is tonally H, but the noun’s prefix H tone is no longer in evidence (57a-c). When the noun prefix \textit{is} tonally H, this is merely the effect of H extension (‘spread’) from the locative prefix \textit{é}- (57d-g) (where the source syllable is underlined)\textsuperscript{118}, or this is where the noun prefix is completely replaced by the locative prefix, in Class 9 (57h-i) and 6 (57j-k), both of whose prefixes commence with an onsetless vowel.

\begin{footnotes}
\footnotetext[115]{In the structuralist-functional work of Doke (1935, 1954, 1984), locatives are treated as a variety of adverb. I include the discussion here under nouns, because they are so saliently built on noun root morphology. Locatives-as-adverbs is resumed in §2.2.6.3, where the ‘in(side)’ prefix \textit{gé}- is introduced.}
\footnotetext[116]{The productive prefix-and-suffix (non-human) locatives have been examined with respect to vowel harmony in §2.1.6.1 (29-30), §2.1.6.4 (35-38).}
\footnotetext[117]{Though the semantic criterion of humanness is salient here, it is generally only the humans in the ‘dedicated’ human noun classes (Class 1,1a) that require \textit{ku}- . Humans in other classes may take \textit{e-}...\textit{eni}.}
\footnotetext[118]{This will only become clear after the tone-extension principles in Chapters 4 and 5 have been considered: every H tone source syllable tries to extend the H tone rightwards to the antepenult syllable (cf. 57d,g,i,k), subject to principles such as the anti-adjacency Obligatory Contour Principle (OCP), which will prevent rightwards realignment of a H preceding a second H (cf. 57a,b,c,e,f,j,k).}
\end{footnotes}
(57) Non-human locatives: prefix, suffix

a. mú-sí smoke é-mu-s-íni to the smoke

b. lí-búúru farmer é-li-búrw-íni to the farmer

c. éma-ngóoló letter é-ma-ngólw-ééni to the letters

d. múú-ti tree é-mú-t-éeni to the tree

e. mú-li itsí tail é-mú-liits-íni to the tail

f. lí-beelé sorghum é-lí-bel-ééni to the sorghum

g. lí-xheegu old man é-lí-xhégw-íni to the old man

h. ú-jhä dog é-jh-ééni to the dog

i. í-hlooko head é-hlókw-ééni to the head

j. émaa-lí blood é-ma-l-ííni to the blood

k. émá-qhweelé pieces of string é-má-qhwel-ééni to the pieces of string

---

119 (57g) is clearly an apparent exception to this; cf. footnotes 133-134: it may be that this category of locatives in (57) should rather be called non-Class 1/1a/2/2b locatives, since (a) the bulk of humans fall into Class 1/1a/2/2b, taking the ku-locative in (59) below; (b) the humans in other noun classes (5/6, 7/8, 9/10) also take this prefix+suffix locative configuration in (57).

120 These can also be glossed as ‘in / at / on / from X’. I select ‘to’ to cover these alternatives. The specific ‘in’ reading is produced by a locative pre-prefix: g(é)- (cf. discussion in §2.2.6), which is added to an é-...ini locative.

121 It is not the first syllable of the locative suffix in (57c-e) that is tonally H, but rather the second of the two lexically specified H syllables in the noun stem that perseveres and is parsed on the penult suffix syllable, cf. Chapter 5 §5.6.1 on noun tones.

122 This clearly does not have non-human reference, but it seems that humans in non-Class 1/1a/2/2b noun classes also require the prefix+suffix locative formation being shown in (57); cf. footnote 131.

123 The string of H syllables in this locative (57g) all emanate from a single underlying H, here, on the locative prefix. By the tone expansion principles to be articulated in Chapter 4, the H extends to the antepenult syllable.
In some non-human locatives there is no suffix (58a-h), especially with referentially specific nouns (58a-b), but also with certain common time and space phrases (58c-h)\(^{124}\). Some of the time and space phrases do, however, select the locative suffix if the locative head noun is modified by a following relative clause (58i-l).

\[(58)\] Non-human locatives: prefix only

\begin{itemize}
  \item a. í-Líšúuthú \quad \text{Lesotho} \quad \text{é-Líšúuthú} \(^{125}\) \quad \text{in Lesotho}
  \item b. í-Khéyípthaawun\(^{126}\) \quad \text{Cape Town} \quad \text{é-Khéyípthaawun} \quad \text{in Cape Town}
  \item c. bú-súukú \quad \text{night} \quad \text{é-bu-súukú} \quad \text{at night}
  \item d. lí-tụjụlụ \quad \text{sky, heaven, top} \quad \text{é-tụjụlụ} \(^{127}\) \quad \text{on top (*in heaven}^{128}\)
  \item e. lí-kwiidlá \quad \text{autumn} \quad \text{é-kwiidlá} \(^{129}\) \quad \text{in autumn}
  \item f. éma-rúyá \quad \text{winter} \quad \text{é-ma-rúyá} \(^{130}\) \quad \text{in winter}
  \item g. sí-liimo \quad \text{year; spring season} \quad \text{é-sí-liimo} \quad \text{in spring}
  \item h. lí-hloobo \quad \text{summer} \quad \text{é-hloobo} \quad \text{in summer}
\end{itemize}

\(^{124}\) The locative é- replaces an onsetless vowel in (57h-i) for Class 9, and in (57j-k) for Class 6, because é- + í- [noun prefix] or é- + é- [noun prefix] is not phonologically parsable as it stands. But in some instances (58d-f), locative é- also appears to replace Class 5 prefix lí-. This replacement is much more surprising, given that the locative prefix is an ‘additive’ prefix, not triggering the morphological removal of the noun prefix, and given that é- + lí- is parsable (and there are many well-formed such Class 5 locatives). The Class 5 phrases only take a suffix when the locative head has a complement phrase that follows (58i,l); other conventionalised time/space locatives (here: Class 5,7) behave similarly (58j,k). There are few fixed Class 5 locative phrases. Older people in Mpapa are reported to say éLísúutfú ‘in Lesotho’ (with labialised coronal, cf. general claims in §2.1.2), but this is strongly dispreferred among younger speakers.\(^{125}\)

\(^{126}\) This is a somewhat arbitrary transcription of what amounts to a code-mixed proper noun with default tone pattern (that is, with a H penult); í-Khéípthaawun is also possible, given that non-Phuthi diphthongs are frequently uttered as diphthongs ‘in’ Phuthi, especially by multilingual speakers (presumably with more than one parallel phonological grammar, or with a hybrid phonology. H should normally reach the antepenult -p(i)-.\(^{127}\)

\(^{127}\) There is a fuller set of these time/space locatives offered in §2.2.4.3.

\(^{128}\) This word has resolved its polysemy morphologically: é-tụjụlụ ‘on top (*in heaven, *in the sky’); vs. é-lí-tűlw-jịnjị ‘in heaven, in the sky (*on top’).\(^{129}\)

\(^{129}\) This word is typically one of a very small set of Class 15 (non-infinitive) nouns in Nguni, pace et contra Doke (1984:62), who indicates somewhat obliquely these are Class 17 nouns, based on their non-verb status. Phuthi, like Sotho, has eliminated such remnant nouns, in this case reanalysing kw- as part of the stem, and reassigning the noun to Class 5 (with a new prefix).\(^{130}\)

\(^{130}\) These two forms (‘in winter’) have identical surface tone forms, but differing underlying morphological and tonal structure.
i. é-kwidl-éni lélí-taa-kó  

...  

next autumn (lit. ‘in the autumn which is coming’)  

j. é-ma-ríy-éni lá-taa-kó  

next winter (lit. ‘in the winter which is coming’)  

k. é-sí-lím-eni lésí-taa-kó  

next spring (lit. ‘in the spring which is coming’)  

l. é-hlób-eni lélí-taa-kó  

next summer (lit. ‘in the summer which is coming’)  

Class 1,1a,2,2b ‘human’ nouns select the ku- locative prefix, with no suffix (59a-g). Occasionally there is an optional locative prefix+suffix configuration with a Class 1 or Class 2 noun, such as (59h,j,l).  

(59)  

Human locatives: prefix only  

a. ŋtàaté father    kú-ňtàaté to father  

b. bó-ňtàaté fathers    kú-bó-ňtàaté  

135 to fathers  

c. mːmá mother    kú-mːmá to mother  

131 Only the phrase-penult is durationally long. The target for H expansion in the locative noun appears to remain the antepenult; H only appear to ‘reach’ the penult in (58i-j) because that root ultima syllable is a H tone sponsor. (58k-l) make it clear that the H tone source in nouns does not extend to the phrase-medial penult syllable, contra the claim to be made in Chapter 4 §4.5. That is, the locative appears to constitute a phrase in its own right (even though its penult is not phonologically long). In these modified phrases, the noun prefix of those nouns whose prefix is deleted in the unmodified locative phrases (58i,l) may optionally reappear:  

(58i) é-kwidl-éni... or é-lí-kwidl-éni...; (58l) é-hlób-eni... or é-lí-hlób-eni...  

As the syntax of locatives (and of phrasal tonology, in general) has not been fully investigated, it is not clear in (58i) whether the anticipated depressor shift (based on Chapter 7 §7.4.1) occurs.  

132 This labial-final stem fails to palatalise in the locative, underlining the no longer productive behaviour of this process; cf. discussion in §2.2.1.6.  

133 Classes 1 and 2 contain exclusively human noun referents; Classes 1a and 2b contain mostly human referents (but some non-humans too, all of which also take the ku- locative).  

134 While ku- is the default for Class 1/1a/2/2b, it is not entirely clear what the distribution is of the two locatives in these instances (59g-h,i-j,k-l).  

135 According to what has been demonstrated in (57a-c), the Class 2b prefix in this locative construction should not be specified as underlyingly H. And yet the opaque nature of Class 2b prefixes (e.g. their opacity to vowel harmony, cf. §2.1.6.4 footnote 78) suggests that bó- may remain H even in locatives. This cannot be established yet, because no data has been recorded where bó- occurs at an antepenult-penult boundary (in which case we may expect a downstep preceding bó- in the light of positional downstep properties (cf. Chapter 5 §5.5.1 (142)).
d. Thulááng [proper name] kú-Thulááng to Thulang (SS. orthography: Tholang)
e. múú-tfu person kú-múú-tfu to a person
f. ébáá-tfu people kú-báá-tfu to people
g. mú-tfwaana child kú-mú-tfwaana to a child
h. mú-tfwáá-tni or é-mú-tfwán-eeni to a child
i. úu-fó man kúu-fó to a man
j. or é-fw-ééni
k. ú-fó-nyaana tiny man kú-fó-nyaana to a tiny man
l. or é-fó-nyán-eeni

Finally, the set of chez-locatives are formed with (highly productive) ka-\(^{136}\) (60). They are built exclusively off proper nouns (60a-b) or personal pronoun roots (60c-f).

(60) Chez-locatives: prefix only
a. ká-Mpaapá at Mpaapa (originally: ‘at the place of [someone called] Mpaapa’)
b. ká-Sáyímooni at Simon’s place
c. káá-mí at my place (lit. ‘at me’)
d. ká-lí-kwáá-mí at my place (lit. ‘at [the place: Class 5\(^{138}\)] of me’)
e. ká-lí-kwáákho at your place (lit. ‘at [the place: Class 5] of you’)
f. ká-lí-kwáákhé\(^{139}\) at his/her place (lit. ‘at [the place: Class 5] of him/her’)

\(^{136}\) This chez-locative ka- (also ka- in Swati) corresponds to kwa- in Zunda Nguni (and ha- in Sotho). Both ka- (60) and ku- (59) (as well as Zunda kwa-) are likely derived from Class 17 *ku-, cf. §2.2.6.3 below.

\(^{137}\) The Phuthi-isation of a foreign name, such as Simon, is currently not even provided with an expressed final vowel -i; rather the name would be Sáyímooni (syllabification requirements have been eased, particularly with sonorant-final syllables loaned into Phuthi); the lengthened vowel -oon, however, indicates that it is still the phonological penult.

\(^{138}\) It is common in Nguni to use a Class 5 pronoun affix to signal ‘the place’ of a person (possibly from li-pháási ‘country’).

\(^{139}\) Tone sponsor-marking (underlined vowels indicate lexical H) ceases here until Chapter 4.

119
2. 2. 1. 5. Diminutives, augmentatives

Data from both diminutives and augmentatives has already been considered by way of vowel harmony properties: §2.1.6.4, §2.2.1.1. There are two diminutive suffixes: -ana (non-productive), -nyana (productive). Both indicate discrete semantic diminution, as opposed to merely ‘small’; Diminutive 1 (-ana) is often lexicalised somewhat more erratically than Diminutive 2 (-nyana) (61).

<table>
<thead>
<tr>
<th>Diminutive base</th>
<th>Diminutive 1</th>
<th>Diminutive 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. íí-dlu house</td>
<td>í-dlw-ana box, toilet</td>
<td>í-dľų-nyáana tiny house</td>
</tr>
<tr>
<td>b. múú-tfu person</td>
<td>mú-tfw-ana child</td>
<td>mú-tľų-nyaana tiny person</td>
</tr>
<tr>
<td>c. mú-řůduwa student</td>
<td>mú-řůdw-ana student</td>
<td>mú-řůduwa-nyáana tiny student</td>
</tr>
<tr>
<td>d. mú-laabḥo river</td>
<td>mú-lāj-ana stream</td>
<td>mú-laabho-nyáana tiny river</td>
</tr>
<tr>
<td>e. úu-fó man</td>
<td>ú-fw-ana young man (patronising)</td>
<td>ú-fő-nyaana tiny man</td>
</tr>
</tbody>
</table>


140 I will also consider a third, non-productive suffix: -atana, cf. (63) below.
141 This literally means ‘one being taught’, which is any kind of student, but this is not the standard lexicalisation for ‘student’ (Diminutive 1 is the standard form). In addition, one would expect *mú-řůduwa, not mú-řůduwa; but the passive (from which this noun is derived) requires its long form allomorph in phrase-final position (cf. §2.2.2.2 below, on verb extensions).
142 The distribution of H tone in words such as (61c,d; 62b,c,e, 63a,c below) which contain a depressed (breathy voiced) syllable earlier than the penult will only become clear after extended discussion in Chapter 7. Basically, post-stem-edge pre-depressor syllables are toneless (§7.3).
143 While there is in principle no upper ceiling on how many times a diminutive (or augmentative) can be suffixed, in practice this rarely happens more than twice (and then only under extranormal discourse conditions, e.g. to indicate extreme emphasis).
(62) **Double diminutives**

<table>
<thead>
<tr>
<th>Diminutive base</th>
<th>Single diminutive</th>
<th>Double diminutive</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. íi-tfó</td>
<td>í-tfó-nyaana</td>
<td>í-tfó-nyáná-nyaana</td>
</tr>
<tr>
<td>b. mú-laabho</td>
<td>mú-labho-nyaana</td>
<td>mú-labho-nyaáná-nyaana</td>
</tr>
<tr>
<td>c. mú-laabho</td>
<td>mú-lájh-aana</td>
<td>mú-lájh-aná-nyaana</td>
</tr>
<tr>
<td>d. múú-tfu</td>
<td>mú-tfw-aana</td>
<td>mú-tfw-áná-nyaana</td>
</tr>
<tr>
<td>e. mú-zwaalí</td>
<td>mú-zwaal-aána</td>
<td>mú-zwaal-aná-nyaana</td>
</tr>
<tr>
<td>f. í-bhutú</td>
<td>í-bhut-áána</td>
<td>í-bhut-áná-nyaana</td>
</tr>
</tbody>
</table>

Finally, there is a small number of non-productive diminutive forms\(^{144}\) (sometimes indicating a female referent, or a derived female referent), built with -atana (63a-c), which we could call Diminutive 3. Such a form does not preclude the productive diminutive suffix -nyaana (63a-c, columns 3 and 4).


(63) **Non-productive -atana diminutives**

<table>
<thead>
<tr>
<th>Base</th>
<th>Diminutive 3</th>
<th>Diminutive 2</th>
<th>Diminutive 3 + Diminutive 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. lí-xheeg</td>
<td>lí-xhegw-átáana</td>
<td>lí-xhegu-nyaana</td>
<td>lí-xhegw-átáná-nyaana</td>
</tr>
<tr>
<td>b. í-nyaama</td>
<td>í-nyaám-átáana</td>
<td>í-nyaáma-nyaana</td>
<td>í-nyaám-átáná-nyaana</td>
</tr>
<tr>
<td>c. í-tfóobhi</td>
<td>í-tfobh-átáana</td>
<td>í-tfobhí-nyaana</td>
<td>í-tfobh-átáná-nyaana</td>
</tr>
</tbody>
</table>

The augmentative suffix adduced in previous sections is toneless -kati (which we can call Augmentative 1). But there is a H-bearing alternative (which has a superclose final vowel), -kátį

---

\(^{144}\) This suffix is regionally common in Nguni, and frequently only semi-productive.

\(^{145}\) This is not a large animal which happens to be small, but a categorically small animal (e.g. mouse, squirrel).

\(^{146}\) There is also a Diminutive 1 form (reflecting palatalisation of the stem-final consonant, cf. (66j): í-tfojh-aána ‘young woman (towards younger end of age spectrum)’.
(Augmentative 2). Both allomorphs are productive, as exemplified in (64); there appears to be no conditioning environment for the appearance of either, other than idiolectal (or stylistic) choice.

(64) Augmentative suffix allomorphs

<table>
<thead>
<tr>
<th>Base</th>
<th>(gloss)</th>
<th>Augmentative 1 (gloss)</th>
<th>Augmentative 2 (gloss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. íi-tfó</td>
<td>thing</td>
<td>í-tfó-kaati</td>
<td>í-tfó-káatí</td>
</tr>
<tr>
<td>b. múú-tfu</td>
<td>person</td>
<td>mú-tfú-kaati</td>
<td>mú-tfu-káatí</td>
</tr>
<tr>
<td>c. íí-d</td>
<td>house</td>
<td>í-dlí-u-káati</td>
<td>í-dlí-u-káatí</td>
</tr>
</tbody>
</table>

2. 2. 1. 6. Palatalisation

It was remarked in §2.1.2 that Phuthi displays evidence of a now frozen phonological process typically referred to in Southern Bantu as palatalisation, cf. Doke (1935:158; 1954:39-40; 1982:13), Herbert (1977, 1990). Phuthi retains the effects of this process, albeit in an inconsistent way, reflecting the hybrid history of the language. The essential observation is that Phuthi (and Southern Bantu, generally\textsuperscript{147}) strongly disprefer (or, at least, used to disprefer) a sequence of [labial] consonants; in effect, this amounts to a banned sequence consisting of labial consonant [p’, pʰ, b, bʰ, m] and labial glide [w]. Such a forbidden sequence can be construed as an OCP violation on [labial] (65a). In its place, Phuthi supplies palatalisation as the default repair strategy (subject to morphological conditioning, cf. (66-68) below), where the first in the labial consonant sequence is resolved as [coronal, –anterior], that is, palatal.

(65) Resolving the Southern Bantu OCP effect on [labial]

<table>
<thead>
<tr>
<th>feature clash</th>
<th>feature resolution</th>
<th>example</th>
<th>languages affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>*[labial][labial] &gt; [coronal][labial]</td>
<td>[bw] &gt; [3w]</td>
<td>Phuthi, Nguni, Sotho</td>
<td></td>
</tr>
<tr>
<td>*[labial][labial] &gt; [labial][coronal]</td>
<td>[bw] &gt; [bj]</td>
<td>non-Phuthi Southern Bantu\textsuperscript{148}</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{147} There is one documented exception in the South African part of Zone S which retains unpalatalised labials: Lala (Van Dyk 1960), e.g. ímbwá ‘dog’ (vs. Phuthi íijhá).

\textsuperscript{148} This alternative resolution of the [labial] feature clash is to de-labialise [w] (short of actually deleting [w]), that is, by phonologically altering the second item in the [labial][labial] sequence sufficiently to satisfy the OCP. In some Tswana and Northern Sotho dialects *pw *bw is resolved productively as [p\̂ b₃], e.g. bwala [b\̂ascalá] ‘beer’, -hlab-w-a [hlab₃a] ‘be
The ‘palatisation’ effect is now heavily morphologised: it surfaces in the locative and diminutive (for nouns), and the passive (for verbs), and even in these constructions only irregularly. The Phuthi effect (65a) is exemplified below (66-67): diminutives (66a-u), locatives (68), passives to follow in (69a,c,e,g,i,k,m,o,p,r,t,v).

Some diminutives (66a,c,f,i,j,m) reflect palatalisation and the loss of the labial glide [w]; (66d,h,p,q,s) reflects palatalisation where the glide [w] is retained.

\(\text{(66) Palatalisation: diminutives}\)

<table>
<thead>
<tr>
<th>Base form</th>
<th>Diminutive 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>mü-goobhú pumpkin</td>
<td>mü-gojh-aána tiny pumpkin</td>
</tr>
<tr>
<td>mü-laabho river</td>
<td>mü-lájh-aana stream</td>
</tr>
<tr>
<td>mü-loomo mouth</td>
<td>mü-lóny-aana tiny mouth</td>
</tr>
<tr>
<td>mü-thaab root</td>
<td>mü-thajhw-aana tiny root</td>
</tr>
<tr>
<td>í-ťfóobhí young woman</td>
<td>í-ťfojh-aána young woman</td>
</tr>
<tr>
<td>í-ťfóobhí young woman</td>
<td>í-ťfodzw-aána</td>
</tr>
</tbody>
</table>

stabbed”; also cf. Venda *pw, *bw > [pj bj] productively. For Phuthi ‘beer’ [ʒʒwaalá], I recorded an alternative, [bʒwaalá ~ bʒaalá]. In the south, the opposite form of cluster resolution (broader than delabialisation) may also be happening: Sotho is losing its [ʒ] in forms that are already the product of delabialisation, e.g. joang [ʒwaŋ] ‘how’ is frequently heard as [waŋ].

That is, palatalisation is no longer productive anywhere in Nguni, that is, labial-final loan stems—verbs or nouns—are ineligible for consonant mutation in the form of palatalisation.

This diminutive appears to be loaned directly from Sotho without any adjustment for (one otherwise expects *mú-thajhw-aána, very similar to the attested form); but this is not the attested Sotho form; rather, Sotho has mú-thatsw-áána (SS. ‘vein/artery’), which is absent in Phuthi (would be *mú-thatsw-áána or *mú-thadzw-áána). There is, clearly, significant fluidity in the lexical membership of Phuthi in relation to Sotho. The only comfort to the linguist is that different speakers usually agree unhesitatingly on which items are Sotho or Phuthi, and which items are not found in the other language (even with adjustment for tone and voicing). That is, the lexicon is somewhat stable, even if there is significant code-mixing and even borrowing.
| m. | mú-khuupha | bread | mú-khútjh-aana | tiny loaf |
| n. | *mú-khútshw-aana |
| o. | *mú-khúph-aana |
| p. | í-thu | stick | í-thujhw-aána | tiny stick, match (for fire, cigarette) |
| q. | í-thudzw-aána |
| r. | *í-thūph-aána |
| s. | í-thiipá | knife | í-thitjw-áána | tiny knife |
| t. | *í-thitsw-áána |
| u. | *í-thip-áána |

Some Phuthi diminutives may have an allomorph (66d,q) that is an exact copy of the Sotho diminutive (with the Sotho palatalised form adjusted slightly for Phuthi, e.g. a Sotho stop or affricate is voiced in Phuthi). In these instances, the relevant Sotho forms are: mú-làpò ‘brook’, mú-làtswànà ‘stream’; thù ‘stick’, thùtswànà ‘cutting’.

Evidence that palatalisation has become morphologised is provided by the diminutive forms in (66j,m,p,s), none of which forms should invoke palatalisation at all, given that the final labial consonant does not precede a labial (round) vowel, e.g. (66j) *í-tfóbhí + -ana should produce something like *í-tfobhy-aána. Further, the ill-formed diminutives (without palatalisation, because there is no labial clash) in (66o,r,v) should be well-formed. Clearly, the process of palatalisation has been extended to ‘all labial-final stems (that is, where the last syllable contains a labial consonant), in the diminutive construction’.

The process of palatalisation has been extended yet further to stems ending in a syllable containing /l/ or /d/, that is the coronals (67), with either Sotho or Nguni (or both) phonological outputs for these diminutives (Diminutive 1, cf. §2.2.1.5 above). This overapplication features in

---

151 This diminutive form in (66j) refers to a young woman slightly younger (or slightly smaller) than the non-diminutive í-tfóbhí. There is no Sotho-esque -dzw- diminutive because this is not a common Sotho root (though, in fact, cognate thòpí ‘young girl’ does exist in Sotho).

152 This is also the hlonipha substitute for Sotho nùkà ‘river’, where hlonipha (literally ‘respect’) refers to the married woman’s taboo-avoidance lexical register common among Xhosa-speakers (Finlayson 2002, Dowling 1988) and historically present among Sotho-speakers (Mncube 1960) but unattested among Phuthi speakers.

153 Since [bj] is not a licit Phuthi onset, the palatalised labial must be resolved in some way; elsewhere in Nguni the offending palatal glide is simply deleted.

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other Nguni languages, too, such as Zulu (Khumalo 1987). (67a,c,e,g,i) are all Sotho-based diminutive forms even though not all base nouns are Sotho-origin: (67e,i) are not from Sotho. The language applies Diminutive -ana inconsistently: (67b) has no ‘palatalised’ *-dl(w)- form.

(67) Palatalisation: diminutives, ctd

<table>
<thead>
<tr>
<th>Base form</th>
<th>Diminutive 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. lí-ngóoló</td>
<td>lí-ngój-áána</td>
</tr>
<tr>
<td>b.</td>
<td>lí-ngólw-áána</td>
</tr>
<tr>
<td>c. í-phúqula</td>
<td>í-phúj-aana</td>
</tr>
<tr>
<td>d.</td>
<td>í-phúdlw-áána</td>
</tr>
<tr>
<td>e. lí-túqulu</td>
<td>lí-túj-aana</td>
</tr>
<tr>
<td>f.</td>
<td>lí-túdlw-áána</td>
</tr>
<tr>
<td>g. lí-qhweelé</td>
<td>lí-qhwej-áána</td>
</tr>
<tr>
<td>h.</td>
<td>lí-qhwendlw-gána</td>
</tr>
<tr>
<td>i. lí-tíbuulu</td>
<td>lí-tíbúj-aana</td>
</tr>
<tr>
<td>j.</td>
<td>lí-tíbúdlw-áána</td>
</tr>
</tbody>
</table>

There is no guarantee that because the diminutive resolution of a labial-labial clash (or coronal l-‘clash’) is through palatalisation, so palatalisation should be the resolution of the same clash in the locative construction (68a-f); on the contrary, locatives entirely avoid palatalisation, preferring even an (illicit) labial sequence over palatalisation. Phuthi again confirms the morphologised behaviour of palatalisation.

Similarly, there is overapplication of palatalisation in (68d), whose lexical base could be Nguni (cf. Swati lí-zulu) or Sotho (li-tsulu); the source of the supercloseness intrusion is not clear.
<table>
<thead>
<tr>
<th>Base</th>
<th>Diminutive 2</th>
<th>Locative</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-goobhu ‘pumpkin’</td>
<td>mú-goj-áána ‘tiny pumpkin’</td>
<td>é-mú-goobh-i jíni 155 to the pumpkin</td>
</tr>
<tr>
<td>b. mú-laabho ‘river’</td>
<td>mú-láj-aana ‘tiny river’</td>
<td>é-mú-laabh-eeeni to the river</td>
</tr>
<tr>
<td>c. mú-loomo ‘mouth’</td>
<td>mú-lóny-aana ‘tiny mouth’</td>
<td>é-mú-lóm-eeeni to the mouth</td>
</tr>
<tr>
<td>d. lí-túuli ‘heaven, sky’</td>
<td>lí-túj-aana ‘tiny heaven, tiny sky’</td>
<td>é-lí-túlw-jíni to heaven, in the sky</td>
</tr>
<tr>
<td>e. lí-ngóoló ‘letter’</td>
<td>lí-ngój-áána ‘tiny letter’</td>
<td>é-li-ngólw-ééni to the letter</td>
</tr>
<tr>
<td>f. lí-qhweelé ‘string’</td>
<td>lí-qhwej-áána ‘tiny string’</td>
<td>é-lí-qhwel-ééni to the string</td>
</tr>
</tbody>
</table>

Based on (68a-f), Phuthi has selected palatalisation to apply only in the diminutive, and (mostly) 156 not in the locative 157 (historically unsurprising, given there is no labialisation in the Sotho locative, because there is no vowel-vowel sequence to resolve (Sotho locative suffix is syllabic -ng). Finally, the morphologisation of the palatalisation resolution to [labial][labial] is confirmed with data from the passive. A stem-final labial consonant is sequenced with morphological verb extension -w- (cf. §2.2.2.2 below); palatalisation of the labial stem-consonant always occurs when the stem-consonant immediately precedes the passive morpheme -w- (69a,e,g,k,o vs. unresolved labial clash in 69b,f,h,l,q); when the longer allomorph -uuw- is present, palatalisation is optional (69c-d,i-j,m-n,r-s).

But the OCP effect is also relativised (as in other Nguni languages, cf. Herbert 1990) to all non-initial labial consonants in a verb stem, in all of which examples both the palatalised (69e,t,v) and unpalatalised (69f,u,w) labial consonants are acceptable allomorphs.

155 And cf. (71c) for an allomorph which still contains the -w-: é-mú-goobhw-i jíni.

156 There are a few relic palatalisation forms in the locative, cf. (70c) below: é-mú-láj-eeeni; but contrast the also high-frequency Nguni locative *é-mú-lóny-eeeni (saliently identified by multilingual Phuthi consultants as Xhosa, not Phuthi).

157 The strategies pursued in the locative to resolve the otherwise violation of the OCP effect on [labial] (68a-d) are considered immediately below, and exemplified in (70).
(69) **Palatalisation: verbs**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>bán-ya-kááp-a</td>
<td>they are chopping</td>
</tr>
<tr>
<td>b.</td>
<td>*tía-ya-kááp-w-a</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>tía-ya-káátpj-uuw-a</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>tía-ya-káápuuw-a</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>bán-ya-hlónííph-a</td>
<td>they are respecting</td>
</tr>
<tr>
<td>f.</td>
<td>*bán-ya-hlónííph-w-a</td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>bán-ya-ýéeb-a</td>
<td>they are stealing</td>
</tr>
<tr>
<td>h.</td>
<td>*tía-ya-ýéeb-w-a</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>tía-ya-ýéj-uuw-a</td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>tía-ya-ýéb-uuw-a</td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>bán-ya-kguubh-a</td>
<td>they are digging up</td>
</tr>
<tr>
<td>l.</td>
<td>*tía-ya-kguubh-w-a</td>
<td></td>
</tr>
<tr>
<td>m.</td>
<td>tía-ya-kjúuh-uuw-a</td>
<td></td>
</tr>
<tr>
<td>n.</td>
<td>tía-ya-kjúbh-uuw-a</td>
<td></td>
</tr>
<tr>
<td>o.</td>
<td>bán-ya-liima</td>
<td>they are cultivating</td>
</tr>
<tr>
<td>p.</td>
<td>tía-ya-liing-w-a</td>
<td></td>
</tr>
<tr>
<td>q.</td>
<td>*tía-ya-liim-w-a</td>
<td></td>
</tr>
<tr>
<td>r.</td>
<td>tía-ya-liýn-uuw-a</td>
<td></td>
</tr>
<tr>
<td>s.</td>
<td>(*)(tía-ya-liým-uuw-a</td>
<td></td>
</tr>
</tbody>
</table>

---

158 This ‘they’ (tí- Class 8/10) refers to inanimate referents (by default).

159 In terms of the tone domain minimalitv proposed in Chapter 4 §4.2, one expects the penult -uuw- in (68c,d,i,j,m,n) to be H, but it fails to be. This suggests that the passive suffix has inflectional status since minimalitv fails to operate across (lexical and lexically derived) stem boundaries.

160 The -uuw- allomorph does not usually occur with stems longer than two syllables. Thus, (69e-f,t-u,v-w) have no alternative forms.

161 There are two palatalised forms here: (69o) is Nguni, (69p) is from Sotho.

162 This form should be possible, but most probably because it is a high-frequency lexical item, the unpalatalised form is not readily produced.
t. bá-ya-sébét-iis-a they are using bá-ya-séjét-iis-w-a they are being used
u.

v. bá-yá-yámúk-eel-a they are admitted bá-yá-yánýúk-eel-w-a they are being admitted
w.

It has become clear from the diminutive, locative and passive morphology above that palatalisation (that is, the OCP effect on [labial]) is no longer properly active, and it is also now clear that Phuthi currently follows two strategies when faced with a [labial] sequence (if there is no palatalised allomorph—derived or loaned—already in the language): (i) delete the offending [w], e.g. locative: *Cw > C (70a-j); *tw > tfw > tf, *dw > dvw > dv$^{163}$ (70k-o); (ii) let the [labial] sequence be parsed in situ (71a-e).

(70) Labial [w]-deletion
a. lí-hloobo summer ét-hlób-eni...$^{164}$ to the summer
b. *ét-hlóbw-eni..., *ét-hlój-eni...
c. mú-laabho river ét-mú-labh-eeni, ét-mú-lách-eeni $^{165}$ to the river
d. *ét-mú-labhw-eeni

e. í-yoomó cow ét-yom-ééni to the cow
f. *ét-yomw-ééni, *ét-yonyw-ééni
g. í-tshúumó folktale ét-tshúm-ééni to the folktale
h. *ét-tshúmw-ééni, *ét-tshúnyw-ééni
i. mú-loomo mouth mú-lóm-eeni to the mouth

$^{163}$ The data in (70m-o) is based on internal reconstruction: the underlying (UR) forms must be *tfw, *dvw, because otherwise there is no triggering environment for the coronal labialisation to begin with (this is independently establishable based on comparative data from Zunda Nguni languages).

$^{164}$ The locative suffix (which should trigger the [bw] sequence) is only invoked for the season words such as ‘summer’ when the locative is followed by a modifying phrase, cf. (58i-l).

$^{165}$ In (70c), there is a well-formed palatalised alternative, but even here the offending labial [w] is not retained.
k. múu-tfu | person | mú-tf-aana | child

l. (*mú-tfw-aana)166, *mú-tw-aana

m. UR kú-tfwáála > [kú-tfáála] to carry on the head

n. UR múu-tfwá > [múu-tfá] Bushman

o. UR múu-d > [múu-d] line, welt

(71) Parsing [labial][labial] in situ

a. í-phuuphu | maize flour | é-phuíphw-eeni | to maize flour

b. úu-fó | man | é-fw-ééni | to the man

c. mú-gobhú | pumpkin | é-mú-gobhw-íñi | to pumpkin

(167) *é-mú-gobh-íñi
d. sí-múumú | lame person, | é-sí-mům-íñi | to lame person

cripple | *é-sí-můnyw-íñi

2. 2. 1. 7. Noun copulatives

Bantu languages always possess a morphological construction traditionally called ‘copula’, effectively a non-verb existential predicate. Copulatives may be built on noun, pronoun, or adjective/relative bases, but the copula prefix or prefix set remains constant.

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166 This star form is in parentheses, because it is exceedingly difficult to tell whether there is a phonetic [w] in data such as this; my impression is that in many citations, there is some acoustic footprint of the [w] in [tfw] (a secondary [w] lip gesture would typically extend throughout the entire primary articulation, but the secondary [f] gesture interferes with the uniform implementation of [w]). The [w] component in [tfw] has not yet been quantified acoustically; suffice to say, for most speakers, in allegro speech, there is no audible [w].

167 Speakers’ judgements for this item conflict: some prefer locative -hływ-; others prefer -hly-.

The copula prefix set given in (45,46vii) above (saliently constructed off noun class prefixes) is re-presented, and exemplified, in (72-73). There are two versions of the copula: the copula prefix is either a H tone sponsor-syllable (underlined)\(^{169}\) in a subset of the noun classes (the ‘weak’/‘nasal’ classes: 1/1a,3,4,6,9; and class 2b) as in (72), which prefixes are also breathy (depressed), or the copula is straightforwardly a phonational (breathy/depressed) property superimposed on the noun prefix (73) in all noun classes (except defective Class 1a, 2b).

[please turn to following page for (72) ‘Segmental copula prefix set’]

\(^{169}\) Again, the diacritic marking of underlyingly H syllables is only taken up systematically from Chapter 4 onwards. The clearest evidence that the segmental copula prefix is a H-sponsor comes from the copulative built on absolute pronouns in §2.2.1 below.
## Glosses Copula form Citation

<table>
<thead>
<tr>
<th>NC #</th>
<th>Copula Prefix</th>
<th>Class Prefix</th>
<th>Citation form</th>
<th>Copula form</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gu-</td>
<td>mū-</td>
<td>mū-tfwaana</td>
<td>gu-mū-tfwaana</td>
<td>(it is a) child</td>
</tr>
<tr>
<td>2</td>
<td>g(e)-</td>
<td>ēba-</td>
<td>ēba-tfwaana</td>
<td>g-ēba-tfwaana</td>
<td>(it is) children</td>
</tr>
<tr>
<td>1a</td>
<td>gu-</td>
<td>∅, (u-)</td>
<td>ú-ŋ:na</td>
<td>gu-ŋ:na</td>
<td>(it is) his/her mother</td>
</tr>
<tr>
<td>2b</td>
<td>yhi-¹⁷²</td>
<td>bō-</td>
<td>bō-ŋ:na</td>
<td>yhi-bō-ŋ:na</td>
<td>(it is) his/her mothers</td>
</tr>
<tr>
<td>3</td>
<td>gu-</td>
<td>mū-</td>
<td>mū-miito</td>
<td>gu-mū-miito</td>
<td>(it is a) throat</td>
</tr>
<tr>
<td>4</td>
<td>yhi-</td>
<td>mī-</td>
<td>mī-miito</td>
<td>yhi-mī-miito</td>
<td>(it is) throats</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>g(e)-</td>
<td>ēma-</td>
<td>ēmá-tiiphō</td>
<td>ge-mā-tiiphō</td>
<td>(it is) nails</td>
</tr>
<tr>
<td>7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9</td>
<td>yhi-</td>
<td>i-</td>
<td>ĭ-tshaaba</td>
<td>yhi-tshāaba</td>
<td>(it is a) mountain</td>
</tr>
<tr>
<td>10</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>14</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>15</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

¹⁷⁰ Gloss conventions: ‘(it is a) child’ indicates the non-copula citation gloss: ‘child’, and the copula citation gloss: ‘it is a child’. For ease of comparison, all stems exemplifying the copulative here are toneless (low) and bisyllabic.

¹⁷¹ In Sigxodo Phuthi, the default copula is yhi-, which can be used for any noun class, in place of the segmental copula for that class, e.g. not only gu-mū-thwaana [sic, without labialisation] ‘it is a child’, but also yhi-mū-thwaana (Sigxodo thw corresponds to Mpapa tfw). This accords with the use of the same prefix as a general copulative with pronouns (cf. §2.2.2).

¹⁷² This is the default copulative prefix, which is used together with other parts of speech (e.g. some pronouns, cf. §2.2.2 below), and also in some dialects (e.g. Sigxodo) as a productive copulative prefix with any noun class.
(73) Phonational (depressor) copula prefix set

<table>
<thead>
<tr>
<th>NC#</th>
<th>Citation form</th>
<th>Copula form</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-tfwaana</td>
<td>mú-tfwaana</td>
<td>(it is a) person</td>
</tr>
<tr>
<td>2</td>
<td>ḡá-tfwaana</td>
<td>ba-tfwaana</td>
<td>(it is) people</td>
</tr>
<tr>
<td>1a</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>2b</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>mú-míito</td>
<td>mú-míito</td>
<td>(it is a) throat</td>
</tr>
<tr>
<td>4</td>
<td>mí-míito</td>
<td>mí-míito</td>
<td>(it is) throats</td>
</tr>
<tr>
<td>5</td>
<td>lí-ttípho</td>
<td>lí-ttípho</td>
<td>(it is a) nail</td>
</tr>
<tr>
<td>6</td>
<td>émá-ttípho</td>
<td>má-ttípho</td>
<td>(it is) nails</td>
</tr>
<tr>
<td>7</td>
<td>s̱-liímo</td>
<td>s̱-liímo</td>
<td>(it is a) year</td>
</tr>
<tr>
<td>8</td>
<td>tí-liímo</td>
<td>tí-liímo</td>
<td>(it is) years</td>
</tr>
<tr>
<td>9</td>
<td>í-tshaaba</td>
<td>yhi-tsháaba</td>
<td>(it is a) mountain</td>
</tr>
<tr>
<td>10</td>
<td>tí-tshaaba</td>
<td>tí-tsháaba</td>
<td>(it is) mountains</td>
</tr>
<tr>
<td>14</td>
<td>búú-tfu</td>
<td>búú-tfu</td>
<td>(it is) humanity</td>
</tr>
<tr>
<td>15</td>
<td>kú-liima</td>
<td>ku-liíma</td>
<td>(it is) cultivating</td>
</tr>
<tr>
<td>17</td>
<td>kâ-ŋ:na</td>
<td>ku-kâ-ŋ:na</td>
<td>(it is) at his mother’s place;</td>
</tr>
<tr>
<td></td>
<td>kú-ŋ:na</td>
<td>ku-kú-ŋ:na</td>
<td>(it is) for his mother;</td>
</tr>
<tr>
<td></td>
<td>é-kú-dzeeni</td>
<td>ku-ké-kú-dzeeni</td>
<td>(it is far (lit. ‘in the far-ness’))</td>
</tr>
</tbody>
</table>

There is a negative construction counterpart to (72-73): ‘it is not...’, with two variations: a full form, and a contracted form. Noun class distinctions are neutralised in the negative. The negative copula (74) is constructed as: *así- + full copula prefix (segmental and breathy copula, or breathy copula alone on Noun Class prefix\(^{173}\)), in column 3; *así- + breathy copula, in column 4.

\(^{173}\) These two forms of the negative copula correspond to the affirmative *segmental* copula

132
<table>
<thead>
<tr>
<th>NC #</th>
<th>Citation form</th>
<th>Negative Copula full prefix</th>
<th>Neg Copula contracted prefix</th>
<th>Negative Copula form</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-tfwaana</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not a child</td>
</tr>
<tr>
<td>2</td>
<td>ébá-tfwaana</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not people</td>
</tr>
<tr>
<td>1a</td>
<td>ú-η:na</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not his/her mother</td>
</tr>
<tr>
<td>2b</td>
<td>bó-ṇna</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not his/her mothers</td>
</tr>
<tr>
<td>3</td>
<td>mú-miito</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not a throat</td>
</tr>
<tr>
<td>4</td>
<td>mí-miito</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not throats</td>
</tr>
<tr>
<td>5</td>
<td>lí-tipho</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not a nail</td>
</tr>
<tr>
<td>6</td>
<td>émá-tipho</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not nails</td>
</tr>
<tr>
<td>7</td>
<td>sí-liimo</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not a year</td>
</tr>
<tr>
<td>8</td>
<td>tí-liimo</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not years</td>
</tr>
<tr>
<td>9</td>
<td>í-tshaaba</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not a mountain</td>
</tr>
<tr>
<td>10</td>
<td>tí-tshaaba</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not mountains</td>
</tr>
<tr>
<td>14</td>
<td>búu-tfu</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not humanity</td>
</tr>
<tr>
<td>15</td>
<td>kú-liima</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not cultivating</td>
</tr>
<tr>
<td>17</td>
<td>é-kú-dzeeni</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>ásí-śj-ú-</td>
<td>it is not far (lit. it is not in the far-ness)</td>
</tr>
</tbody>
</table>

(72), and the affirmative phonational copula (73). The negative copula prefixes in (74) behave differently to the negative conjunctive copulative (in §2.2.5 below), where phonological (and morphological) breathiness is absent in the negative.

For class prefixes that contain the vowel [u] (Classes 1/1a/3/14/15), there is an alternative harmonised form of the negative prefix: ásí-, e.g. ásí-śj-ú-tfwaana ‘it is not a..."
2.2.2. PRONOUNS

Bantu languages generally have a rich range of pronouns, all built off noun class prefix morphology. Phuthi has three basic sets: absolute (§2.2.2.1), possessive (§2.2.2.2) and demonstrative (§2.2.2.3).

2.2.2.1. Absolute pronouns

As in any Bantu language, there are independent pronominal forms in Phuthi that identify a noun under conditions of appositional, usually emphatic, discourse reference. They are mostly (but not entirely, e.g. Class 1/1a) derivable from an instantiation of the noun class prefix, built onto a fixed morphologically complex base -o-ná, most likely a sequence of nominalising suffix -o and dummy ‘stabiliser’ (Gowlett 1984) suffix -ná (where the stabiliser can be eliminated in prefixed forms of the pronoun); -ná fulfils requirements of lexical minimality, in the light of McCarthy & Prince (1986, 1993a, 2001). The dummy suffix has an allomorph -né for the personal pronouns (rows 1ps, 1pp, 2pp).

The full set of absolute pronouns, including personal pronouns, is given (in phrase-final form) in (75); for the personal pronouns in the first four rows, the subject prefix (SP) is supplied in parentheses under ‘Noun Class Prefix’, since there is no non-pronoun base for these forms. The pronoun base in (75) column ν occurs following an associative prefix (cf. §2.2.1.1 (46), column ix, §2.2.2.2, §2.2.2.3), conjunctive lhà- ‘and’ (§2.2.5), instrumental adverb gá- [1], or adverbial formative gagá- (§2.2.6.2).

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child’; cf. also comments on así- under copulative negative for the absolute pronouns (§2.2.2.1). 175 As common in Bantu, there is a low-level morphological filter that requires stems to consist minimally of two syllables; where this fails, dummy affixes are inserted, here: -ná / -né; elsewhere yi- (with monosyllabic stems in the imperative, cf. Chapter 6 §6.3.3.1, and in the context of reduplication in most verb paradigms, cf. Chapter 4 §4.4), cf. Downing (1994).
### Absolute pronouns

<table>
<thead>
<tr>
<th>NC #</th>
<th>Noun Class Prefix</th>
<th>Absolute Pronoun</th>
<th>Gloss</th>
<th>Pronoun base</th>
<th>Copula pronoun</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ps</td>
<td>(gi-)</td>
<td>mii-né</td>
<td>me</td>
<td>-mi</td>
<td>guu-mí</td>
</tr>
<tr>
<td>2ps</td>
<td>(u-)</td>
<td>wee-ná</td>
<td>you</td>
<td>-we</td>
<td>guu-wé</td>
</tr>
<tr>
<td>1pp</td>
<td>(sí-)</td>
<td>tshii-né</td>
<td>us</td>
<td>-tshí</td>
<td>yhi i tshí</td>
</tr>
<tr>
<td>2pp</td>
<td>(li-)</td>
<td>lii-né</td>
<td>you (pl)</td>
<td>-ni</td>
<td>yhi i ní</td>
</tr>
<tr>
<td>1</td>
<td>mű-</td>
<td>y-ee-ná</td>
<td>him/her</td>
<td>-yé</td>
<td>guu-yé</td>
</tr>
<tr>
<td>1a</td>
<td>Ø</td>
<td>y-ee-ná</td>
<td>him/her/it</td>
<td>-yé</td>
<td>guu-yé</td>
</tr>
<tr>
<td>2</td>
<td>éba-</td>
<td>b-oo-ná</td>
<td>them</td>
<td>-b-ó</td>
<td>yhi i bó</td>
</tr>
<tr>
<td>2b</td>
<td>bó-</td>
<td>b-oo-ná</td>
<td>them</td>
<td>-b-ó</td>
<td>yhi i bó</td>
</tr>
<tr>
<td>3</td>
<td>mű-</td>
<td>w-oo-ná</td>
<td>him/her/it</td>
<td>-w-ó</td>
<td>guu-wó</td>
</tr>
<tr>
<td>4</td>
<td>mí-</td>
<td>y-oo-ná</td>
<td>it</td>
<td>-y-ó</td>
<td>yhi i yó</td>
</tr>
<tr>
<td>5</td>
<td>lí-</td>
<td>l-oo-ná</td>
<td>him/her/it</td>
<td>-l-ó</td>
<td>yhi i ló</td>
</tr>
<tr>
<td>6</td>
<td>éma-</td>
<td>hh-oo-ná, w-oo-ná</td>
<td>them/it</td>
<td>-w-ó</td>
<td>gaa-wó</td>
</tr>
<tr>
<td>7</td>
<td>sí-</td>
<td>s-oo-ná</td>
<td>him/her/it</td>
<td>-s-ó</td>
<td>yhi i só</td>
</tr>
<tr>
<td>8</td>
<td>tí-</td>
<td>t-oo-ná</td>
<td>them</td>
<td>-t-ó</td>
<td>yhi i -tó</td>
</tr>
<tr>
<td>9</td>
<td>í-</td>
<td>y-oo-ná</td>
<td>him/her/it</td>
<td>-y-ó</td>
<td>yhi i yó</td>
</tr>
<tr>
<td>10</td>
<td>tí-</td>
<td>t-oo-ná</td>
<td>them</td>
<td>-t-ó</td>
<td>yhi i tó</td>
</tr>
<tr>
<td>14</td>
<td>bú-</td>
<td>b-oo-ná</td>
<td>it</td>
<td>-b-ó</td>
<td>yhi i bó</td>
</tr>
<tr>
<td>15</td>
<td>kú-</td>
<td>k-oo-ná</td>
<td>it</td>
<td>-k-ó</td>
<td>yhi i kó</td>
</tr>
<tr>
<td>17</td>
<td>kú-</td>
<td>k-oo-ná</td>
<td>there</td>
<td>(?)</td>
<td>(?)</td>
</tr>
</tbody>
</table>

The {li- ~ -ni} allomorphy in the 2pp pronoun reflects the ‘confusion’ between /l/ and /n/ in Nguni (also cf. Chapter 1 §1.1.5.1, footnote 37). Most Nguni languages have *ni-* as SP and *-ni* as absolute pronoun base; Sotho has *li-* as SP (and there is no separable absolute pronoun base).
Absolute pronouns are exemplified in (76): in subject position (76a), object position (76b-c), and prefixed forms (76d-g); (76d-e) demonstrate the default H-tone absolute pronoun base, whereas (76f-g) demonstrate the non-default toneless (that is, low) absolute person pronoun base (and cf. §2.2.5 below for comment on the variable tone shape of the conjunctive prefix lha- ~ lhá-).

(76) Absolute pronouns

a. yená ú- yaa-yá s/he understands (‘as for him/her, s/he understands’)
NC1- SP_NC1-T/A-understand ABS_PRON

b. gi- ya- múú- yaa yeená I understand him/her
SP_1PS-T/A-OP_NC1- understand NC1_ABS_PRON (‘as for him/her, I understand him/her’)

c. gi- bóna yeená I see him/her (I see him/her)
SP_1PS-see NC1_ABS_PRON

d. tí- tfó táa- bó their things (lit. ‘things of them’)
NC10-things 10POSS- NC2_ABS_PRON

e. lhaa- bó and / with them
ASSOC-NC2_ABS_PRON

f. tí- tfó táá- mi my things (lit. ‘things of me’)
NC10-things 10POSS- 1PS_ABS_PRON

g. lhá- mi and / with me
ASSOC-1PS_ABS_PRON

Copulatives (rightmost column in 75) are built off absolute pronouns by prefixing

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177 There is a common topicalised form of this sentence, too, with the absolute pronoun fronted, and contrastive pragmatic emphasis on the object topic: yeená gi-ya-múú-ya ‘as for him/her [emphatic topic], I understand him/her’.
copulative *gú-* or *yhi-* to the stem, as in the rightmost column in (75), with glosses ‘it is...’, e.g. (75, first data row) ‘it is me’. The default copula prefix is *yhi-*; 1ps, 2ps, and Classes 1/1a,3 take *gú-*; there is a third copula prefix used only with the absolute pronoun based in Class 6: *gá-* (cognate to Zunda Nguni Class 6 *ngá-*).

The non-3p absolute pronoun bases (to be called ‘general’ pronoun bases in 2.2.2.2 below) have two allomorphs\(^{178}\): (i) toneless (in the prefixal column, e.g. *lháa*-we ‘with you’, cf. (76g); §2.2.5 below), and (ii) H tone, in combination with the copula prefix\(^{179}\) (rightmost column in (75) above), e.g. *guu*-wé ‘it is you’.

Parenthetical ‘(?)’ for Class 17 indicates absence of a prefixed pronoun base and copula; the Class 17 absolute pronoun does, however, exist as a predicate base (*koná* ‘(be) there’, e.g. *gi*-koná, (literally) ‘I am here/there [usually non-deictic]’, that is, ‘I am present’ (and in the discourse of greeting dyads: ‘I am well’).

2. 2. 2. 2. Associative (possessive) personal pronouns

The associative construction (commonly called ‘possessive’\(^{180}\) in Southern Africa) is a set of noun prefixes (selected according to the Noun Class of the head noun) attached to the modifier

\(^{178}\) These two tonal allomorphs are probably phonologically conditioned (in view of the discussion of tone domains to come in Chapters 4-5, and of depression in Chapter 7), as follows: (i) in *lháa*-we, *lháa-* attracts lexical H in the UR (conditioned in opaque morphological ways; cf. the absence of lexical H in *lha*- preceding (prefixless) Class 1a nouns, cf. §2.2.5); but this lexical H fails to extend into the pronoun stem (for reasons of the nature of the morphological domains being conjoined here; (-)we(-) ‘you’ is lexically toneless; (ii) 3ps -é and 3pp -ó suffixes are lexically H, in which case the H of the conjunctive *lha-* appears to delete (actually fuses with the ultima H domain, and fails to express, by one version of the OCP (Chapter 5 §5.2, possibly with some kind of general anti-expression constraint (as in §5.4.1.6) applying to the conjunctive *lha-*)

\(^{179}\) One can surmise that the H on a prefix such as *lhá-* is deleted by a version of the Obligatory Contour Principle (full discussion of the OCP in Chapter 5 §5.1-5.2). ‘Possessive’ as a descriptive label is overly narrow, because while the relationship
noun (the possessor noun phrase). Associative prefixes (APs), all built off the Noun Class prefix in some measure, were supplied in §2.2.1.1 (46, column ix).

There are, in fact, two types of pronoun base: first, the absolute pronoun base we saw in §2.2.2.1 (75) above; and second, each of the three grammatical persons has a non-absolute personal pronoun base in the Phuthi lexicon and grammar (77), which bases are not identical (for 2ps, 3ps, 1pp, 2pp) to the absolute pronoun bases in (75) above. Two examples of each non-absolute personal pronoun base are provided, with prefixes from Class 1.

(77) Personal pronoun bases

<table>
<thead>
<tr>
<th>pers, #</th>
<th>personal pron base</th>
<th>Class 1 noun + NC_1-PERS_PRON</th>
<th>gloss</th>
<th>Class 2 noun + NC_2-PERS_PRON</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ps</td>
<td>-mi</td>
<td>mú-khótí ŵhaá-mi</td>
<td>my friend</td>
<td>éba-khótí báá-mi</td>
<td>my friends</td>
</tr>
<tr>
<td>2ps</td>
<td>-kho</td>
<td>mú-khótí ŵhaá-kho</td>
<td>your friend</td>
<td>éba-khótí báá-kho</td>
<td>your friends</td>
</tr>
<tr>
<td>3ps</td>
<td>-khé</td>
<td>mú-khótí ŵhá-khé</td>
<td>his/her friend</td>
<td>éba-khótí báá-khé</td>
<td>his/her friends</td>
</tr>
<tr>
<td>1pp</td>
<td>-(e)tfú&lt;sup&gt;181&lt;/sup&gt;</td>
<td>mú-khótí ŵh-éťtfú</td>
<td>our friend</td>
<td>éba-khótí b-éťtfú</td>
<td>our friends</td>
</tr>
<tr>
<td>2pp</td>
<td>-(e)nú</td>
<td>mú-khótí ŵh-éěnú</td>
<td>your (pl) friend</td>
<td>éba-khótí b-éěnú</td>
<td>your (pl) friends</td>
</tr>
<tr>
<td>3pp</td>
<td>-bo&lt;sup&gt;182&lt;/sup&gt;</td>
<td>mú-khótí ŵháa-bó</td>
<td>their friend</td>
<td>éba-khótí báá-bó</td>
<td>their friends</td>
</tr>
</tbody>
</table>

between the two nouns is always morphologically the ‘associative’ prefix, the possible semantic relationship is broader than just one of possession.

<sup>181</sup> For other Southern Bantu languages (and for Eastern Bantu, generally), where the Proto-Bantu bases for 1pp and 2pp pronouns survive, they can be argued to be *-itu and *-inu. In Nguni, these pronoun roots are never seen apart from the process of vowel coalescence; since all associative (possessive) prefixes are of the form Ca-, the invariable surface shape of 1pp can continue to be abstractly claimed to be *-ithu and 2pp *-inu. But Phuthi (like its Tekela sister, Swati) has no productive vowel coalescence (cf. §2.2.5). Rather, associative prefixes all have fixed -e- vowel (‘pseudo-coalescence’, cf. footnote 188), except for Class 1a, 2b head (possessor) nouns, absolute pronoun bases and personal pronoun bases (1ps, 2ps, 3ps, 3pp), all of which bases lack any form of class prefix, and which thus select a Ca- (not Ce-) form of the associative prefix. Cf. §2.2.2.4 below. Because of the absence of the coalescence pattern in Phuthi, and yet the Ca- form of the associative prefix (in general), the personal pronoun 1pp and 2pp bases cannot be *-tfú, *-nu, but must be -etfú, -enu (or indeed any other vowel instead of e-, as the Ce-associative prefix involves substitution of e- for what is otherwise the initial vowel).

<sup>182</sup> This 3pp form in (77) is the Class 2/2b pronoun base, the human pronoun base by default (but there are also -yo, -wo and -to (as in 75 above).
2.2.3. Associative noun-noun pattern

Continuing with the general associative pattern, associative prefixes are noteworthy for the phonological correlation of weak prefixes with sonority/breathiness. Associatives are exemplified in (78), with a Class 1a possessor noun (\(\text{ŋtata}\) ‘father’), and in (79) with a range of possessor nouns.

(78) **Associative prefixes (with Class 1a base)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Prefix</th>
<th>Possessor Noun</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-tfwána (w)-(ŋ)-taaté</td>
<td>father’s child (child of father)</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>n-taté (w)-(ŋ)-taaté</td>
<td>father’s father (father of father)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ébá-tfwána bá-(ŋ)-taaté</td>
<td>father’s children (children of father)</td>
<td></td>
</tr>
<tr>
<td>2b</td>
<td>bó-(ŋ)-taté bá-(ŋ)-taaté</td>
<td>father’s fathers (fathers of father)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>mú-nwána (w)-(ŋ)-taaté</td>
<td>father’s finger (finger of father)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>mú-nwána ya-(ŋ)-taaté</td>
<td>father’s fingers (fingers of father)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>lí-nyáwu lá-(ŋ)-taaté</td>
<td>father’s foot (foot of father)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>émá-nyáwu a-(ŋ)-taaté</td>
<td>father’s feet (feet of father)</td>
<td></td>
</tr>
</tbody>
</table>

The words used in this example set are, in isolation (phrase-medial form provided first, phrase-final form in parentheses; only the singulars are given): mú-tfwána... (mú-tfwaana) ‘child’, n-taté... (ntaaté) ‘father’, mú-nwána... (mú-nwaana), ‘finger’, lí-nyáwu... (lí-nyaawu) ‘foot’, í-yéto... (í-yeto) ‘deed’, sí-tjhába... (sí-tjhaaba) ‘tribe’, bú-tfu... (búú-tfu) ‘humanity’, kú-líma... (kú-liima) ‘to cultivate / cultivating’, k-o-ná (k-oo-ná) ‘there’. Cf. Chapter 7 §7.8.2.3 for the same data, but with sponsors indicated, and presented in the context of the conditioning of L tone insertion.

Class 1a possessor nouns allow the absence of any overt segmental morphology; the result is that the effect of what will be seen in Chapter 4 §4.1 as widescope H-extension (‘spread’) and in Chapter 7 §7.2 as depressor shift is salient in these Class 1a examples. For all other AP[associative prefix]-NC-STEM sequences (where NC is not 1a), a templatic AP vowel -e- is required; this is a hallmark of the Tekela Nguni languages (Phuthi, Swati and others); cf. footnotes 181, 188.

This sequence should perhaps be segmented as mú-tfwána \(w\)-Ø-\(ŋ\)-taaté, where Class 1a has a Ø prefix.

Alternatively, the Class 6 form is attested (in Mpa pa) as: \(\text{fig}-\(ŋ\)-taaté\), that is, with a breathy/depressor segmental onset to the associative (cf. Sotho non-breathy \(h_{\text{q}}\)).
i. Class 7 sí-tjhába sá-ŋtaaté father’s tribe (tribe of father)

j. Class 8 tí-tjhába tá-ŋtaaté father’s tribes (tribes of father)

k. Class 9 í-yéto ya-ŋtaaté father’s deed (deed of father)

l. Class 10 tí-yéto tá-ŋtaaté father’s deeds (deeds of father)

m. Class 14 bû-tfu bá-ŋtaaté father’s humanity (humanity of father)

n. Class 15 kû-líma kwá-ŋtaaté father’s cultivating (cultivating of father)

o. Class 17 k-o-ná ká-ŋtaaté 187 there at father’s (chez father)

The associative prefix reverts to pseudo-coalesced Ce- shape as soon as the possessor (modifier) noun is not from Class 1a or 2b (79).

(79) General associative noun-noun sequence

<table>
<thead>
<tr>
<th>Noun Class</th>
<th>General Associative Noun-Noun Sequence</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>tí-tshwántsho té-muu-tfu</td>
<td>pictures of a person</td>
</tr>
<tr>
<td>2</td>
<td>tí-tshwántsho té-baa-tfu</td>
<td>pictures of people</td>
</tr>
<tr>
<td>3</td>
<td>tí-tshwántsho té-mú-miito</td>
<td>pictures of a throat</td>
</tr>
<tr>
<td>4</td>
<td>tí-tshwántsho té-mí-miito</td>
<td>pictures of throats</td>
</tr>
<tr>
<td>5</td>
<td>tí-tshwántsho té-lí-tiipho</td>
<td>pictures of a nail</td>
</tr>
<tr>
<td>6</td>
<td>tí-tshwántsho té-má-tiipho</td>
<td>pictures of nails</td>
</tr>
<tr>
<td>7</td>
<td>tí-tshwántsho té-si-kóólo</td>
<td>pictures of a school</td>
</tr>
</tbody>
</table>

187 This Class 17 phrase is not strictly a possessee-possessor sequence, though it was likely reinterpreted from that into an associative form (the possessor/modifier); the wrinkle is that such an associative prefix ká- is secondary, that is, it preprefixes a primary prefix (of a noun in one of the basic (‘human’) classes: 1, 1a, 2, 2b).

188 Cf. footnote 181. Also, the Ce- AP shape constitutes for most noun classes a kind of ambiguous pseudo-coalescence, in that its -e- vowel occurs before several Noun Class prefixes that contain (C)i- in which case the combined AP-NC- prefix sequence of Ce-Ci- (Classes 4, 5, 7, 8, 10) or Ce- (Class 9) appears to be respectful of general Nguni coalescence. Further, because Phuthi has Class 2 and 6 prefixes with fixed initial e- vowel (éba-, éma-), even the Ce-Ca- AP-NC- sequence could be from a Ca-AP. The AP shape is only confirmed as a fixed e-template (and not a coalescing vowel) when surfacing as Ce-Cu- in Classes 1, 3, 14, 15 (79a,c,k,l).

189 ‘NC#’ here refers to the Noun Class number of the modifier (possessor) noun.
2. 2. 2. 4. Demonstratives

We have seen the full catalogue of demonstrative prefixes in §2.2.1.1 (47) above. These are briefly exemplified in (80), for Mpapa Phuthi, where Head-Modifier (Possessee-Possessor) is the only possible sequence). Each example contains each of the three demonstrative ‘positions’: proximal, distal and ultra-distal (given in italics)—respectively, from Class 1,2 (80a-b) and 7,8 (80c-d).

(80)  Demonstratives
proximal    distal    ultra-distal
a. mú-khótí lʰó   mú-khótí lʰɔ̂wɔ   mú-khótí lʰowá   this/that/that  friend
b. éba-khótí lʰáába   éba-khótí lʰáábo   éba-khótí lʰábá   these/those/those  friends
c. sí-kólo lʰɛɛsi   sí-kólo lʰɛɛso   sí-kólo lʰɛsáa   this/that/that  school
d. tí-kólo lʰɛɛti   tí-kólo lʰɛɛto   tí-kólo lʰɛtáa   these/those/those  schools

As Mzamane (1949), and Doke (1954:111), have correctly remarked, Phuthi is the only Nguni language to completely lack the Nguni locative demonstrative paradigm: ‘here is... / here are...’, cf. Swati náŋu (Class 1/1a), nàba (Class 2/2b) (Rycroft 1981:xxiv). Interestingly, these locative demonstratives are also absent in Sotho.

2. 2. 2. 5. Enumeratives

Enumerative prefixes (EPs) have been given in §2.2.1.1 (46 column x). There are typically four\(^{190}\) enumerative stems in Southern Bantu (Doke 1954:62-63), of which Phuthi has

\(^{190}\) Tsonga is exceptional in having the four common stems as well as an additional four enumerative stems moved from the class of numeral adjective stems (Doke 1954:63).
three (no reflex of \textit{-mbi/-mbe} ‘different kind of’). Each stem behaves distinctly with regard to
prefix: \textit{-khi} (81a, 82) is the only stem to take the enumerative prefixes exactly as given in (46,
column x); \textit{-ni} takes a single prefix of invariable shape (81b, 83); \textit{-nye} (81c, 84) has distinctly
formed compound enumerative prefixes (more below) for semantically singular noun classes
only (or rather, for nouns without an explicit plural value\textsuperscript{191}).

\begin{itemize}
\item \textbf{Enumerative stems}
\item a. Enumerative 1: \textit{-khi} \ which? \\
\item b. Enumerative 2: \textit{-ni} \ what kind of \\
\item c. Enumerative 3: \textit{-nye} \ one\textsuperscript{192}
\end{itemize}

\begin{itemize}
\item (81) Enumerative 1: \textit{-khi}
\item NC\#, NOUN, EP\textsuperscript{-khi} \ gloss
\item a. Class 1 \ mú-tfu \ w\ddot{\textit{h\ddot{u}}}-\textit{khi} \textsuperscript{193} \ which person? \\
\item b. Class 1a \ ṅtató \ w\ddot{\textit{h\ddot{u}}}-\textit{khi} \ which father? \\
\item c. Class 2 \ ébá-tfu \ baa-khi \ which people? \\
\item d. Class 2b \ bó-ŋtató \ baa-khi \ which fathers? \\
\item e. Class 3 \ mú-ti \ w\ddot{\textit{h\ddot{u}}}-\textit{khi} \ which tree? \\
\item f. Class 4 \ mí-ti \ yìh\textit{i} \ -khi \ which trees? \\
\item g. Class 5 \ lí-típho \ ìì-khi \ which nail? \\
\item h. Class 6 \ émá-típho \ w\ddot{\textit{h\ddot{a}}}a-khi \ which nails? \\
\item i. Class 7 \ sì-kólo \ sì-khi \ which school? \\
\item j. Class 8 \ tì-kólo \ tì-khi \ which schools? \\
\item k. Class 9 \ í-tshába \ yìh\textit{i} \ -khi \ which mountain? \\
\item l. Class 10 \ tì-tshába \ tì-khi \ which mountains?
\end{itemize}

\textsuperscript{191} This includes a semantically typically plural class, such as 6, but only with reference to
uncountable nouns like \textit{émaatí} ‘water’ (and similarly for non-count abstract nouns in Class 14).
\textsuperscript{192} (81c) ‘one’ behaves distinctly from what appears otherwise to be a homophonous root,
\textit{-nye} ‘another’, which is an adjective stem \textit{-nye} ‘another’ in (85m). Doke (1954:236) is certainly
wrong in the listing of ‘one’ as \textit{-ne}. This appears to be a typographical error.
\textsuperscript{193} The distribution of depression in the enumerative prefixes is presented in Chapter 7
§7.8.2.3 (316) and analysed in §7.8.3: ‘weak’ noun classes (here corresponds to sonorant-initial
prefixes) are depressed.
m. Class 14 bu-nyóyú buu-khí which wasp?

n. Class 15 kú-líma kuu-khí which cultivating?

The -ni enumerative (83a-f) is surprising in two ways: (a) it fails to reflect the noun class prefix of the head noun it modifies (the fixed enumerative form appears to be based on a Class 1 form, but there is no way to test this); (b) the ‘prefix’ on the -ni enumerative is syllabic -η- (not -mu-, as otherwise expected).

(83) **Enumerative 2: -ni**

a. mú-tfu m-ní what kind of person?

b. ébá-tfu m-ní *ébá-tfu baa-ní what kind of people?

c. lí-típho m-ní *lí-típho lii-ní what kind of nail?

d. émá-típho m-ní *émá-típho (w)aa-ní what kind of nails?

e. sí-kólo m-ní *sí-kólo sii-ní what kind of school?

f. tí-kólo m-ní *tí-kólo tii-ní what kind of schools?

The ‘one’ words (84) are formed distinctly from the preceding enumeratives in (82-83): the prefix sequence is tonally and segmentally a participial prefix (PP), followed by an enumerative prefix (but where the enumerative prefix lacks breathy voicing, contra the enumerative prefix set in §2.2.1.1 (46, column x)).

(84) **Enumerative 3: -nye**

<table>
<thead>
<tr>
<th>NC#</th>
<th>NOUN</th>
<th>PP-EP-nye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>mú-tfu á-muu-nye</td>
<td>one person (lit. ‘person one’ = ‘person being one’)</td>
</tr>
<tr>
<td>Class 1a</td>
<td>ṇntaté á-muu-nye</td>
<td>one father</td>
</tr>
<tr>
<td>Class 3</td>
<td>mú-míto ú-muu-nye</td>
<td>one throat</td>
</tr>
</tbody>
</table>

---

194 There can be variation between syllabic -mu- and syllabic -η- but this usually does not occur in the case of the accented (heavy) penult syllable.

195 There is an additional fixed form common throughout Nguni: baaní ‘who?’, probably from a Class 2 enumerative prefix + -ní.

196 The evidence for the participial being the first part of this prefix comes (a) from Class 1/1a participial ú- (cf. Chapter 6 §6.2.1.1), vs. otherwise regular Class 1/1a SP ú-; and (b) from the obligatory H tone even on non-3p participial SPs.
2. 2. 3. **ADJECTIVALS**

Adjectival morphology—‘qualificatives’ in Doke’s (1935:181) usage—is examined under these headings: adjectives vs. relatives (§2.2.3.1); predicative adjectives and predicative relatives (§2.2.3.2); hedging prefix -bu- and hedging relative suffix -ákga: ‘-ish’ (§2.2.3.3); adjective and relative negative copulatives (§2.2.3.4).

2. 2. 3. 1. Adjectives vs. relatives

In many Bantu languages, there are two sets of adjectival prefixes: ‘adjective’, and ‘relative’, which two sets of prefixes vary only slightly in their morphological shape, and which vary according to the particular lexical stems they can be attached to. ‘Adjective’ indicates a small, closed set of adjective stems (85); ‘relative’ indicates a large, open class of relative and copula verb stems and a smaller set of underived relative stems (86). The full prefix sets have been provided in §2.2.1.1 above (46, columns ii and iii). The contrast is exemplified in (87-88), with examples from classes where there are prefix differences between the two paradigms.

(85)  **Adjective stem (complete set)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>-hlé</td>
</tr>
<tr>
<td>b.</td>
<td>-bí</td>
</tr>
</tbody>
</table>

---

197 Doke (1982:29) observes: ‘In Bantu pure adjectives are extremely rare.’ Doke (1935:43) notes that in most Bantu languages the number of adjectives varies from 12 to 25.

198 The quality of this vowel is robustly and consistently superclose, which is a lexical property of neither the Nguni or Sotho items; this constitutes a lexical innovation in Zone S. Cf. discussion of morphological extension of supercloseness (§2.1.6.2). Similarly the superclose vowels consistent across the root syllables in (85i) are a Phuthi innovation.
Relative stems are drawn from a variety of sources: (a) underived simple stems (86c,d,f-k); (b) all verb stems (86a,b,l); (c) noun stems stripped of preprefixes (e- in Classes 2,6) and noun prefix H tone (86e,m-q); (d) noun copulas (86r-s), that is, predicates; all associative phrases (86p,q; and cf. §2.2.5), instrumental phrases (86t), and locative adverbials (86u-v; cf. §2.2.4.3).

199 The stem -ncí is not usually found synchronically in Nguni in its unreduplicated form; Phuthi also tolerates -ncíncí, and even a double reduplication form -ncíncíncí ‘very small, smallest’.

200 The numeral ‘one’ cannot be included in this set, because it takes an aberrant Class 1/1a prefix á- (not lá-), that is, participial, as just indicated under Enumerative 3 (84). Consistent supercloseness of root vowels for this item is an innovation in Phuthi; cf. footnote 198.

201 This -nye ‘another’ is segmentally and tonally homophonous with -nye ‘one’ (cf. §2.2.2.5 (81c,84) above, but is morphologically distinct with reference to prefix formation: -nye ‘another’ takes only the relative formation being exemplified here, whereas -nye ‘one’ takes only the enumerative structure; cf. footnote 192.

202 This relative base, -lishúumí ‘ten’ (from lí-shúumí ‘ten’), surfaces here either with its prefix H tone intact, or where the H from the relative prefix has spread onto the noun prefix part (-lí-) of the numeral base stem (this second analysis would contraindicate—just for the numeral relative stems—the anti-adjacency OCP principle to be articulated in Chapter 5 §5.1.)
(86) Relative stems (partial)

a. -tshléléél-é six (lit. ‘which has/have crossed over’)\(^{203}\)

b. -ṣubh-įįyé seven (lit. ‘which has/have pointed’)

c. -yáākga eight (< Afrikaans ag(t) [ax(t)] ‘eight’)\(^{204}\)

d. -nééke nine (< Afrikaans nege [nǐxǫ]\(^{205}\) ‘nine’)

e. -líshúumí ten

f. -daalá green

g. -boovú red

h. -ntshu black

i. -tshwewű white

j. -té naked

k. -khóopó cruel

l. -بيانaa-kó (who/which) sing(s)

m. -bo-X (who is\(^{206}\)) mother of X

n. -mu-naadți (who/which is) nice

o. -maáĎa (who/which is) powerful [lit. ‘(who/which) is power’]

---

\(^{203}\) (86a-b) are perfective verb stems, cf. discussion of perfective (and other) tenses in §2.2.4.7. The ‘original’ Phuthi stem -yegqele ‘six’ (cf. Mzamane (1949:70), Doke (1954:236)) is no longer attested in Mpapa and Sigxodo Phuthi, although the meaning ‘crossed over’ is retained in the Sotho perfective used here for the numeral (also in Sotho).

\(^{204}\) The ‘original’ Phuthi lexical phrase is -phuliye minwana lemibini [my orthography; no tone given in the cited source] ‘eight’, lit. ‘(which) have broken two fingers’], cf. Mzamane (1949:70), Doke (1954:236). But this form is no longer attested in Mpapa and Sigxodo Phuthi.

\(^{205}\) But at the time that this Afrikaans stem was borrowed into Phuthi (perhaps via another language, such as Sotho)—possibly early to mid-1800s (or even earlier), the diphthongisation from the Dutch monophthong may not yet have been salient; the source item would likely have been closer to [neegɑ] or [neekɑ], depending on dialect. The ‘original’ Phuthi lexical phrase -phuliye munwana lomunye [my orthography, no tone given in the citation source] ‘nine’ [lit. ‘(which) have broken one finger] is no longer attested in Mpapa or Sigxodo Phuthi.

\(^{206}\) The glossing of the English copula verb ‘is/are’ in (86,88) is given according to the presence of the Phuthi copula. Examples (86n,o,p,q,u,v) make it clear that the Phuthi copula is not coextensive with the English copula, which copula lacks any transparent morphological Phuthi correspondent in these examples. The ‘relative bases’ (Dokean terminology) in (86n,o,p,q,u,v) are phonologically identical to the isolation forms from which they are derived.
p. -máád (who/which is) powerful [lit. ‘(who/which) is with power’]
q. -dzaba (who/which is) interesting
r. -gu-mú-tfu (who/which) is human [lit. ‘(who/which) is a person’]
s. -líimo (which) is/are years [indicating duration of predicate]
t. -shéey (who/which is) outside
u. -ló-wuj-ééni (who/which is/are) on the right
v. -haákha (who/which is) here

Adjective and relative prefixes are exemplified for Classes 1,3,4,6 in (87a-d, 88a-d). In addition, (88e-f) exemplifies relative bases formed out of nouns inserted into the ‘adjective’ (relative) paradigmatic slot without any form of copula modification.

(87) Adjectives
a. mú-tfu lámuu-hlé beautiful person
b. mú-bó nó lómuu-hlé beautiful piece of music / song
c. mí-bó nó lémii-hlé beautiful pieces of music / songs
d. éma-vi lámaa-hlé beautiful voices

(88) Relatives
a. mú-tfu lá-ge-shéey outside person (‘person who is outside’)
b. mú-bó nó ló-ge-shéey outside music (‘music which is outside’)
c. mí-bó nó lé-ge-shéey outside pieces of music (‘pieces of music which (are) outside’)

207 These are all ‘weak’ noun classes, and thus show the interesting differences between adjective (87a-d) and relative (88a-d) prefix formation (cf. discussion of weak vs. strong in §2.2.1.1 (48), (49, rows ii vs. iii); Chapter 7 §7.8.2.3).

208 Equivalents for (88d-e) modified by the copula (with concomitantly modified meanings) would be: (e) lá-yi-bó-Tuká ‘which are Tuka’; (f) lá-mu-náadzí or lá-gu-mú-naadzí ‘which are (something) nice’.
d. éma-vi lá-ge-shéeyí  outside voices (‘voices which (are) outside’)  

e. mmá lá-bó-Tuká  mother of Tuka (‘woman who (is) (of) Tuka’s people’)

f. mmá lá-mú-naadzí  nice woman / mother (‘woman who (is) niceness’)

2. 2. 3. 2. Predicative adjectives and predicative relatives

Adjectives and relatives can be used attributively or predicatively. The data in (87-88) has exemplified attributive adjectives and attributive relatives. Predicative adjective and relative prefixes are formed as in (89a,b), exemplified in (90-91). As seen in (85, 87), adjectives are morphologically very similar to regular nouns (§2.2.1). Predicative adjectives are uniformly formed with the single common morphological feature across all copulas: the phonological feature of depression (typically invoked by breathy voicing; cf. prefixes in §2.2.1.1 (46)). The copulative adjective prefixes (89a, 90) are identical to the nominal ones (cf. listing and discussion of nominal copulative prefixes in Chapter 7 §7.5 (135)).

(89) Predicative adjectives, relatives
a. adjectives: prosodic copula prefix (breathiness and depression on Noun Class prefix)
   Class 1/1a/3: mú-, Class 2/2b: bá-, Class 4: mí-, Class 5: lí-, Class 6: má-, Class 7: sí-, 
   Class 8/10: tí-, Class 9: yí-, Class 14: bú-, Class 15/17: kú-

b. relatives: subject prefix
   Class 8/10: tí-, Class 14: bú-, Class 15/17: kú-

(90) Predicative (copulative) adjective
a. Class 1/1a/3  m múu-hlé 210  s/he is beautiful
b. Class 2/2b  báa-hlé  they are beautiful

c. Class 4  míi-hlé  they are beautiful

209 This is the standard polite address form towards a married (and sometimes unmarried) woman, in the case of a first child (usually a son), here named Tuka (standardly spelled <Toka>, because Sigxodo and Mpapa Phuthi names are written in Sotho orthography).

210 The copulative adjective prefixes in (90a-i) instantiate across the (long) penult the relatively rare rising-falling tone.
<table>
<thead>
<tr>
<th>Class</th>
<th>Prefix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>lí-i-hlé</td>
<td>he/she/it is beautiful</td>
</tr>
<tr>
<td>6</td>
<td>mļa-hlé</td>
<td>it/they are beautiful</td>
</tr>
<tr>
<td>7</td>
<td>ši-i-hlé</td>
<td>he/she/it is beautiful</td>
</tr>
<tr>
<td>8/10</td>
<td>tļi-hlé</td>
<td>he/she/it is beautiful</td>
</tr>
<tr>
<td>9</td>
<td>yži-hlé</td>
<td>it is beautiful</td>
</tr>
<tr>
<td>14</td>
<td>bžu-hlé</td>
<td>it is beautiful</td>
</tr>
<tr>
<td>15/17</td>
<td>kžu-hlé</td>
<td>it is beautiful</td>
</tr>
<tr>
<td>17</td>
<td>kļ-k-ékůžěeni</td>
<td>it is far (lit. ‘it is in the far-ness’)</td>
</tr>
</tbody>
</table>

Predicative relatives (except the unclear example (91j) for Class 17) are identical to subject prefixes (cf. discussion of SPs to come in §2.2.4.1; tonal properties of SPs in Chapter 6 §6.2.1.1).

(91) **Predicative relative**

<table>
<thead>
<tr>
<th>Class</th>
<th>Prefix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1a/3</td>
<td>ú-boový</td>
<td>s/he is red</td>
</tr>
<tr>
<td>2/2b</td>
<td>bá-boový</td>
<td>they are red</td>
</tr>
<tr>
<td>4/9</td>
<td>í-boový</td>
<td>it is red</td>
</tr>
<tr>
<td>5</td>
<td>lī-boový</td>
<td>he/she/it is red</td>
</tr>
<tr>
<td>6</td>
<td>á-boový</td>
<td>it/they are red</td>
</tr>
<tr>
<td>7</td>
<td>sī-boový</td>
<td>he/she/it is red</td>
</tr>
<tr>
<td>8/10</td>
<td>tī-boový</td>
<td>he/she/it is red</td>
</tr>
<tr>
<td>14</td>
<td>bū-boový</td>
<td>it is red</td>
</tr>
</tbody>
</table>

---

211 This copulative prefix is quirky: *kū*- is breathy and treated as an adjective (90), and not as a relative (91); yet the stem is a derived locative (built on a noun), which does not fit the profile of the adjective closed class set. The breathy prefix *kū*- could also be rendered *gu*- (it is not clear yet whether these two versions of the prefix are phonetically distinct).
2. 3. Hedging prefix -bu- and hedging relative suffix -ákga: ‘-ish’

Phuthi has an adjectival (‘relative’) prefix bu- (toneless), and an adjectival (‘relative’) suffix -ákga (with H tone on first syllable). In a kind of circumfixal combination, these affixes semantically hedge the lexical meaning of any noun base to be used as a relative, roughly equivalent to English ‘-ish’; the prefix bu- can also be used without the suffix, and appears to continue to mean ‘-ish’.

In (92), the base noun is in column 1, both modified noun forms are given (columns 2, 3), with the gloss for the two modified forms in column 4; in columns 2 and 3, ú- is the 3ps/Class 1/1a subject prefix; í- is a Class 9 prefix indicating generic (but still referential) ‘it’.

(92) **Adjectival (relative) modifiers: bu-...-ákga**

<table>
<thead>
<tr>
<th>Base</th>
<th>bu-...</th>
<th>bu-...-ákga</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-tfwaana child</td>
<td>ú-bú-tfwaana</td>
<td>ú-bú-tfwaan-áákga</td>
<td>s/he is childish</td>
</tr>
<tr>
<td>b. lí-kgháalá crab</td>
<td>ú-bu-kgháalá</td>
<td>ú-bu-kghál-áákga</td>
<td>s/he is crab-like</td>
</tr>
<tr>
<td>c. lí-tfwiili dust</td>
<td>í-bú-tfwiili</td>
<td>í-bú-tfwiil-áákga</td>
<td>it is dust-like</td>
</tr>
<tr>
<td>d. íi-yú sheep</td>
<td>ú-bu-yú</td>
<td>ú-bu-y-áákga</td>
<td>s/he is sheep-like</td>
</tr>
<tr>
<td>e. lí-tswááyi salt</td>
<td>í-bu-tswááyi</td>
<td>í-bu-tswáy-áákga</td>
<td>it is salt-like</td>
</tr>
<tr>
<td>f. s-áádlá hand</td>
<td>í-bu-s-áádlá</td>
<td>í-bu-s-áádl-áákga</td>
<td>it is hand-like</td>
</tr>
</tbody>
</table>

Evidence is given in (93) that -ákga behaves as -nyana and -kati do (cf. §2.1.6.4), that is, the suffix -ákga does not count as the word right-edge, for the purpose of determining edge-adjacency for mid-vowel [ATR]/[RTR] harmony (cf. §2.1.6).

---

212 Cf. previous footnote, referring to (90k): this could be a copulative adjective or relative.

213 This seems likely to be cognate with the Xhosa <-rho> [xa] (Pahl 1983:55); both Phuthi and Xhosa are likely to have borrowed this suffix from a Khoe or San language, as [x] is extraneous to the consonants inherited from Proto-Bantu (Guthrie 1971:63).

214 In these forms, the Noun Class prefix is s- (from Class 7 sí-), which is clearly reanalysed as being part of the stem, for the purposes of bu- prefixation.
(93) -a*kg*a is non-cohering
b. lí-bééle [lí-bééle] breast lí-bééle-ááxa [lí-bééle-ááxa]

c. lí-bééle [lí-bééle] breast lí-bééle-ááxa [lí-bééle-ááxa] it is breast-like

d. lí-bééle [lí-bééle] breast lí-bééle-ááxa [lí-bééle-ááxa]

Thus, the class of non-cohering suffixes contains three members in Phuthi: diminutive
-n*yan*a, augmentative -kati (-kátì)—both discussed in §2.1.6.4—and now -á*kg*a.

2. 2. 3. 4. Adjective and relative negative copulatives

In turn, the negatives of the adjective and relative copula constructions introduced in
§2.2.3.2 are formed with negative person markers (e.g. Class 1: aká-); the adjective negative
copulative (94a) remains distinct from the relative (94b) by the inclusion of the negative
copulative noun prefix (essentially, the noun prefix itself, as in (90) above, but here without the
depression/breathy feature). Adjective and relative negative copulatives are both signalled by
negative morpheme -si-215.

(94) Negative copulative adjective and relative prefixes
a. adjectives: NegSP-si-NPref-
    Class 1/1a/3: aká-sí-mu-, Class 2/2b: abá-sí-ba-, Class 4/9: ayí-si-, Class 5: alí-sí-
    Class 6: aká-sí-ma-, Class 7: así-sí-si-, Class 8/10: atí-sí-tí-, Class 9: ayí-si-
    Class 14: a-bú-sí-bu-, Class 15/17: akú-sí-ku-

b. relatives: NegSP-si-
    Class 1/1a/3/6: aká-si-, Class 2: abá-si-, Class 4/9: ayí-si-, Class 5: alí-si-
    Class 7: así-si-, Class 8/10: atí-sí-, Class 14: abú-sí-, Class 15/17: akú-sí-

215 The negative morpheme -si- used in negative copulatives built on Phuthi nouns,
adjectives and relatives generally occurs in Nguni only with noun and absolute pronoun
copulatives. The presence of -si- with adjectives, relatives and pronouns is a Sotho feature.
Elsewhere in Nguni, negative adjectives contain simply the negative SP followed by the basic
noun prefix (not the preprefix é-) for the relevant noun class: e.g. Xhosa Class 1/1a aká-m-hlé
‘s/he is not a person’, Class 2/2b abá-baa-hlé ‘they are not people’; cf. Phuthi (95a, 95b).
Negative copulative adjective (predicative)

a. Class 1/1a aká-sí-muu-hlé s/he is not beautiful
b. Class 2/2b abá-sí-baa-hlé they are not beautiful
c. Class 3 awú-sí-muu-hlé it is not beautiful
d. Class 4 ayí-sii-hlé they are not beautiful
e. Class 5 alf-sí-lii-hlé it is not beautiful
f. Class 6 aká-sí-maa-hlé they are not beautiful
g. Class 7 así-sí-sii-hlé he/she/it is not beautiful
h. Class 8/10 atí-sí-tii-hlé they are not beautiful
i. Class 9 ayí-sii-hlé it is not beautiful
j. Class 14 abú-sí-buu-hlé it is not beautiful
k. Class 15/17 akú-sí-k-ékúd it is not beautiful

Negative copulative relative (predicative)

a. Class 1/1a aká-sí-boovú he/she/it is not red
b. Class 2/2b abá-sí-boovú they are not red
c. Class 3 awú-sí-boovú it is not red
d. Class 4 ayí-sí-boovú they are red
e. Class 5 alf-sí-boovú it is not red
f. Class 6 aká-sí-boovú it/they are not red
g. Class 7 así-sí-boovú he/she/it is not red
h. Class 8/10 atí-sí-boovú they are not red
i. Class 9 ayí-sí-boovú it is not red
j. Class 14 abú-sí-boovú it is not red
k. Class 15/17 akú-sí-boovú it is not red
l. Class 17 akú-sí-k-ékúd it is not far (lit. ‘it is not in the far-ness’)

‘It’ is differentially referential between Classes 15 and 17: Class 15 ‘it’ is referential (to a gerund); Class 17 ‘it’ is a non-referential expletive existential.

As before, this construction is morphologically quirky: in the negative copulative, the
2.2.4. Verbs

As is always the case in a Bantu language, the Phuthi verb system is the most productive area of the morphology. There are at least\textsuperscript{218} 120 million possible forms of every Phuthi verb: 15 subject prefixes x 16 object prefixes x 2\textsuperscript{8} verb extensions x 2 polarity settings x 20 tenses/aspects x 5 moods x 10 auxiliaries\textsuperscript{219}. I review the basic morphological characteristics of the verb system in this section.

This section contains discussion of Phuthi root and affix verb morphology in these categories: subject prefixes (§2.2.4.1); object prefixes (§2.2.4.2); root and stem shapes (§2.2.4.3); vowel verbs (§2.2.4.4); latent \textit{-i-} verbs (§2.2.4.5); productive extensions (§2.2.4.6)—verb suffixes (including passive voice) that are highly productive (\textit{-el-}, \textit{-is-}, \textit{-an-}, \textit{-w-}, \textit{-isis-}), and others that are relatively productive (\textit{-ek-} / \textit{-akal-}, \textit{-el-}, \textit{-ag-}, \textit{-ul-}, \textit{-uluk-}); tenses (§2.2.4.7); imbricated perfectives (§2.2.4.8); non-indicative moods (§2.2.4.9), negative polarity (§2.2.4.10), reduplication (§2.2.4.11).

2.2.4.1. Subject prefixes (SPs)

SPs have been introduced in §2.2.1.1 (46, column \textit{iv}). Every noun class has a subject prefix, which functions both concordially with a noun subject from that class (97a-d,e-t), or anaphorically with a subject noun from that noun class which is not overt at all, or not overt in

\begin{itemize}
  \item Prefix \textit{ku}- is no longer breathy, suggesting it is best treated as a relative (96, cf. earlier 91)—the stem continues to be a locative (derived from a noun base), which does not fit the profile of the adjective closed class set.
  
  \item Using the figures provided in this paragraph: 122 880 000 forms. Cf. Odden (1981) for estimates of morphological verb productivity in Shona. Odden now (p.c., 2004) believes he significantly underestimated the combinatorial total for Shona.
  
  \item The 15 SPs are conflated from 19 separate prefixes to eliminate morphologically identical prefixes (Classes 1=1a=3; 2=2b; 8=10; 15=17). The 16th OP is the reflexive \textit{-ii-} (cf. §2.2.4.2 below). I exemplify nine tense forms in §2.2.4.7 (116-117), but including complex tense/aspects (e.g. future perfect, remote past perfect, etc), there are at least 20 distinct forms. The four moods (cf. §2.2.4.9) are indicative, subjunctive, potential, participial, relative. The highly productive verb extensions (cf. §2.2.4.3) are applicative, causative, reciprocal, intensive, passive; I include here the relatively productive extensions (without the less active reversive and reversive-stative): neuter-stative, completive, extensive. The auxiliaries include \textit{-ntse} [ntse] (*[ntse]) ‘still’, \textit{-sa-} ‘still / still not’, \textit{sélé} [sel] ‘already’ (*[sel]), cf. Chapter 1 §1.1.5.3; Chapter 2 §2.1.1 footnote 18; §2.2.6.5 for comments on adverbial disharmony), \textit{-hleti} ‘always’, \textit{-na lheku-} ‘usually’, among others.
\end{itemize}
the same phrase (98a-d,e-t). The personal SPs\(^{220}\) (97a-d) have no non-pronoun antecedent, hence
the absolute pronoun is provided here as the antecedent noun.

The only exception to these syntactic properties of SPs is Class 17 *ku-* which functions
non-referentially (98n), typically having no overt subject. Class 17 can, however, be argued to be
referential (and concordial and anaphoric) in a locative phrase, either with *e-*...-*ini* or with *ká-
locative morphology (cf. §2.2.1.4: 57, 60), as in (97s-t).

(97) **Subject prefixes functioning concordially\(^{221}\)**

*personal prefixes*

a. 1ps miné gi-ya-khááb\(á\)ha I am walking
b. 2ps wená u-ya-khááb\(á\)ha\(^{222}\) you are walking
c. 1pp tshiné si-ya-khááb\(á\)ha we are walking
d. 2pp liné li-ya-khááb\(á\)ha you (pl) are walking

*general prefixes*

a. Class 1 úfátí ú-ya-khááb\(á\)ha the woman is walking
b. Class 1a ñtaté ú-ya-khááb\(á\)ha the father is walking
c. Class 2 éba-fátí bá-ya-khááb\(á\)ha the women are walking
d. Class 2b bó-ñtaté bá-ya-khááb\(á\)ha the fathers are walking
e. Class 3 mú-láyetá ú-ya-khááb\(á\)ha the message is going
f. Class 4 mí-láyetá í-ya-khááb\(á\)ha the messages are going
g. Class 5 lí-džakwá lí-ya-khááb\(á\)ha the drunkard is walking

\(^{220}\) I supply only the 1ps, 2ps, 1pp and 2pp persons, because 3ps and 3pp are instantiated by
whichever noun class SP they are concordial or anaphoric to (in the particular phrase). The
personal SP *gi-* is the only SP to contain (lexical) breathiness, and thus depression. This will
prove significant in Chapter 7, where this SP will be used to elicit forms of the verb that contain
H tone patterns distinct from forms where the SP is non-depressed.

\(^{221}\) The verb used throughout (97-98) is *-khááb\(á\)ha*, which typically requires an animate
subject, unless it indicates a process, e.g. (97s-t,98s-t). The gloss is ‘walk, go’.

\(^{222}\) The 2ps SP is given here simply as *u-* (not *û-*), though there is reason to analyse the
‘toneless’ (that is, non-H) subject prefixes as depressed, that is, as L (cf. discussion of masked
depression in Chapter 7 §7.6.2). Similarly, the personal pronouns in (97c,d) are given as toneless.
h. Class 6  émá dzákwa á-ya-kháábha  the drunkards are walking
i. Class 7  sí-bhí njí sí-ya-kháábha  the singer is walking
j. Class 8  tí-bhí njí tí-ya-kháábha  the singers are walking
k. Class 9  í-womó í-ya-kháábha  the cow is walking
l. Class 10 tí-womó tí-ya-kháábha  the cows are walking
m. Class 14  bú nyóyú bú-ya-kháábha.  the wasp is walking
n. Class 15  kú dlá kú-ya-kháábha  the eating is going (i.e. in process).
o. Class 17  ká-ńtate kú-ya-kháábha  at father’s (place), there is walking (taking place)
p. Class 17  é mú gid ení kú-ya-kháábha  at the party, there is walking (taking place)

(98)  Subject prefixes functioning anaphorically  ‘personal’ SPs

a. 1ps  gi-ya-kháábha  I am walking
b. 2ps  u-ya-kháábha  you are walking
c. 1pp  si-ya-kháábha  we are walking
d. 2pp  li-ya-kháábha  you (pl) are walking

general SPs

e. Class 1  ú-ya-kháábha  s/he is walking
f. Class 2  bá-ya-kháábha  they are walking
g. Class 1a  ú-ya-kháábha  s/he is walking
h. Class 2b  bá-ya-kháábha  they are walking
i. Class 3  ú-ya-kháábha  it is going
j. Class 4  í-ya-kháábha  they are going
k. Class 5  lí-ya-kháábha  he/she/it is walking
l. Class 6  á-ya-kháábha  they are walking
m. Class 7  sí-ya-kháábhá  s/he is walking
n. Class 8  tí-ya-kháábhá  they are walking
o. Class 9  í-ya-kháábhá  he/she/it is walking
p. Class 10 tí-ya-kháábhá  they are walking
q. Class 14  bú-ya-kháábhá  it is walking
r. Class 15  kú-ya-kháábhá  it is going (i.e. in process)
s. Class 17  kú-ya-kháájh-w-a  there is walking (taking place)
t. Class 17  kú-ya-kháájh-w-a  there is walking (taking place)  

2. 2. 4. 2. Object prefixes (OPs)

OPs have a very similar segmental shape to the SPs (although OPs are uniformly -CV-, that is, there is a required onset 224), and a very similar tonal shape (though they are uniformly H 225, unlike the SPs where there is a toneless subset (non-3p SPs). OPs have a complementary distribution to the SPs above; they have been introduced in §2.2.1.1 (46, column v). Unlike SPs, OPs are always anaphoric; where both OP and object are overt, the OP functions increasingly as a definite article (it is my observation that much, if not all, of Nguni appears to be in transition towards OP-as-definite-article; this is inapplicable in the case of the personal pronoun objects, which are inherently referentially definite).

223 It is not particularly important whether the (intransitive) verb takes the passive extension -w- (cf. §2.2.4.10), or not; the gloss remains impersonal (non-referential); the passive form (97t) may be commoner, depending on register (the end of the passive root reflects ‘palatalisation’ of the stem-final consonant, cf. §2.2.1.6).

Phuthi follows the general Nguni requirement here. Sotho, which has no general onset requirement, lacks onsets in its OPs specifically for classes 1, 3, 4, 6, 9 (the ‘weak’ classes, cf. §2.2.1.1 (48)) and for the reflexive -f-.

The morphological affiliation of the OP, however, is generally to the stem domain, and not to the SP domain. The morphological {OP+stem} combination is frequently called the ‘macrostem’, signalling the typically close tonological relationship across the two domains in a Bantu language.

224 One cannot tell from the examples in (99) that the OP is lexically H (without knowing more about tonology as it will emerge in Chapters 4 and 5), since the verb in these examples is H, and thus the OP surfaces as toneless/low (cf. discussion of the tonal properties of the OP in Chapter 5 §5.4).
There is one additional prefix in this set: reflexive -ti- (99u), which does not vary according to subject noun class (or SP noun class).

(99) **Object prefixes functioning anaphorically**\textsuperscript{226}

**personal OPs**

- a. 1ps bá-ya-\textit{gi}\-tsháádza they like me
- b. 2ps bá-ya-\textit{ku}\-tsháádza they like you
- c. 1pp bá-ya-\textit{si}\-tsháádza they like us
- d. 2pp bá-ya-\textit{li}\-tsháádza they like you (pl)

**general OPs**

- e. Class 1 bá-ya-\textit{mu}\-tsháádza úfáatí they like her, the woman \textsuperscript{227}
- f. Class 1a bá-ya-\textit{mu}\-tsháádza \textit{ntaaté} they like him, the father
- g. Class 2 bá-ya-\textit{ba}\-tsháádza éba-fáatí they like them, the women
- h. Class 2b bá-ya-\textit{ba}\-tsháádza bó-\textit{ntaaté} they like them, the fathers
- i. Class 3 bá-ya-\textit{mu}\-tsháádza mú-láyeetá they like it, the message
- j. Class 4 bá-ya-\textit{yi}\-tsháádza mí-láyeetá they like them, the messages
- k. Class 5 bá-ya-\textit{li}\-tsháádza lí-dzāakwá they like him, the drunkard
- l. Class 6 bá-ya-\textit{wa}\-tsháádza émá-dzāakwá they like them, the drunkards
- m. Class 7 bá-ya-\textit{si}\-tsháádza sí-bhíjí ni they like him/her, the singer
- n. Class 8 bá-ya-\textit{ti}\-tsháádza tí-bhíjí ni they like them, the singers
- o. Class 9 bá-ya-\textit{yi}\-tsháádza í-woomó they like it, the cow
- p. Class 10 bá-ya-\textit{ti}\-tsháádza tí-woomó they like them, the cows

\textsuperscript{226} The verb used throughout (99) is transitive -tsháádza ‘love’, which typically requires an animate subject.

\textsuperscript{227} The glosses here can be conflated to ‘they like the woman’ (and so on, for (99f-t)), where ‘woman’ is less contrastively emphasised than simply semantically definite. The whole of Nguni, especially Xhosa, appears to be reinterpreting the resumptive function of OPs into a definiteness system.
2. 2. 4. 3. Root and stem shapes

Like most Bantu languages, most Phuthi simple verb stems are by default two syllables (that is, the root is -CVC-), as in (100); a few are one syllable (root is -C-), as in (101)\(^\text{228}\); some are three syllables (-CVCVC-), as in (102). Very few underived verb stems are longer than three syllables (and if they are, it would be because they are the verb reflexes of ideophones).

These stem lengths are illustrated in (100-102) as infinitives, where the default tense/aspect marker (‘final vowel’) -a is provided to make the verb finite and well-formed as a main clause predicate. Verb roots belong to one of two lexical tone classes: H or toneless (low). Tone properties are pursued in Chapters 4 through 7 (the contrast between, and neutralisation of, the stem classes is examined in Chapter 8 §8.3.9, §8.3.11, and references). In the remaining data in this chapter, I indicate merely surface tone. In the data below (100a-f,101a-h,102a-j) are drawn from the toneless/low stem tone category; (100g-l,101i-o,102k-v) from the H category. The tone class affiliation of stems is not explicitly referred to beyond the data in (103).

(100) Underived stem shapes: 2-σ

\begin{align*}
\text{toneless/low tone class} \\
\text{a. kú-liim-a}^{229} & \quad \text{to cultivate} \\
\text{b. kú-yeet-a} & \quad \text{to do/make} \\
\text{c. kú-lwaan-a} & \quad \text{to fight}
\end{align*}

\(^{228}\) I provide this data (for comparative purposes) as the fullest set of 1-σ stems that I have recorded; some stems that are anticipated by the comparative Bantuist to be in this Nguni 1-σ set are missing:*-hla (= Z -(i)hla) ‘descend’ has been replaced by Sotho-origin -théwúúka (cf. Sotho -théua); *-bha (=Z -(i)mba) ‘dig’ has been replaced by Sotho-origin -yeebha (cf. Sotho -epa). The parenthetical -(i)- in the Zulu examples above indicates a ‘latent -i-’ vowel; cf. §2.2.4.5.

\(^{229}\) I indicate the morpheme boundary between root and final vowel tense/aspect marker -a in these data sets (100-103,109,111) even though I do not do so elsewhere in this dissertation, because the composition of the suffix morphology is a topic of discussion in this section.
d. kú-hlaat-a to wash

e. kú-ːl-a to cry

f. kú-ŋhaatsh-a to put on a blanket (as clothing)

H tone class

g. kú-bóón-a to see

h. kú-búút-a to ask

i. kú-ŋk-a to pick up, take

j. kú-nyíšk-a to give

k. kú-hláát-a to vomit

l. kú-yáát(-)i to know

(101) **Underived stem shapes: 1-σ**

toneless/low tone class

a. kúú-t-a to come

b. kúú-n-a to rain

c. kúú-ny-a to defecate

d. kúú-y-a to go (to)

e. kúú-b-a to become

f. kúú-w-a to fall

g. kúú-tjh-o to say so

h. kúú-tsh-i to say, do

H tone class

i. kúu-kh-á to pick, draw (water)

j. kúu-ph-á to give

k. kúu-s-á to dawn, grow clear; to be silly, naughty

l. kúu-f-á to die

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230 (100l,101g-h) commonly have irregular fixed final vowels in Southern Bantu (especially Nguni), in all -a paradigms (broadly: the indicative, infinitive and participial moods). Two also have irregular shapes in other paradigms: the perfective (-tjhitíyo ‘said so’, -tshitíyo ‘said’, cf. §2.2.4.4); -yati and -tjho do not take the subjunctive paradigmatic vowel -e, but retain -i and -o.

None of the Phuthi 1-σ stems, including (101a,o), have latent initial vowels (unlike all other Nguni languages); cf. discussion in §2.2.4.5.
m. kúu-tjh-á  to burn
n. kúu-dlí-á  to eat
o. kúu-y-á  to hear, sense, understand

(102) Underived stem shapes: 3-σ
toneless/low tone class
a. kú-nákaan-a  to think
b. kú-ʔádleek-a  to succeed
c. kú-hlágaan-a  to meet
d. kú-móncuuk-a  to have the outside taken off
e. kú-kgéikel-a  to dance the young men’s dance
f. kú-gídzi-z-a  to make the sound of cows’ hooves clopping
g. kú-bhacáam-a  to lie on the stomach
h. kú-lébuuk-a  to thank
i. kú-wóteel-a  to become drowsy
j. kú-gódvuuk-a  to go home

H tone class
k. kú-khúlúúm-a  to speak
l. kú-líbéél-a  to guard
m. kú-lúpháál-a  to grow old
n. kú-máméél-a  to listen
o. kú-sébéét-a  to work

There appear to be a number of 3-σ stems that are historically morphologically complex, that is, that where the root-extension complex has become lexicalised. There is little non-speculative point in attempting to decompose such stems synchronically. But in the light of what will be observed about verb extensions in §2.2.4.6 below, we may speculate that (102a,c,q) contain a historical reciprocal suffix -an-; (102b) contains a neuter-stative -ek-; (102e,i,l,n) contain an applicative -el-; (102s,v) contain a (transitive) reversible -ul-; (102d,j) contain a reversible neuter-stative -uk-; (102g) contains a stative positional -am-; (102m) contains a stative -al-; (102r) contains a contactive -atsh-. This still leaves the indeterminate ‘suffixes’ that appear to be full lexicalised into the stem in (102f,k,o,u): -iŋ-, -um-, -et-, -ur-, respectively. The only item that unambiguously contains no suffixes is the loan stem in (102t).
p. kú-lagaá-t-a to wish
q. kú-phabhaá-n-a to become mad
r. kú-fubaá-tsh-a to hold in the fist
s. kú-khu-huúl-a to remember
t. kú-jhayíy-a to dance (in the Western way)
u. kú- tlúthúúr-a to shake out
v. kú-phúmúúl-a to rest

(103) Underived (?) stem shapes: 4-σ
a. kú-sugú:Jl-a to convert (smn) toneless/low tone class
b. kú-tájkiis-a to thank toneless/low tone class
c. kú-phúmê:Jl-a to succeed H tone class

These 4-σ stems in (103), and almost all other stems longer than 3-σ, can be argued to be complex, even though the meaning is often lexicalised (e.g. 103a, 103c); (103b) is transparently loaned from Afrikaans dankie ‘thank you’ (via Sotho, where Afrikaans *d > t, and a default causative -is- suffix (cf. §2.2.4.10) is attached to the loan root).

2. 2. 4. 4. Vowel verbs

Repeating the observation from Chapter 1, Phuthi contains no vowel verbs, other than very recent loans from Sotho (or English). This is surprising for an Nguni language, in fact, for any Southern Bantu language. There are three historical scenarios: (i) what elsewhere in Nguni and Sotho are vowel-initial stems are supplied in Phuthi with a glide onset (104a-v): [w] preceding a labial (round) vowel /o u/, in (104a-g), [j] everywhere else233, in (104h-v); (ii) in a small set of exclusively Nguni items234, what is otherwise an initial vowel is simply absent in

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233 This strategy—[j]-insertion by default—is not specific to the verb system, but general to the language. It also applies to older loans from not only Sotho but also English and Afrikaans, e.g. the numeral ‘eight’ (a relative stem) is -yakga, from Afrikaans [ax(t)], cf. §2.2.3.1 (86c) above.

234 The distribution of these solutions is significant: the general Nguni vowels that receive an
Phuthi (105a-d); (iii) in recent Sotho-origin loans, a weak onset (a glottal stop) is inserted (106), as already noted in the discussion of noun class prefix allomorphy (§2.2.1.2).

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>gloss</th>
<th>Xhosa</th>
<th>Sotho</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kú-wóteela</td>
<td>to become drowsy</td>
<td>uk-ózela</td>
<td></td>
</tr>
<tr>
<td>b. mú-woógi</td>
<td>nurse</td>
<td>úm-ongi</td>
<td>mu-ógi</td>
</tr>
<tr>
<td>c. kú-wóótsha</td>
<td>to bask in the sun</td>
<td>úk-ótha</td>
<td>— 235</td>
</tr>
<tr>
<td>d. kú-wótlúlla</td>
<td>to stretch out</td>
<td>—</td>
<td>hu-ótlúlla</td>
</tr>
<tr>
<td>e. kú-wóóma</td>
<td>to become dry</td>
<td>úk-óma</td>
<td>hu-óma</td>
</tr>
<tr>
<td>f. lí-wuujiá</td>
<td>righthand side</td>
<td>—</td>
<td>hu-óta</td>
</tr>
<tr>
<td>g. kú-wóóda</td>
<td>to become thin</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>h. kú-yáákha</td>
<td>to build</td>
<td>úkw-ákha</td>
<td>hu-áha</td>
</tr>
<tr>
<td>i. kú-yááma</td>
<td>to touch (lit., fig.)</td>
<td>—</td>
<td>hu-áma</td>
</tr>
<tr>
<td>j. kú-yámúkeela</td>
<td>to accept, receive</td>
<td>ukw-ánkela</td>
<td>hu-amuhela</td>
</tr>
<tr>
<td>k. kú-yáráába</td>
<td>to answer</td>
<td>—</td>
<td>hu-árába</td>
</tr>
<tr>
<td>l. kú-yaadza</td>
<td>to increase, expand</td>
<td>úkw-ánda</td>
<td>(hu-atla ‘prosper’)</td>
</tr>
<tr>
<td>m. kú-yeeta</td>
<td>to do/make</td>
<td>úkw-enzá</td>
<td>hu-etsa</td>
</tr>
<tr>
<td>n. kú-yééma</td>
<td>to stop, stand up</td>
<td>úkú-ma &lt; -(i)ma</td>
<td>hu-éma</td>
</tr>
<tr>
<td>o. kú-yáneela</td>
<td>to be enough</td>
<td>ukw-ánela</td>
<td>(hu-anéla ‘receive’)</td>
</tr>
<tr>
<td>p. kú-yémúúla</td>
<td>to become pregnant</td>
<td>—</td>
<td>hu-émúla</td>
</tr>
<tr>
<td>q. kú-yétélá</td>
<td>to put blame on (smn)</td>
<td>—</td>
<td>hu-étélá</td>
</tr>
</tbody>
</table>

Inserted glide are ‘real’ vowels: they mostly have a fixed segmental value across Nguni; the vowels that are ‘deleted’ in Phuthi are dummy vowels: they tend to have highly variable segmental value across Nguni languages, and they do not have distinct tone properties. Downing (1998) has shown that these dummy initial vowels respond differently from non-dummy initial vowels to processes of morphological reduplication (dummy vowels cannot be used to fill out the reduplication template, whereas non-dummy vowels can).

235 ‘—‘ indicates that there is no cognate Xhosa or Sotho item (as the case may be) to the Phuthi lexical item in the first column; ‘(...)’ indicates a possible cognate.
(105) **Nguni initial vowel is deleted in Phuthi**

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>gloss</th>
<th>Xhosa</th>
<th>Sotho</th>
</tr>
</thead>
<tbody>
<tr>
<td>r. kú-yeedža</td>
<td>to make a journey</td>
<td>(úkw-enďà ‘to go to be married (of women)’)</td>
<td></td>
</tr>
<tr>
<td>s. kú-yhaála</td>
<td>to refuse</td>
<td>úkw-ála</td>
<td>—</td>
</tr>
<tr>
<td>t. kú-yááti</td>
<td>to know</td>
<td>úkw-áži</td>
<td>—</td>
</tr>
<tr>
<td>u. sí-yeedá</td>
<td>shoe</td>
<td>—</td>
<td>si-ɛtá</td>
</tr>
<tr>
<td>v. kú-yeebha</td>
<td>to dig</td>
<td>(ukú-mɓa, -(i)mɓa)</td>
<td>hu-ɛpa</td>
</tr>
</tbody>
</table>

(106) **Glottal insertion**

(106a) is the default form, instantiating the third (and the only synchronic) Phuthi response to vowel verbs: insertion of a glottal stop to create a weak (laryngeal) onset; (106b) is tolerated to some extent; some speakers also tolerate the [j]-inserted form (106c); no one accepts
glided [kw-] form (which form would imply that the stem is ‘really’ vowel-initial), nor the vowel-deleted form (106e). The well-formedness distribution of ‘succeed’ allomorphs in (106f-i) is the same, except that here even the [j]-inserted form is bad (106h).

2. 2. 4. 5. Latent -i- verbs

All Nguni languages (except Phuthi) have a small set of verbs that are not overtly vowel-initial, but which trigger allomorphy of any /a/-final morpheme immediately preceding such a vowel-initial stem. Doke (1935:136, 1982:34) has termed these ‘latent initial i-’ verbs, because the effect they have is to alter /a/ into [e], instead of the anticipated [a], as the Xhosa and Swati data indicates in (107a-b): the Nguni morphological long form prefix -ya- displays allomorphy with -ye-. But this category of verb stem does not occur in Phuthi: the Phuthi cognates to the latent initial i- Nguni verbs in (107) appear to have been morphologically levelled with respect to such an effect; there is no allomorphy of -ya-.

(107) Latent -i- verbs outside Phuthi

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Swati</th>
<th>Xhosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kúú-ta</td>
<td>kú-ta</td>
<td>ukú-ža</td>
</tr>
<tr>
<td>b. kúu-yá</td>
<td>kú-yá</td>
<td>úku-vá</td>
</tr>
<tr>
<td>c. gi-yaa-ta</td>
<td>ngi-ye-ta</td>
<td>ndi-ye-za</td>
</tr>
<tr>
<td>d. gi-yaa-vá</td>
<td>ngi-ye-vá</td>
<td>ndi-ye-vá</td>
</tr>
<tr>
<td>e. bá-yáá-ta</td>
<td>bá-ye-ta</td>
<td>bá-ye-ža</td>
</tr>
<tr>
<td>f. bá-yaa-vá</td>
<td>bá-ye-vá</td>
<td>bá-ye-vá</td>
</tr>
</tbody>
</table>

to come
to understand
I come
I understand / hear / sense
they come
they understand / hear / sense

2. 2. 4. 6. Productive extensions

Of the 10 to 15 verb ‘extensions’ (that is, derivational suffixes) active in the Bantu language family, no one language typically has a subset larger than 10 active extensions. Southern Bantu languages are typically claimed to have at least five extensions active, including

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236 There are only these two potential examples remaining in Phuthi; for other words, the Phuthi form is more closely cognate with Sotho than Nguni, e.g. kú-yeebha ‘to dig’ (cf. Xhosa ukú-mba, -(i)mba; Sotho hu-epa); kú-yeema (cf. Xhosa ukú-ma, -(i)ma; Sotho hu-ema).

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the applicative (‘applied’), causative, passive, reciprocal, neuter-stative (Doke 1954:66-70).

There is a larger set of marginally active, or mostly moribund, extensions (including the
contactive, reversive, and more), whose segmental presence can be identified in lexicalised
stems. The productivity status of each extension is much more nuanced in any one language than
is typically suggested in a descriptive Bantu grammar: there is a cline of productivity both for
individual extensions, and as to the flexibility of specific combinatorial possibilities.

In Phuthi, there are two broad groups of active extensions (and a third group of frozen
extensions, which are not the focus of this work\(^\text{237}\)): (i) highly productive extensions (-el-, -is-, -an-, -w-, -isis-), and (ii) relatively productive extensions (-ek-/akal-, -el/-el-, -ag-, -ul/-ul-, -uk/-uluk-)\(^\text{238}\). These extensions will be seen in the data that follows in Chapters 4 through 7. I
summarise their profile here, with brief examples (comparing the derived forms, in each case,
with the simplex non-derived forms).

The highly productive extensions are as follows (where ‘X’ is the action of the main
verb), in (108). These extensions are exemplified singly, and in limited combinations (extensions
given in bold), in (109).

(108) Highly productive extensions
a. **Applicative -el-** (109c,f,g,n,o,p): ‘X for, on behalf of, X at/in, X to the detriment of’
   (adds valency)
b. **Causative -is-** (109d,k,o,p): ‘make, cause, help X’ (adds valency)
c. **Reciprocal -an-** (109f,l,o,p): ‘X each other/one another’ (subtracts valency)
d. **Passive -w-** (109e,g,j,p): ‘be X-ed’ (subtracts valency)
e. **Intensive -isis-** (109h,l,m): ‘X intensively’ (has no effect on valency)

(109) Highly productive extensions: instantiation
a. si-ya-liim-a we cultivate
b. si-lim-a tí-síimí we cultivate fields
c. si-lim-el-a múkhóotí we cultivate for (our) friend

\(^{237}\) The ‘frozen’ extension suffixes include the **contactive**: -atsh-, e.g. kú-fuḫ⁴gátsa ‘to
hold in the fist’, kú-ɣátsa ‘put something on a body extremity’, kú-tfwáátsha ‘to put on the
head’, kú-bhagátsa ‘to put on blanket (as clothing)’; **positional**: -am-, e.g. kú-bháčáama ‘to lie
on the stomach’, kú-phákááma ‘to stand up’.

\(^{238}\) This has been catalogued exhaustively for Xhosa in Satyo (1985).
d. si-lish-ises-a múkhóotí    we help/make (our) friend cultivate

e. (tí-símdí) tí-yá-liing-w-a    (the fields) they are being cultivated

f. si-yá-lim-ela-an-a    we cultivate for each other

g. si-yá-lim-eel-w-a    we are being cultivated for (i.e. smn is cultivating for us)

h. si-yá-lim-isis-a    we cultivate intensively

i. si-ya-tshéég-a    we buy

j. tí-ya-tshéég-w-a    they are being bought

k. si-ya-tséég-isis-a    we sell

l. si-ya-tséég-isisis-a    we buy intensively\(^{239}\); we convince

m. si-ya-tséég-isísisis-a    we sell intensively

n. si-ya-tséég-ela-an-a    we buy for each other

o. si-ya-tséég-iséelas-an-a    we sell for each other

p. tí-ya-tséég-iséelas-an-w-a    they are sold for each other

The relatively productive extensions are given in (110), and exemplified in (111-114).

(110) Relatively productive extensions

a. Neuter-Stative -ek-, -akal- (111b,d,f,h): ‘be X-able, be in a state of being X-ed’ (subtracts valency). There are two allomorphs of this suffix: -ek- is commoner; -akal- (historically, was likely *-ak-al-) is lexically associated with certain verbs (111f,h).

b. Compleitive\(^{240}\) -el- (112c,f,i): ‘X to completion’ (has no effect on valency)

c. Extensive -ag- (113b,d,f,h): ‘X indiscriminately’ (has no effect on valency)

d. Reversive (transitive) -ul-, -ul- (114b,e,g,i,l,o,r): ‘un-X, undo effects of X’ (has no effect on valency)

e. Reversive Neuter-Stative -uk-, -ulk- (114c,f,h,j,m,p,s): ‘get un-X-ed, be un-X-able’ (subtracts valency)

\(^{239}\) There is an alternative reading ‘we cause to sell’, which analyses the suffixes as two causatives -is-is-, instead of the (phonologically identical) single intensive -isis-. Speakers confirm that discourse context rescues such potential ambiguity.

\(^{240}\) This is also called the ‘perfective’ (Doke (1954:69),(1984:152), for Nguni), but the term is potentially confusable with the inflectional perfective aspect (cf. §2.2.4.7, §2.2.4.8).
(111) Neuter-Stative -ek-, -akal-
   a. kú-phéduul-a \(^{241}\) to answer
   b. kú-phéduul-éek-a to get answered, be answerable
   c. kú-tfúkúl-l-a \(^{242}\) to release, to set free
   d. kú-tfúkúl-eek-a to get released, to be free/liberated
   e. kú-bón-a to see
   f. kú-bón-ákaal-a to get seen, to be visible \(^*\)bá-ya-bón-éék-a
   g. kú-tshéeb-á to hope, to believe
   h. kú-tshéeb-akáal-a to become trustworthy \(^{243}\)

(112) Completive -el/-
   a. kú-phúum-a to come out
   b. kú-phúm-éél-a to come out to, to make progress (with é-bhíili ‘in front’)
   c. kú-phúm-él-l-a to succeed
   d. kú-qeedza to finish
   e. kú-qedz-él-l-a to finish for, finish for the last time
   f. kú-qedz-él-l-a to finish off (e.g. glass of water); kill (if already ill)
   g. kú-khááb-á to go, walk
   h. kú-khab-él-l-a to go for/to, walk to
   i. kú-khab-él-l-a to visit

(113) Extensive -ag- \(^{244}\)
   a. kú-raay-a to kick
   b. kú-ráy-aag-a to kick indiscriminately
   c. kú-hlaab-a to stab
   d. kú-hlab-aag-a to stab indiscriminately
   e. kú-maatha to run
   f. kú-máth-aag-a to run here and there (i.e. indiscriminately)

\(^{241}\) There was a lower-frequency alternative stem reflecting labialisation: -phedyula.
\(^{242}\) Even though this stem appears to have a reversive -ul- suffix, there is no unambiguously related non-reversive corresponding stem.
\(^{243}\) This verb has an inceptive meaning ‘become trustworthy’; the gloss ‘they are trustworthy’ is assigned to the morphologically perfective form, cf. tense (§2.2.4.7) and imbricated perfectives (§2.2.4.8) below.
\(^{244}\) The extensive does not occur productively anywhere else in Nguni. It is used in a range of data in Chapter 7 to elicit depressor effects as deep into the verb stem as possible, cf. §7.2.2.1, §7.3.1, §7.4.2.1. (The extensive morpheme in Sigxodo Phuthi is voiceless -ak-, as in Sotho,
g. kú-lúúm-a to bite
h. kú-lúm-áág-a to bite indiscriminately

(114) Reversive -ul-, -u/l- and reversive-stative -uk-, -uluk-

a. kú-dlaal-a to spread out (e.g. a mat for sleeping on, a bed)
b. kú-dlaal-úl:l-a to fold up (e.g. a bed), gather up
c. kú-dlaal-úuk-a to become folded up (e.g. a bed)
d. kú-bháatsh-a to put on a blanket (as clothing)
e. kú-bháatsh-ul:l:a to take off a blanket (as clothing)
f. kú-bháatsh-uluuk-a to get taken off (of a blanket, as clothing)
g. kú-phéthuul-a245 to change (sth) into
h. kú-phéthuuk-a to get changed into
i. kú-phúúl-a to break
j. kú-phúuk-a to get broken
k. kú-kháatsh-áál-a to get tired
l. kú-kháatsh-úl:l:a to refresh
m. kú-kháatsh-uluuk-a to get refreshed
n. kú-fáás-a to tie (cf. Afrikaans vas [fas] (maak) ‘(make) fastened’; or perhaps English fasten)
o. kú-fás-úl:l-a to untie (e.g. of a showlace)
p. kú-fás-uluuk-a to get untied
q. kú-rhóol-a247 to roll up (cf. Afrikaans rol [rəl] ‘roll’)
r. kú-rhóol-úl:l-a to unroll
s. kú-rhóol-uluuk-a to get unrolled

It is instructive to observe that the combinations of verb extensions in Phuthi are frequently lexicalised, despite the apparent analytic separability of distinct extension suffixes. Semantic bleaching ensues from the lexicalised root-suffix combinations, to such an extent that hence of no use in setting up the depressor domains—the crucial empirical material of Chapter 7).245 (114g-h,i-j,l-m) are in a (reversive) transitive vs. (reversive) stative relationship, even though the base (non-reversive) form is no longer extant (hence the absence of a morpheme boundary between root and reversive). (114k) serves to confirm the non-reversive meaning of the forms without the reversive suffixes. Glosses: ‘smn’ = ‘someone”; ‘sth’ = ‘something’.

246 The morphological segmentation is assumed to be kú-kháatsh-áál-a (with frozen stative suffix *-al-), given that the reversive attaches to the (assumed) root -kháatsh-, even though this root is attested only as a possible (semantically opaque) cognate kú-kháátsh-a ‘to smear, paint’.

247 This set of lexical items (114q-s) is attested only in Sigxodo. It is clear from these loan roots (-fas-, -rhóol-) in (114n-p,q-s) that these reversive suffixes have been at least somewhat productive until fairly recently.
one or two suffixes are sometimes apparently interchangeable, with no salient semantic implications, as in (115b-c,d-f); the reversive -ul/- in (115d) can be particularly surprising\textsuperscript{248}.

(115) **Semantic bleaching and confusion**

a. kú-qeedz-a to finish
b. kú-qedz-gél-a to finish for, finish for the last time
c. kú-qedz-él-l-a to finish off (e.g. glass of water; kill if already ill)
d. kú-qedz-úl-l-a to finish thoroughly [lower register, incl. of children]
e. kú-qedz-ísíis-a to finish thoroughly
f. kú-qedz-él-ísíis-a to finish thoroughly

2. 2. 4. 7. Tenses

Phuthi has a limited range of tenses\textsuperscript{249} (intersected by a set of moods and aspects), classified according to their tone properties into lexical and grammatical paradigms, as exemplified for the indicative mood (which has the widest range of distinct tenses), in (116,117)\textsuperscript{250}.

(116) **Indicative lexical tenses**

a. long present (phrase-final)\textsuperscript{251} si-ya-liim-a \textsuperscript{252} we cultivate
b. short present\textsuperscript{253} (phrase-medial) si-lim-a... we cultivate...

\textsuperscript{248} This bleached reversivity is not without parallel elsewhere. President Bill Clinton said \(\text{http://www.iol.co.za/index.php?click_id=13&art_id=qw1058611501217B255&set_id=1}\) on July 19, 2003, in a speech on Nelson Mandela’s 85th birthday: ‘If you want to give Madiba a birthday present, do something about Africa’s challenges and about untapping its potential’, where ‘untap’ has some sort of semantic (but definitely not reversible) relationship with ‘tap’.

\textsuperscript{249} There are also compound tenses (in both habitual/stative and continuous aspects), formed with an auxiliary verb (such as -ba ‘be’), which I do not consider here.

\textsuperscript{250} ‘Indicative’ here refers to verbs which are declarative in locutionary force, and which are not subjunctive or participial—deploying indicative (non-subjunctive, non-participial) prefixes.

\textsuperscript{251} The tone properties of the long present indicative are examined at length in Chapter 4 §4.1-§4.3, and listed in Appendix A, paradigm A.

\textsuperscript{252} The exemplars for all paradigms in these sections (§2.2.4.7, §2.2.4.9) are the toneless stem -lima ‘cultivate’, and the H stem -bóón ‘see’. The analysis of tone properties of the cited paradigm is offered in Chapters 4 to 7 (and a wide range of paradigms is given in Appendix A).

\textsuperscript{253} The tone properties of the short present indicative are examined in Chapter 4 §4.5, and listed in Appendix A, paradigm C.
c. general future\textsuperscript{254} \hspace{1em} si-to-liim-a \hspace{1em} we will cultivate
\hspace{1em} si-to-bóón-a \hspace{1em} we will see
d. proximal future\textsuperscript{255} \hspace{1em} si-ta-kó-liim-a \textsuperscript{256} \hspace{1em} we will cultivate (soon)
\hspace{1em} si-ta-kó-bóón-a \hspace{1em} we will see (soon)
e. distal future\textsuperscript{257} \hspace{1em} si-ya-kó-liim-a \hspace{1em} we will cultivate (not soon)
\hspace{1em} si-ya-kó-bóón-a \hspace{1em} we will see (not soon)
f. recent past\textsuperscript{258} \hspace{1em} ség-lím-íiyé \hspace{1em} we cultivated (recently)
\hspace{1em} ség-bóm-íiyé \hspace{1em} we saw (recently)
g. long perfective\textsuperscript{259} \hspace{1em} si-lim-iýye \hspace{1em} we (have) cultivated (recently)\textsuperscript{260}
\hspace{1em} si-bóm-iýye \hspace{1em} we (have) seen (recently)

(117) \textbf{Indicative grammatical}
a. short perfective\textsuperscript{261} \hspace{1em} si-lím-iýye... we (have) cultivated (recently)
\hspace{1em} si-bóm-iýye... we have seen / saw (recently)
b. remote past\textsuperscript{262} \hspace{1em} saá-líím-ám \hspace{1em} we cultivated (non-recent past)
\hspace{1em} saá-bóm-ón-á \hspace{1em} we saw (non-recent past)

\textsuperscript{254} The tone properties of the general future, proximal future and distal future indicative are not examined in the dissertation, but the general future is catalogued in Appendix A, paradigm F.
\textsuperscript{255} Cf. previous footnote.
\textsuperscript{256} This infinitive-looking prefix kó- contains the mid vowel /o/—not the high vowel /u/—contrary to all infinitive vowels in Nguni and Sotho elsewhere where the (uncoalesced) vowel is consistently /u/. Elsewhere in Nguni, [o] occurs only if the verb -\textit{ta} / -\textit{ya} (grammaticalised into a proximal/distal future marker) is coalesced with the infinitive vowel in ku- to produce Zunda Nguni -\textit{zoku-} / -\textit{yoku-} or, even more contracted, -\textit{zo-} / -\textit{yo-} (but never *-\textit{zako-} / *-\textit{yako-}).
\textsuperscript{257} Cf. previous footnote.
\textsuperscript{258} This tense/aspect is not explored in the dissertation, but has the same tone properties as the remote past (117b; cf. Chapter 7 §7.6.2, Appendix A paradigm L): H SP, clearly depressed in non-3p forms, but no depressor shift into the stem (cf. §7.8.1.2 for analogous data in the present negative); stem σ1 is reserved for lexical tone; stem grammatical H tone extends to the ultima.
\textsuperscript{259} The tone properties of the long perfective indicative are examined in Chapter 4 §4.1-§4.3, and are listed in Appendix A, paradigm E.
\textsuperscript{260} The semantic and pragmatic distinction between ‘recent past’ (116f) and ‘perfectives’ (116g, 117a) is not well-established.
\textsuperscript{261} Unlike all other Nguni languages, the Phuthi short perfective is not segmentally different from the long perfective in any way (apart from the predictable absence of phrasal-final length on the penult). Rather, like Sotho, the short perfective indicative (examined in Chapter 6 §6.3.1.1; cf. Appendix A, paradigm J) is distinguished from the long perfective solely by its tone properties.
\textsuperscript{262} The tone properties of the remote past indicative are examined in Chapter 7 §7.6.2, and are listed fully in Appendix A, paradigm L.
The present and perfective tense/aspect are the only one which distinguish between long (or phrase-final) and short (or phrase-medial) forms: present tense (116a) and (116b) are distinguished by a toneless tense/aspect morpheme -ya-, and a rightwards tone target adjusted from antepenult to penult (due to the loss of penult length), cf. Chapter 4 §4.1, §4.5; (116f) and (117a) are distinguished only by tone pattern: the long form is a lexical pattern (cf. Chapter 4 §4.1); the short form is a σ2-to-penult grammatical pattern (cf. Chapter 6 §6.3.1.1).

The perfective tense/aspect has a special semantic subtype: stative/inceptive verbs, that is, verbs whose default meaning is ‘become X, come into the state of X-ing’ (118). These verbs are not morphologically distinct, but their perfective form refers to a present state which is the result of past (now completed) inceptive action (118), rather than to a salient past action (116f, 117a).

(118) **Inceptive/stative perfectives**

<table>
<thead>
<tr>
<th>present (inceptive)</th>
<th>gloss</th>
<th>perfective (stative)</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-phákáám-a</td>
<td>we stand up</td>
<td>si-phákééme ²⁶³</td>
<td>we are standing (have come into a standing position)</td>
</tr>
<tr>
<td>b. si-ya-hlaal-a</td>
<td>we sit down</td>
<td>si-hleeti ²⁶⁴</td>
<td>we are sitting (have come into a sitting position)</td>
</tr>
<tr>
<td>c. si-ya-súútsh-a</td>
<td>we become satiated</td>
<td>si-súútshi</td>
<td>we are satiated</td>
</tr>
<tr>
<td>d. si-ya-laabh-h-a</td>
<td>we become hungry</td>
<td>si-labh-i.jye</td>
<td>we are hungry (have come into a hungry state)</td>
</tr>
<tr>
<td>e. si-ya-nyóór-w-a</td>
<td>we become thirsty</td>
<td>si-nyór-جموعة ²⁶⁵</td>
<td>we are thirsty (have come into a thirsty state)</td>
</tr>
<tr>
<td>f. si-ya-khátsháál-a</td>
<td>we become tired</td>
<td>si-khátshééle</td>
<td>we are tired (have come into a tired state)</td>
</tr>
</tbody>
</table>

I have no comment thus far on reduplicatives and reduplication, because this construction can be configured for any paradigm, having no special underlying tonal properties of its own (cf. §2.2.4.11, Chapter 4 §4.4, and Appendix A, paradigm B).

---

²⁶³ No morphological constituency is indicated in (118a-c,f), because the morphological status of the suffix is not discrete with respect to the stem shape (due to imbrication, cf. §2.2.4.8).
²⁶⁴ (118b-c) are stative perfectives, and they have an irregular perfective morpheme.
²⁶⁵ This stem is borrowed from Sotho, with the passive extension -w- in its perfective form already attached in the donor language, hence not harmonic perfective -uwe, but Sotho -ywe (stem-vowel fixed as superclose, irrespective of the supercloseness value of the stem-final vowel).
2. 2. 4. 8. Imbricated perfectives

There is a morphological peculiarity widely commented on in Bantu (Bastin 1983), involving a blurred fusion of the boundaries between verb root (or other verb extension suffixes) and particular verb extensions containing -a-. This ‘blurring’ amounts to a kind of harmony, arising out of vowel replacement: $a \Rightarrow e / \_e$, subject to being triggered in the context of the perfective suffix. Typical examples (with analogues elsewhere in Southern Bantu) are given in (119). It is clear from (119c,g,h) that imbrication can propagate iteratively leftwards through suffixes which contain -a- into a stem -a- vowel, but that stem σ1 vowels are protected from this process (119a-b), unless the stem is only two syllables long (119e-f,120a-g) in which case a single application of imbrication results in substituting the stem vowel -a-.

Thus, once imbrication is selected by the morphology as applicable, it must occur at least once (that is, perfective suffix -e must substitute at least one -a- vowel to its left with -e-). Imbrication is thus subject to minimality (output requires at least -..e..e#): the positional prominence of σ1 is overridden by the minimality requirement.

We can also conclude from (119c) vs. (119d,k) that imbrication is subject to locality: once a non-/a/-bearing syllable intervenes (e.g. in (119d,k,l) it is the underlying applicative -el- which has become syllabic -l-), the imbrication propagation ceases.

(119) General imbricated perfectives (common to Nguni)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>si-ya-khátsháál-a</td>
<td>we get tired</td>
</tr>
<tr>
<td>b.</td>
<td>si-ya-pataal-a</td>
<td>we pay</td>
</tr>
<tr>
<td>c.</td>
<td>si-ya-pataal-ana-a</td>
<td>we pay each other</td>
</tr>
<tr>
<td>d.</td>
<td>si-ya-patał-l-aan-a</td>
<td>we pay for each other</td>
</tr>
<tr>
<td>e.</td>
<td>si-ya-bhaátsh-a</td>
<td>we put on (a blanket to wear)</td>
</tr>
<tr>
<td>f.</td>
<td>si-ya-tfwáál-a</td>
<td>we start carrying on the head, we carry (habitually)</td>
</tr>
<tr>
<td>g.</td>
<td>si-ya-libal-aan-a</td>
<td>we forget each other</td>
</tr>
<tr>
<td>h.</td>
<td>si-ya-búlál-aan-a</td>
<td>we kill each other</td>
</tr>
<tr>
<td>i.</td>
<td>si-ya-fubháátsh-a</td>
<td>we close a fist (on)</td>
</tr>
</tbody>
</table>
I observe that there are two sets of imbrication candidates in (119): any verb whose root ends in \(-aC-a\), where the perfective is then \(-eC-e\) (119a-i), and not \(*-aC-e\) or \(*-aC-iye\); also, more broadly, any verb whose root ends in \(-l-\), in which case the perfective is \(-l-e\) (119j-m), and not \(*-l-iye\). In other words, candidates (119j-m) reflect only potential imbrication, but cannot implement the pattern (other than \(-e\) in the perfective morpheme itself), since there are no candidate \(-a\) vowels locally preceding.

There are also verb stems\(^{267}\) that undergo imbrication in Phuthi which are not imbrication candidates elsewhere in Nguni (120); thus, the pattern appears to have penetrated the Phuthi lexicon more than in any related Southern Bantu language.

\[(120) \text{Imbricated perfectives apparently unique to Phuthi}^{268}\]
\[
\begin{align*}
\text{a. } & \text{si-ya-maab} & \text{we hold} & \text{si-meeb} & \text{we have caught, we are holding} \\
\text{b. } & \text{si-ya-laahl} & \text{we throw away} & \text{si-leehl} & \text{we have thrown away}
\end{align*}
\]

\(^{266}\) Confirmation that the conditioning for this \(-e\) allomorph of the perfective (even with no imbrication) relies on the final consonant being \(-l-\) and not something else comes from non-imbricating items such as \text{si-ya-pheetsh-a} ‘we finish (sth), reach the end of (sth)’,
\text{si-phetsh-iyye}, not \(*\text{si-phetsh-e}.*

\(^{267}\) These are almost always unambiguously non-Sotho stems: (120a,d) could be either Nguni or Sotho. The non-productivity of the process is confirmed by the stems that are unavailable for imbrication: \text{si-ya-hlab-a} ‘we stab’, \text{si-hlab-iyye} ‘we have stabbed’, not \(*\text{si-hleeb-e}.* This could also reflect the antipathy towards imbricating originally Nguni-only stems (even though \text{hlab-a} is found in both Nguni and Sotho, it is likely that Phuthi arrived with this stem already in the language prior to contact with Sotho languages). There are some saliently Nguni stems such as \text{-d\textsubscript{ll}a\textsubscript{ll}-a} ‘play’, which refuse to imbricate even to satisfy minimality: \text{si-d\textsubscript{ll}a\textsubscript{ll}-iyye} ‘we have played’, not \(*\text{si-d\textsubscript{ll}e\textsubscript{ll}-e}; \text{si-khabh\textsubscript{i}i\textsubscript{iy}e} ‘we have gone’, not \(*\text{si-khê\textsubscript{bb}-e}.*

\(^{268}\) Every one of these imbricated perfective forms also has a non-imbricated regular perfective, e.g. \text{si-mabh-hiyye} ‘we are holding’, \text{si-lahl-iyye} ‘we have thrown away’, \text{si-yadz\textsubscript{ii}i\textsubscript{yye} ‘we have increased’, etc. This contrasts generally with the preceding perfectives in (119) which are not unique to Phuthi, where there is generally no alternative \(-iyye\) perfective. (There is also sometimes attested a hybrid perfective with imbricated stem vowel and productive perfective.
Cf. Appendix A, paradigm E, for more long perfectives. Other examples of imbricated perfectives are seen in the short perfective paradigm discussed in Chapter 6 §6.3.1.1 (86-95).

2. 2. 4. 9. Non-indicative moods

Besides the indicative paradigms given in (116-118), there are paradigms representing what are traditionally labelled subjunctive and potential moods in Southern Bantu, and also the participial, imperative, infinitive and relative paradigms (or ‘moods’, if construed broadly to include non-finite verb paradigms), cf. Doke (1954:70-75,106-109; 1982:44-45).

These non-indicative moods are instantiated by a significantly reduced set of paradigms (across tenses and moods) compared to the indicative. The subjunctive exists chiefly in two paradigms: present (121a-b), and past (121c-d). The ‘past subjunctive’ in Nguni functions exclusively in consecutive (or sequential) verb constructions, and after certain auxiliaries (cf. Doke 1935:204).

suffix -iiye, e.g. si-yedz-iye ‘we have increased’ <-yedz-a ‘increase’). The dual heritage of the Phuthi grammar is reflected in the inability of the Sotho-origin -ag-(a) suffix to imbricate at all.

This verb refers to the putting on of anything, for the purpose of wearing or adornment, onto a body extremity (but not for the purpose of carrying, or doing work): e.g. a hat, shoes, gloves, glasses, earrings, even a nose-ring (should a Phuthi-speaker wear one!).

Again (cf. (114n) in §2.2.4.6 above), the presence of a loan stem such as -fas-a suggests that the imbrication process (or at least a partially productive analogical pattern of extension) remained morphologically productive until fairly recently.

Doke labels the participial a ‘sub-mood’ (1982:45), because it typically has forms corresponding to other moods in a Bantu language (such as indicative and potential, and contingent where it is found). This stems from the unclear notion of mood. In a traditional grammar of Latin or Greek, moods are mutually exclusive paradigms, never overlapping or nested. I do not pursue the distinction here between mood and sub-mood.

The subjunctive is claimed, generally, to function not only in its general subjunctive domain but also ‘in certain consecutive verb constructions’ (Doke 1935:204), both in present and past subjunctive paradigms. The past subjunctive also functions in sequence with certain...
The tone properties of the present subjunctive are examined further in Chapter 6 §6.2.2.2, and the tone properties of the past subjunctive are examined further in Chapter 7 §7.6.3.2.

The potential mood is exemplified in (122).

(a) Potential (present)

(a) si-ga-liim-a we might cultivate
(b) si-ga-bóón-a we might see

The non-finite participial mood exists for every tense and aspect. The distributionally commonest paradigms are the present participial (123a-b) and the perfective participial (123c-d).

auxiliaries, such as Mppa -ese [ese] (disharmonic, not *ese) ‘...ever’, e.g. s-ese səlīma ‘have we ever cultivated?’, s-ese sə-bóona ‘have we ever seen?’ Cf. Appendix A, paradigm N.

The grammatically H participial SPs and lexically H or toneless participial present stems are examined in Chapter 6 §6.2.1.1 (and cf. Appendix A, paradigm G). The perfective participial is a σ2-to-ultima pattern, identical to the imperative and perfective negative pattern (in §6.3.3.2). Doke (1935:160; 1984:162) observes that ‘participle’ is inappropriate as a would-be synonym for ‘participial mood’. But the use of ‘mood’ itself (unless broadened from traditional grammar) is questionable here, given that the participial is a dependent (non-finite) paradigm, much like the infinitive which Doke simply labels a ‘non-finite form’ (and not a mood).
(123)  
Participial (present, perfective)  
a. sí-liim-a ...us cultivating  
b. sí-bóón-a ...us seeing  
c. sí-lim-íiyé ...us having cultivated  
d. sí-bón-íiyé ...us having cultivated  

The imperative and the infinitive are exemplified in (124-125).

(124)  
Imperative  
a. lìimá cultivate!  
b. bóoná see!  

(125)  
Infinitive  
a. kú-liim-a to cultivate  
b. kú-bóoná to see  

Relatives have been presented in §2.2.3 as a type of adjectival formation. But the largest subset of the relatives (cf. §2.2.3.1 (86a,b,l) consists of verb stems\(^{276}\). Besides these, all adjective and relative stems can reflect all tenses, moods and aspects, just as verbs in the indicative do. Present tense relative verbs\(^{277}\) are exemplified in (126a-b), perfective relative verbs\(^{278}\) in (126c-d).

(126)  
Relatives  
a. lésí-límaa-kó (we) who cultivate  
b. lésí-bóona-kó (we) who see  
c. lésí-lim-íiyé (we) who have cultivated  
d. lésí-bón-íiyé (we) who have seen  

---

276 The (grammatical) tone pattern of the present tense relative verb paradigm is examined in Chapter 6 §6.2.2.1, and catalogued in Appendix A, paradigm H.
277 All relatives implement declarative locutionary effect (typically corresponding to the indicative morphological mood). Thus, the locutionary effects of subjunctive and participial are cannot be converted straightforwardly into a relative verb paradigm. Rather, auxiliaries (not treated here) must be employed in the relativisation of these non-indicative moods.
278 Perfective relative verbs are not examined elsewhere in any detail. Their grammatical tone pattern is σ2-to-ultima, as seen for imperatives (124) above, and in most of the negative grammatical tone patterns in §2.2.4.10 (127c,128a-f) below.
2. 2. 4. 10. Negative polarity

Phuthi displays distinct morphology for affirmative and negative polarity in every tense/mood/aspect paradigm. Negative polarity is implemented by various tonal and segmental means: (a) indicative (127a): segmentally by a negative prefix \( a^- \) which precedes a version of the subject prefix (NegSP), and with a negative suffix \(-i\), as well as with a particular grammatical tone/voice pattern (\( \sigma 2\)-to-penult, cf. the presentation of these tone patterns in Chapter 7 §7.8.1); (b) indicative perfective (127c): by the negative prefix \( a^- \), and a further prefix \(-ta^-\), as well as a particular grammatical tone pattern (\( \sigma 2\)-to-ultima, cf. Chapter 6 §6.3.3.2); (c) indicative compound forms (127b,d,e)—here: future; remote pasts I and II): segmentally by the negative prefix \( a^- \) alone, without suffix forms; (d) subjunctive, participial, potential, (imperative), infinitive, relative (128a-f): H tone SP + \(-g^a^- \) + stem + suffix \(-i\).

(127) Indicative negatives

a. present\(^{279}\)  
   a-sí-'líím-i we do not cultivate  
   a-sí-bóón-i we do not see

b. general future  
   a-sí-no-liima\(^{280}\) we will not cultivate, we cannot cultivate  
   a-sí-no-bóóna we will not see

c. perfective  
   a-sí-ta-liimí\(^ {281}\) we have not cultivated  
   a-sí-ta-bóoní we have not seen

\(^{279}\) There is no contrast between long and short present paradigms in the negative. The downstep in (127a) crucially represents a domain juncture found in such toneless/low paradigms; cf. discussion in Chapter 7 §7.8.1.

\(^{280}\) While this is the standard form of the future negative, it is clearly contracted from the still extant alternatives: \( a\text{-}sí\text{-}na\) ku-liima, \( a\text{-}sí\text{-}na\) ku-bóóna, where the construction is composed morphologically of a conjunctive base \(-na\) (cf. §2.2.5) followed by a form of the infinitive (and where the anticipated infinitive prefix H tone is absent in the negative here). The corresponding affirmative forms (with H infinitive prefix, and assimilated conjunctive \(-no^-\)) do not indicate future-ness per se but a modal ‘might’ construction: \( si\text{-}no\text{-}kú\text{-}liima\) ‘we might cultivate’, \( si\text{-}no\text{-}kú\text{-}bóóna\) ‘we might see’. Unlike the future affirmative \(-to^-\), the contracted negative \(-no^-\) is opaque to H extension rightwards, resulting in the only structures in the language where a H fails to extend as far as the antepenult. Longer toneless stems make this clearer: \( a\text{-}sí\text{-}no\text{-}libaala\) ‘we will not forget’, \( a\text{-}sí\text{-}no\text{-}libatiisa\) ‘we will not delay’. These patterns suggest that (124b,c) may behave as internally composite (separable) phonological words, in this respect. I do not have distinct proximal/distal future negative forms recorded.

\(^{281}\) The perfective negative selects a grammatical H pattern (\( \sigma 2\)-to-ultima), examined in Chapter 6 §6.3.3.2. There is no contrast between long and short perfective negative paradigms.
Non-indicative negatives

a. subjunctive  sí-ga-liim-í we should not cultivate / us not cultivating
/ participial283  let us not cultivate!284
/ imperative  sí-ga-bóon-í we should not see / us not seeing /
              let us not see!

b. past subjunctive285  ...a-sá-liima and we did not cultivate
...a-sá-booná and we did not see

c. potential  si-gá-ga-liim-í we might not be able to cultivate
               si-gá-ga-bóon-í we might not be able to see

d. infinitive  kú-ga-liim-í not to cultivate
               kú-ga-bóon-í not to see

e. present relative  lésí-ga-liim-í (we) who do not cultivate
               lésí-ga-bóon-í (we) who do not see

The remote past negative is formed with an optional negative SP prefix, then a fixed
prefix tasé-, followed by either a subjunctive stem (‘Remote Past I’) in (126d), or a participial
stem (‘Remote Past II’), in (126e). The semantic difference (if any) between the two remote past
negative formations is not yet clear. This remote past negative is not examined in detail in the
dissertation, but is given in Appendix A, paradigm P.

There is significant reduction in morphological contrast in the negative polarity of these
grammatical paradigms. A single form (128a) serves as the core of five negative paradigms:
negative (present) subjunctive, negative (present) participial, negative (present) imperative,
negative (present) infinitive and negative (present) relative; the only morphological difference
is that the infinitive and relative require prefixes specific to their paradigms (but the stem tone
patterns are identical in all negative forms here). The negative imperative requires 2ps or 2pp SP:
ú-ga-liim-í ‘do not cultivate! (sg)’, lí-ga-liim-í ‘do not cultivate! (pl)’;
ú-ga-bóon-í ‘do not see! (sg)’, lí-ga-bóon-í ‘do not see! (pl)’.

The hortative subjunctive glosses (128a) are more unambiguously selected by an a- prefix
on this negative form: a-sí-ga-liim-í ‘let us not cultivate!’, a-sí-ga-bóon-í ‘let us not see!’.

The past subjunctive is analysed in Chapter 7 §7.6.3.2 (where quasi-depression status is
proposed for Object Prefixes of that paradigm); also cf. §2.2.4.9 footnote 272.
f. perfective relative  lésí-ga-tá-liim-í (we) who have not cultivated
lésí-ga-tá-bóon-í (we) who have not seen

It is striking that, apart from the present indicative negative\(^{286}\) (and the compound paradigms: future and remote past)\(^{287}\), *all* lexical (127a,c) and grammatical (128a-f) negatives are formed with the same grammatical tonal morphology (\(\sigma_2\)-to-ultima pattern\(^{288}\)) and the same segmental morphology \(-\text{ga...i}\) (the negative past subjunctive (127b) lacks \(-\text{ga...i}\), but has the same grammatical tone pattern).

2. 2. 4. 11. Reduplication

Reduplication morphology is not explored in this dissertation, since it adds no new lexical or grammatical information\(^{289}\). Reduplicatives are drawn on in Chapters 4 through 7, however, to confirm other tone patterns being established, since they always invoke verb stems two syllables longer than their non-reduplicative counterparts.

Simply put, the reduplicative template is the common Bantu bisyllable shape (Downing 1994, 1995), copied from the first two syllables of the verb stem (129a-c), and filled with a dummy \(-\text{yi-}\) syllable (129e-f) if the non-reduplicative verb stem is monosyllabic (cf. discussion of morphological affiliation of the \(-\text{yi-}\) according to tone properties, in Chapter 4 §4.4, and also §4.1.3, §4.1.4.7).

Reduplicative stems can be constructed for any mood, tense, aspect, polarity, and with any verb extension suffixes attached; that is, there appear to be no restrictions on eligible reduplication paradigms. The data below reflects the present indicative (129a-f), perfective

\(^{286}\) The present indicative (127a, also Chapter 7 §7.8.1) takes a \(\sigma_2\)-to-penult grammatical H pattern, not \(\sigma_2\)-to-ultima.

\(^{287}\) The compound future and remote past paradigms should be evaluated for their negative pattern really only with respect to the first part of the compound, which in these cases is too short (one or two syllables) to reflect the parameters of a grammatical H pattern.

\(^{288}\) This \(\sigma_2\)-to-ultima pattern is examined in some detail in Chapter 6 §6.3.2.2.

\(^{289}\) Brief data is provided in Chapter 7 §7.7.2.3 (209) and footnote 134, that suggests possible H domain fission (or at least a very *sui generis* instantiation of what will be called in Chapter 7 ‘H domain expression’, conditioned by depressor syllables that multiply interrupt a single H domain, which domain in turn is expressed in multiple discrete spans of H intonation.
indicative (129g-h), and present subjunctive (129i-j), but could just as straightforwardly be built on any other paradigm (glosses in (129) correspond to the reduplicative stem in each case).

(129)  Reduplication

<table>
<thead>
<tr>
<th>non-reduplicative</th>
<th>reduplicative stem</th>
<th>reduplicative gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-liima</td>
<td>si-ya-liima-liima</td>
<td>we cultivate now and then</td>
</tr>
<tr>
<td>b. si-ya-bóona</td>
<td>si-ya-bóná-boona</td>
<td>we see now and then</td>
</tr>
<tr>
<td>c. si-ya-libaala</td>
<td>si-ya-liba-libaala</td>
<td>we forget now and then</td>
</tr>
<tr>
<td>d. si-ya-bóníísa</td>
<td>si-ya-bóná-bóníísa</td>
<td>we show now and then</td>
</tr>
<tr>
<td>or</td>
<td>si-ya-bóní-bóníísa</td>
<td></td>
</tr>
<tr>
<td>e. si-yaa-ta</td>
<td>si-ya-ta-yii-ta</td>
<td>we come now and then</td>
</tr>
<tr>
<td>f. si-ya-phá</td>
<td>si-ya-phá-yii-phá</td>
<td>we give now and then</td>
</tr>
<tr>
<td>g. si-lim-iiye</td>
<td>si-lima-lim-iiye</td>
<td>we have cultivated now and then</td>
</tr>
<tr>
<td>or</td>
<td>si-limi-lim-iiye</td>
<td></td>
</tr>
<tr>
<td>h. si-bón-iiye</td>
<td>si-bóná-bón-iiye</td>
<td>we have seen now and then</td>
</tr>
<tr>
<td>i. sí-líím-e</td>
<td>sí-límá-liim-é</td>
<td>we should cultivate now and then</td>
</tr>
<tr>
<td>j. si-bóón-e</td>
<td>sí-bóná-boon-é</td>
<td>we should see now and then</td>
</tr>
</tbody>
</table>

2. 2. 5. CONJUNCTIVES (AND ‘HAVE’)

There is a small set of conjunctions in Phuthi, including á ‘if/when’, kapa ‘or’, lhába ‘whether, if’, té ‘then, so, well’, těمبha (Mp) ‘but’, kódzwa (Sgx) ~ kódywa (Mp) ‘but’, lhayiba (~lhaba) ‘even if, although’, kútshi ‘that (complementiser)’, kánythší ‘on the other hand’, and the prefixed conjunctive290 lhá- (-ňhá-)291 ‘and, with’. There is little to say about conjunctions (other than the ‘and’ conjunctive): by default, all invoke the indicative for the accompanying verb.

290 Doke (1935:76-77; 1984:227,245) labels this na- in Zulu the ‘conjunctive formative’. Doke (1982:51) labels this conjunctive prefix an ‘adverb of conjunction’, excluding it from being a ‘conjunctive’ because it is not a separable word. But Doke’s notion of wordhood as a necessary criterion for an independent part of speech is theoretically uninsightful.

291 Lháyiba (~lhaba) ‘whether/even if’ takes the subjunctive. For ‘and/with’, lhá- is used in Mpapa; -na is also found, but only in the predicative construction (cf. discussion immediately below): -na lhá- ‘(be) with’ (that is, ‘have’); and its negative counterpart -na- ‘(not be) with’, that is, ‘not have’. In Sigxodo, lhá- does not occur; rather there is ňhá- ‘and, have [positive]’, na- ‘have [negative]’, and ňhayiba ‘even if’. Henceforth, I focus exclusively on the Mpapa form.
The conjunctive *lhá-* is used in two ways: (a) as a conjunctive copulative, that is, a predicative verb equivalent; and (b) as a (coordinating) conjunction prefix. This latter non-copulative conjunction is exemplified in (130a-r).

<table>
<thead>
<tr>
<th>(130) Copula</th>
<th>citation form</th>
<th>citation gloss</th>
<th>conjunctive</th>
<th>conjunctive gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-tfwaana</td>
<td>child</td>
<td>lhê-mú-tfwaana</td>
<td>and/with a child</td>
<td></td>
</tr>
<tr>
<td>b. ébá-tfwaana</td>
<td>children</td>
<td>lhê-bá-tfwaana</td>
<td>and/with children</td>
<td></td>
</tr>
<tr>
<td>c. mú-khóotí</td>
<td>friend</td>
<td>lhê-mú-khóotí</td>
<td>and/with a friend</td>
<td></td>
</tr>
<tr>
<td>d. ébá-khóotí</td>
<td>friends</td>
<td>lhê-bá-khóotí</td>
<td>and/with friends</td>
<td></td>
</tr>
<tr>
<td>e. í-bhùúka</td>
<td>book</td>
<td>lhê-bhùúka</td>
<td>and/with a book</td>
<td></td>
</tr>
<tr>
<td>f. tí-bhùúka</td>
<td>books</td>
<td>lhê-tí-bhùúka</td>
<td>and/with books</td>
<td></td>
</tr>
<tr>
<td>g. makootí</td>
<td>bride</td>
<td>lhà-makootí</td>
<td>and/with a bride</td>
<td></td>
</tr>
<tr>
<td>h. bó-mákootí</td>
<td>bride</td>
<td>lhà-bó-mákootí</td>
<td>and/with a bride</td>
<td></td>
</tr>
<tr>
<td>i. ŋtaaté</td>
<td>father</td>
<td>lhà-ňtaaté</td>
<td>and/with father</td>
<td></td>
</tr>
<tr>
<td>j. bó-ňtaaté</td>
<td>father</td>
<td>lhà-bó-ňtaaté</td>
<td>and/with father</td>
<td></td>
</tr>
<tr>
<td>k. mii-né</td>
<td>I/me</td>
<td>lhàá-mi</td>
<td>and/with me</td>
<td></td>
</tr>
<tr>
<td>l. bóó-na</td>
<td>they/them</td>
<td>lhàa-bó</td>
<td>and/with them</td>
<td></td>
</tr>
<tr>
<td>m. ge-mú-tfwaana</td>
<td>about a child</td>
<td>lhà-ge-mú-tfwaana</td>
<td>and about a child</td>
<td></td>
</tr>
<tr>
<td>n. gaa-bó</td>
<td>about them</td>
<td>lhà-gaa-bó</td>
<td>and about them</td>
<td></td>
</tr>
<tr>
<td>o. gu-múú-tfu</td>
<td>it is a person</td>
<td>lhà-gu-múú-tfu</td>
<td>and it is a person, and by a person</td>
<td></td>
</tr>
<tr>
<td>p. yi-i-bó</td>
<td>it is them</td>
<td>lhà-yi-i-bó</td>
<td>and it is them; and by them</td>
<td></td>
</tr>
<tr>
<td>q. lhó</td>
<td>this (Class 1/1a/3)</td>
<td>lhàa-lhó</td>
<td>and this (one)</td>
<td></td>
</tr>
<tr>
<td>r. mú-tfwána</td>
<td>another child</td>
<td>mú-tfwána lómúú-nye</td>
<td>every child (lit. mú-tfwána lómúú-nye)</td>
<td></td>
</tr>
</tbody>
</table>

---

292 The copulative also functions as the agentive (‘by X’) in a passive construction.
The conjunctive ₁h₄-₁h₅- has unusual tone and segment allomorphy\(^{293}\): (i) it appears as ₁h₅-, with a H tone, preceding a stem with a ‘normal’ noun prefix, as in (130a-f), most saliently as in (130e) where the H is ‘trapped’ between breathy consonants\(^{294}\), that is, *not* preceding Class 1a, 2b in (130g,i), probably also not in (130h,j); (ii) the conjunctive with segmental shape ₁h₆- is also H preceding a toneless pronoun base (130k); (iii) the conjunctive with segmental shape ₁h₇- is *not* H (but toneless) preceding a non-normal noun prefix, that is, preceding Class 1a (130g,i) and probably also Class 2b in (130h,j); this toneless ₁h₇- also surfaces preceding a H pronoun base\(^{295}\) (130l), or an instrumental (130m,n) or a copulative (130o,p), or a demonstrative (130q), or an adjectival relative (130r).

The copulative conjunctive form is used to express the predicate ‘have’, literally ‘be with’. In Mpapa, there is a sequence of two conjunctive morphemes in the affirmative -na ₁h₈- (with exactly the segmental and tonal distribution just described for the (non-copulative) conjunctive) as in (131a,c,e), but where ₁h₈- is omitted in the negative (131b,d,f). The -na ₁h₉- sequence is also used with the infinitive to indicate ‘usually’ (131g,h).

(131)  **Copulative conjunctive**
   
   a. si-na₁h₈-mú-tfwaana  
       we have a child
   
   b. a-sí-na mu-tfwaana\(^{296}\)  
       we don’t have a child

---

\(^{293}\) The instrumental adverbial prefix gá- (cf. §2.2.6.2) ‘with, by means of’ has precisely the same segmental and tonal distribution as the conjunctive ₁h₄- here.

\(^{294}\) The arguments around the specification of the conjunctive as H are messy: if the noun prefixes retain their phonological H specification following the conjunctive (*unlike* in the locative, cf. §2.2.1.4), then the conjunctive is never unambiguously H, because the conjunctive ₁h₈-₁h₉- is depressed (breathy), causing its sponsored H to shift rightwards (cf. Chapter 7 §7.4.1). Phonetic evidence from (130c,d) suggests that the noun prefixes following the conjunctive also lack their specified H tone (as in the locatives), as the tone on -mu- and -ba- is rapidly falling, which is the phonetic profile of a H shifted into a toneless syllable, not the expected surface shape of a non-shifted antepenult H tone being parsed *in situ*. So, if the conjunctive prefix is indeed H, and the noun prefixes are indeed toneless in this paradigm, then the H on the noun prefixes in (130a-d) results from shift off the depressed prefix; in (130e), the short rising H tone is from the conjunctive, reflecting depression blocking (cf. Chapter 7 §7.4.2).

\(^{295}\) Cf. §2.2.2.1 for discussion on absolute pronouns.

\(^{296}\) The word-hood status of the -na- portion is not clear; if the entire sequence is a single
There is good evidence that the -na lhe- sequence (found in Mpapa Phuthi) is not original, but calqued on the Sotho -na lí-: (i) In Sigxodo Phuthi, as in the rest of Nguni, there is only the common Nguni nhá- for the non-copulative conjunctive, -nhá- (breathy and H) for the copulative conjunctive positive, and -na- (non-breathy, toneless) for the copulative conjunctive negative, e.g. si-ṃhe-múthwaana 297 ‘we have a child’; a-sí-na-mu-thwaana ‘we don’t have a child’; (ii) even in Mpapa Phuthi, there are archaic lexicalised relative stems built off the conjunctive (132): in every case the conjunctive consists exclusively of -ne- (without lha-)298.

(132) **Lexicalised conjunctive stems**

<table>
<thead>
<tr>
<th>citation noun</th>
<th>gloss</th>
<th>conjunctive stem</th>
<th>predicate</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. émáá-la</td>
<td>lies</td>
<td>-ne-máá-la</td>
<td>ú-ne-máá-la</td>
<td>s/he is a liar (lit. ‘has lies’)</td>
</tr>
<tr>
<td>b. búú-tfu</td>
<td>humanity, humanness</td>
<td>-ne-búú-tfu</td>
<td>ú-ne-búú-tfu</td>
<td>s/he is kind (lit. ‘has humanness’)</td>
</tr>
<tr>
<td>c. í-ngaangá</td>
<td>stubbornness, arrogance</td>
<td>-ne-ngáangá</td>
<td>ú-ne-ngáangá</td>
<td>s/he is stubborn (lit. ‘has stubbornness’)</td>
</tr>
<tr>
<td>d. í-dzaaba</td>
<td>news, sth of interest</td>
<td>-né-dzaaba</td>
<td>í'-né-dzaaba</td>
<td>it is important / interesting (lit. ‘has a matter, has news’)</td>
</tr>
</tbody>
</table>

word, then the -na- provides a morpheme boundary opaque to H extension rightwards, resulting in a second instance of a compound structure where a H fails to reach at least the antepenult (the first example was the contracted future forms in §2.2.4.10 (127b) above).

297 There is no labialisation in Sgx Phuthi, hence -thw-, *-tfw-.

298 This -ne- (pseudo-coalesced from -na- + V) is always non-breathy, but displays the effects of depression (cf. Chapter 7 §7.2, §7.4.1-§7.4.2): it is surface-toneless; it ‘depressor-shifts’ its H into a following toneless stem syllable (132c); it displays ‘depression block’ by retaining its H only if the following syllable is itself breathy (132d); thus, the ‘have’ -ne- allomorph must be H underlyingly here, and must have been breathy (depressed) historically.
2. 2. 6. ADVERBIALS

There are two types of morphologically derived adverbs: (a) semi-productive adverbs, with ūkā- (§2.2.6.1); (b) productive adverbs with ga-[1] (instrumental) and gagá- (§2.2.6.2); ga-[2] (locative ‘inside’) is also productive (§2.2.6.3), but the other locative adverbials are lexically frozen. There are lexical sets of days and months built with ga-[1] (§2.2.6.4). Finally, there are (synchronically) underived adverbs in the form of adverbially functioning nouns (§2.2.6.5).

2. 2. 6. 1. Adverbs with ūkā-

The semi-productive prefix ūkā- is used in Phuthi (as commonly occurs in all other Nguni languages) to form a small set of adverbs. The prefix is mostly H before a toneless stem-initial syllable, but toneless before a H syllable299. The adverbials are given in the righthand column in (133). A few ūkā- adverbs seem to have no synchronic overt adjective cognate (133k-l).

(133) ūkā- adverbs

<table>
<thead>
<tr>
<th>adjective/relative stem</th>
<th>adverb</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. -hlé</td>
<td>beautiful, pretty</td>
</tr>
<tr>
<td>b. -bí</td>
<td>bad, ugly, evil</td>
</tr>
<tr>
<td>c. -ncí,</td>
<td>small</td>
</tr>
<tr>
<td>-ncí-nyaana</td>
<td></td>
</tr>
<tr>
<td>d. -dzé</td>
<td>long, tall, far</td>
</tr>
<tr>
<td>e. -nyheéti</td>
<td>many, a lot</td>
</tr>
<tr>
<td>f. -kgúulú</td>
<td>big, old, important</td>
</tr>
<tr>
<td>g. -nye</td>
<td>one</td>
</tr>
<tr>
<td>h. -bišiŋí</td>
<td>two</td>
</tr>
<tr>
<td>i. (-)gaá-ko</td>
<td>like that</td>
</tr>
</tbody>
</table>

299 It is not the case that ka- is uniquely H before toneless stem-initial syllables (as is the case with lha- and ga-) above, nor the case that ka- is H only in stems identifiably original to Nguni (133c-e,h-k), or that ka- is H only in stems identifiably loaned from Sotho (133l). But H is almost always H before toneless stem σ1 (133a-f,k,l); the exceptions in (133g-h) are numerals, and from other derived stems in (133i-j).
j. (-)mú-naadží nice-ness, sth nice    ká-mú-'náadží300 nicely
k. —                 kaa-bhé again
l. —                 ká-piilí301 soon

2. 2. 6. 2. Adverbs with instrumental gag-(1), formative gagá-

The productive instrumental prefix gag- ‘with, by (means of), about’302 can be attached to any noun, or nominal (absolute or demonstrative pronoun, adjective, relative), as in (134a-g). This instrumental gag- is distinct from the conjunctive lha- in that it is invariably H, as confirmed by (134g-h,135d), where the instrumental clearly continues to trigger the presence of a H even with Class 1a forms.

(134) Instrumental prefix

a. mú-tfwaana child    ge-mú-tfwaana about a child
b. ébá-tfwaana children ge-bá-tfwaana about children
c. f-bhuúka book     gé-bhuúka about a book
d. tí-bhuúka books    ge-tí-bhuúka about books
e. b-oo-ná them (Class 2/2b) gáa-bó about them
f. mii-né me (1ps)     gaá-mi about me
g. makootí bride     ga-mákootí bride
h. 1ha-makootí and the bride  1ha-ga-mákootí and about the bride

The ‘adverbial formative’—Doke (1954:112) for Southern Bantu generally; (1984:250)

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300 There are some strange tone mismatches between adjective stem and derived adverb, such as here in (133j), that I have no account for.

301 This form is borrowed directly from Sotho: ká-piilí ‘soon’ (cf. Phuthi root -bhili ‘in front’, in §2.2.6.3).

302 I gloss this just as ‘about’ below (134), but the whole range of glosses is possible for every item; ‘with’ here can only be used in the instrumental sense ‘by means of’. This prefix can also mean ‘on, in’ in a time sense (cf. §2.2.6.4 below).
for Zulu—is shaped \( g\hat{a}- \) in Phuthi, and has the same distributional properties as \( g\hat{a}- \): it is prefixable to any noun (135a-d).

(135) **Adverbial formative**

a. \( g\hat{a}\)-mú-tfu as big as a person
b. \( g\hat{a}\)-báá-tfu as big as people
c. \( g\hat{a}\)-á-mi as big as me
d. \( g\hat{a}\)-mákootí as big as a bride

2. 2. 6. 3. Locative adverbials: \( g\hat{a}-\)\(^{(2)}\), frozen forms

There is a second \( g\hat{a}- \) prefix in Phuthi, which signals a semantically narrowed form of the locative: ‘inside’. This is cognate with Sotho \( k\hat{a}- \) and cognate to Nguni \( ng\hat{a}- \), though the Nguni form has semantic widening properties: ‘in the vicinity of’. Because \( g\hat{a}-\)\(^{(2)}\) is invariably prefixed to an \( \hat{e}- \) locative (136a-e; and introduced in §2.1.6.1 (29-30), §2.2.1.4, §2.2.1.6), the -\( a- \) vowel can only be surmised\(^{304}\); this prefix always appears with the \( \hat{e}- \) locative as \( g-\hat{e}-\).

(136) **locative ‘inside’**

a. mú-loomo letter \( \hat{e}-\hat{m}\-l\-om\-eeni \) in/at/on/from/to the mouth
b. \( g\)-e-\( m\)-\( l\)-om\-eeni \( ^{305}\) inside/into the mouth
c. íí-d\( l\)\( u\)\( w\) house \( \hat{e}-\hat{d}\-w\-\( \hat{e}\)-eni \) in/at/on/from/to the house
d. \( g\)-\( \hat{e}\-\( d\-\( w\-\( \hat{e}\)-eni \) inside/into the house
e. mú-goobhú pumpkin \( \hat{e}-\hat{m}\-gobh-\( i\)-\( n\)-n\) in/at/on/from/to the pumpkin
f. \( g\)-e-\( m\)-\( g\-b\-h-\( i\)-\( n\)-n\) inside/into the pumpkin

\( ^{303}\) This is one of a very small set of adverbial formatives (nominal derivational (pre)prefixes).

\( ^{304}\) Xhosa, unlike Phuthi, prefixes \( nga- \) to the \( \hat{e}- \) locative with a an anti-hiatus consonant -\( s\)-, giving \( nga-s-e\-\). This onset -\( s\-) allows the two morphemes in Xhosa to be syllabified distinctly.

\( ^{305}\) There is variation in this ‘inside’ locative item: the -\( mu\)- fails to become H from the depressor-shifted prefix \( g-\hat{e}\)- by virtue of L domain minimality (Chapter 7 §7.5), but this minimality is not applied strictly, so \( g\)-e-\( m\)-\( l\)-om\-eeni \) is also possible.
Adverbs in Bantu include morphologically frozen locative forms which should bear reflexes of the Proto-Bantu locative classes 16, 17, 18, 25 (137a-d). In Phuthi, such adverbs will include the demonstrative forms in §2.2.1.1 (47) above, to be repeated below as (138a-c).

(137) Expected locative class reflexes in Phuthi

<table>
<thead>
<tr>
<th>Proto-Bantu</th>
<th>anticipated Nguni prefix</th>
<th>attested Phuthi</th>
<th>attested Xhosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Class 16 *pa-</td>
<td>*pa- ~ *pha-</td>
<td>—</td>
<td>pha-</td>
</tr>
<tr>
<td>b. Class 17 *ku-</td>
<td>*ku- ~ *khu-</td>
<td>ku- ~ k- ~</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ka- ~ kha- ~ kwa-</td>
<td></td>
</tr>
<tr>
<td>c. Class 18 *mu-</td>
<td>*mu-</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>d. Class 25 *e-</td>
<td>*e-</td>
<td>e-</td>
<td>e-</td>
</tr>
</tbody>
</table>

The ambivalence with respect to phonological aspiration—Class 16 {*pa- ~ *pha-}, Class 17 {*ku- ~ *khu-}—arises from confusion around the morphological status of these prefixes. If they were faithful to their proto-prefix status, we anticipate unaspirated forms, since the aspiration of proto-stops does not affect non-root morphemes (cf. Noun Class 15 prefix ku-, stative extension -ek-, -akal-). As in other Nguni languages, the attested reflexes of the proto-locative classes in Phuthi are sometimes aspirated as they have been reanalysed as non-prefix morphemes (that is, as being no longer morphologically analysable).

The Phuthi correlation is correct: the unaspirated human locative morpheme ku- (cf. §2.2.1.4) is productive, whereas the aspirated associative form kha- in (138) below) is not productive at all. Similarly, the chez-locative, ka- (illustrated in §2.2.1.4 (60) above) is fully productive; it appears to be an unaspirated form of the Class 17 associative, parallel to kha-. The apparently associative unaspirated form kwa-, however, occurs only in sequence with frozen locative adverbs, cf. (139) below. Finally, the fully productive Class 25 (Meeussen 1980) is more complicated, and has been extensively discussed and illustrated in earlier sections\(^\text{306}\). As Class 25

\(^{306}\) While Classes 16-18 are the widely agreed upon locative classes (Meeussen 1980, Guthrie 1967-1971, Doke 1935, 1954, 1982)—productive in some languages, though not generally in southern Bantu —the status of the most frequently occurring productive locative in south-eastern Bantu, sometimes called Class 25, is unclear. It has the fewest features of an independent morphological class. It has no independent affixes of its own associated with it, but rather uses those of (frozen) locative classes, typically Class 17, here: associative kwa-, SP ku- and OP -ku-. Phuthi data from this locative class has been extensively discussed and illustrated in terms of vowel harmony: §2.1.6.1 (29-30), §2.1.6.2 (32), §2.1.6.4 (36-37); morphology: §2.2.1.4
locatives have no bearing on frozen adverbial morphology, they are not discussed further here (though their presence is evidence in (138e-g), (pre)prefixing other frozen adverbial locative forms).

The only reflexes of the proto-classes 16-18 in Southern Bantu are found in what are typically classified as locative adverbs, given that they do not qualify a head noun (as Proto-Bantu locative classes 16,17,18 are always secondary noun classes). Phuthi has selected Class 17 for the forms it preserves (and not Class 16 as well, as found in other non-Tekela Nguni languages, e.g. Xhosa in (137a) above). The forms preserved are typically aspirated: locative demonstratives (138a-c), locative adverbs (138d), locative possessives (138e-g), negative existential (138h). But there is also one unaspirated form (138i) that appears to reflect Class 17: a doublet reflex for the locative demonstrate root *k-* in (137b) (which serves in the absolute pronoun form); and there is the productive locative prefix *ku-* used exclusively with human complements (138j).

(138) Phuthi frozen locatives

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>ḫháá-kha</td>
</tr>
<tr>
<td>b.</td>
<td>ḫháá-kh-o</td>
</tr>
<tr>
<td>c.</td>
<td>ḫhá-kh-áa</td>
</tr>
<tr>
<td>d.</td>
<td>kháá-tshí</td>
</tr>
<tr>
<td>e.</td>
<td>(é-)khá-bó- ~ (é-)khó-bó-</td>
</tr>
<tr>
<td>f.</td>
<td>ékheetfu &lt; *e-kha-itfu</td>
</tr>
<tr>
<td>g.</td>
<td>ékheeenu &lt; *e-kha-inu</td>
</tr>
<tr>
<td>h.</td>
<td>-kh-o</td>
</tr>
<tr>
<td>i.</td>
<td>k-oo-ná</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>ku-</td>
</tr>
</tbody>
</table>

<sup>307</sup> I call this a ‘doublet reflex’, because every other noun class has a single form which serves in both affirmative and negative constructions: *l-oo-ná* ‘the one’ [Cl.5], aká-naa-l-ó ‘s/he does not have it’ [Cl.5]; *t-oo-ná* ‘the ones’ [Cl.8/10], aká-naa-t-ó ‘s/he does not have them’ [Cl.8/10]. Cf. discussion on ‘have’ -na- in §2.2.5 above.

<sup>308</sup> Cf. Xh. ápha, Z. lápha; similarly for (138b-c): Xhosa/Zulu apho / lapho, aphaya / laphaya.

<sup>309</sup> Cf. Xh. / Z. phákáthi ‘between, middle’.

<sup>310</sup> (135h-i) are exemplified with akáá-kho, ‘s/he is not there’ (*akáá-ko); ú-k-o-ná ‘s/he is
Finally, there is a set of adverbial locative stems, built out of locative phrases (apparently lacking extant non-locative noun bases), but lexicalised differently (in some cases) according to the presence of \(ge\)- or \(e/-\emptyset\)-, where the \(ge\)- form indicates a spatial locative, and the \(e\)- (or \(\emptyset\)-) form indicates the grammaticalised relational figurative form, in (139a-e,f-g); in other words, there is no clear difference between \(e\)- and \(ge\)- forms (139k,m,n,q,t-v). For some words, the \(e\)-locative is missing (139h,i,j,s). All adverbial locative stems can form an adverbial phrase with one of the Class 17 associative prefixes \(kwa-\) (139a-v), except the ‘near/far’ words in (139w-x), which take conjunctive \(lha-\) \(lle\); the last example (139x) requires that the conjunctive be prefixed to the locative, hence the locative \(k\)- hiatus-prevention segment.

(139) \(e\)- and \(ge\)- space and time locatives

a. \(é\)-bhi li in front, before

b. bhi li \(311\) in front of bhi li kwé-sikóólo in front of the school

c. bhulu \(312\) in front of bhulu kwé-sikóólo in front of the school

d. bhílíni before bhíl-iní kwé-sikóólo before school [begins]

e. gé-bhi li in front (of) gé-hili kwé-sikóólo in front of the school

f. émyá after é-myá kwé-sikóólo after school [ends]

g. genívá behind ge-nivá kwáá-mi behind me

h. é-hlágutišíini at the side (of) é-hlágutshi kwé-sikóólo beside the school

*ge-hlágutshíini

i. ge-nxá lhéti \(313\) on this side ge-nxá lhéti kwé-múlaabho on this side of the river

*é-nxá...

\(\text{\textsuperscript{311}}\) This form stripped of prefix and suffix, as also (139c,l,o,u), seems to occur only in sequence with a following associative phrase, and not as an adverb alone.

\(\text{\textsuperscript{312}}\) (139c) is a ‘harmonised’ form of (139b): the round (labial) consonant seems to trigger a kind of low-level roundness harmony across the word.

\(\text{\textsuperscript{313}}\) The only other attested form of this word besides (139i.i) is in the enumerative phrase ‘there’ (*ú-kh-o-ná). There has obviously been dialect borrowing that these two roots display allomorphy with respect to aspiration, or the inheritance process from Proto-Bantu is nuanced in ways not yet understood. Negative existentials are also discussed in §2.1.6.1 (cf. footnote 64).
**nxa yikhí** ‘which side, which way, where?’

314 I indicate the penult here as breathy [á] even though there is no breathy onset consonant.

This lexical ‘depression-without-a-depressor’ configuration is discussed in Chapter 7 §7.8.2.1 (311k), footnotes 214, 220. There is also the Nguni fixed locative adverbial (perhaps borrowed): *é-phaási* occurring (only?) in the phrase *hlalá é-phaási* ‘sit down’.

315 This is also contracted to *tukwá- / ŋukwé- ‘on top of’.

316 This phrase occurs in the ‘Ave Maria’ prayer: *ulihlóhónoló kháthší kwébańatí* ‘you are blessed among women’.
2. 2. 6. 4. Lexical sets: days, months

The Phuthi lexicon configures days of the week (140) and months (141) as instrumental adverbs of time with the prefix ga. Days of the week run along the normal southern African pattern of ordinal numbers second through fifth, counting the days after Sunday; the le- (pseudo-coalesced from la-) associative prefix refers to a now ellipted Class 5 noun, probably ílaaga ‘day, sun’.

(140) Days of the week

a. ge-cááwe on Sunday
b. ge-ňvuulo on Monday (lit. ‘on the opening one’)
c. ga-lé-bú-bįįnjį on Tuesday (lit. ‘on the second one [understood: day]’)
d. ga-lé-bu-tsháatfu on Wednesday (lit. ‘on the third one [understood: day]’)
e. ga-lé-búú-ne on Thursday (lit. ‘on the fourth one [understood: day]’)
f. ga-lé-búú-hlaanú on Friday (lit. ‘on the fifth one [understood: day]’)
g. ge-ţiği béelo on Saturday (lit. ‘on the final one’)

The months are saliently borrowed from English or Afrikaans; they are obviously Class 1a nouns (since they lack an overt noun prefix), but typically never occur in forms other than the citation frames given below.

(141) Months

a. gá-jénůwáāřį in January
b. ga-féprúwáāřį in February
c. gá-máátjh(i) in March
d. ga-ęypúreli in April

317 This word (141a) is disharmonic, with respect to the non-edge-adjacent mid vowel which is not raised to ATR [ɛ], but retained as RTR [e]. Similarly for the mid vowels in (141b,d,i,j,k,l).

318 There is an alternative to this: ga-fébërwáāri ‘in February’.
e. ga-mééyįį in May
f. gá-juúníį 319 in June
g. gá-julááyi in July
h. ga-ágaásti in August
i. ga-séptémńba in September
j. ga-ókthóóbha in October
k. ga-nóvenńba in November
l. gá-di zeḿńba in December

2. 2. 6. 5. Underived adverbs

The small set of adverbial time terms in (142)—of which (142i-l) contain a surprising phonological aberrance (discussed below)—are not (or no longer) derivable.

(142) Underived time adverbs
a. búútle slowly 320
b. kápíilí soon 321
c. ítoolo yesterday
d. maluuba day before yesterday
e. malubééni three days ago (that is: day before day before yesterday)
f. kusáasá tomorrow
g. ge-múusó tomorrow
h. ge-músw-ééni day after tomorrow
i. lamhlaajńhé today

319 This word, along with (141g), presents the extremely rare phenomenon of non-breathy—though voiced—fricative onset [ʒ] accompanying a breathy vowel [u]; thus: a rising penult [ʊú].
320 This word is loaned directly from Sotho búútle, and is thus unanalysable in Phuthi.
321 This word is loaned directly from Sotho kápíilí as an unanalysable lexical item, hence the complex stem—likely otherwise to have been *ká-bhííli (with tonally distinct ultima)—cannot be morphologically reassembled synchronically in Phuthi.
(142a-i,m) are autonomous words; (142j-l) are a subset (possibly related to each other) of auxiliaries that function adverbially, usually occurring with prefixes attached, but under certain discourse conditions occurring also as autonomous forms\(^{322}\).

I have included this subset of adverbials (142j-l) because they, along with (142i) preceding, each appear to violate the standard RTR harmony conditions on right-edge-adjacent mid-vowels, in favour of an exceptional ATR setting. They are internally harmonic—where relevant (142j,k,m)—but only to the ATR right-edge mid-vowel, in accordance with what I have claimed earlier is possibly a phonological feature of a subset of adverbs: regular mid-vowel harmony is suspended (cf. Chapter 1 §1.1.5.3; §2.1.1 footnotes 18, 23; §2.2.6.5). Thus, right-edge mid-vowel phonological disharmony may be emerging as a lexical class marker for adverbs.

2.3. Conclusion

In the preceding sections, I have inventoried a substantial fragment of the phonological (§2.1) and the morphological (§2.2) patterns encountered in Phuthi. There is undoubtedly more than what has been given here (for example, there is a wider range of tenses, including a whole set of compound tenses; a larger set of aspect markers; more auxiliary verbs). But with the information presented in this chapter, the reader should be able to proceed easily to the analysis of tone data in Chapters 4 to 6, and then to the examination of the intersection of tone and voice patterns in Chapter 7. Paradigms in Appendix A will fill out many of those seen in this chapter.

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322 These auxiliary items do not display long penults, suggesting that they are clitic-like, and not full phonological words. Specifically, the assembled item téjhé (*téjhé) can occur phrase-finally, but never with a lengthened penult. In fact it is constructed from separate items: té ‘so’ and jhē ‘like this’ (the fused sequence is lexicalised in meaning and function).
Chapter 3

Optimal Domains Theory

This chapter lays out the theoretical assumptions made in this work which are necessary to model the wide range of tone and voice data analysed in the dissertation. I reflect on the potential interaction of theory with prosodic data in §3.1. I review the recent history of phonological theories that have handled prosodic data (especially from tone data) in §3.2, including the recent history of prosodic theory (§3.2.1), and I summarise the core properties of an OT grammar in §3.2.2. The explicit assumptions of Optimal Domains Theory (ODT) are provided in §3.3, along with a selection of the empirical results that will be reached in the course of the following four chapters. I conclude in §3.4.

3.1. Data vs. theory

Karl Popper (1972) has identified the critical primacy of explicit, falsifiable hypotheses to precede the construction of theory in any field, and the need for both the hypotheses and the predictions of the emergent theory to be testable. Without such, claims Popper, we have no demarcated domain of science (as opposed to pseudo-science). Popper supports Hume’s rejection of induction as a logically unjustifiable way to proceed, but also rejects Hume’s ‘psychological explanation of induction in terms of custom or habit’ (1972:42). The stronger the theoretical claims made (and thus, conversely, the easier to falsify), the better the theory. While Popper is unrealistically pessimistic about the inductive sources of hypothesis-making, he sets up the important falsifiability standard for scientific theoretical to aspire to.

This dissertation seeks to articulate aspects of a particular theory of phonology (or a set of intersecting theories): Optimal Domains Theory (ODT). ODT makes claims that are falsifiable, especially around the key linguistic construct, locality. This emergent instantiation of Optimality Theory is particularly well-suited to handling ‘long distance phenomena’, that is, phonological features which behave in a harmonic manner. Since the most active and complex prosodic properties of Phuthi involve tone and voice phenomena, ODT is a highly appropriate framework
in which to present the empirical content of the language. The critical theoretical assumptions I make for this work follow in §3.3.

Coupled with the stated theoretical aim is an empirical one: this work seeks to lay out a large fragment of the Phuthi tone grammar, in such a way that the prosodic nature of this Nguni language is revealed in a most detailed profile. It is hoped that the tone profiles that are revealed will be sufficiently interesting to Bantuists interested in comparative tone data, but also to general theoretical linguists interested in the extent of phonological and morphological variation in the tone system of a single language.

The interlocking nature of the work—and of all properly founded phonological work—will become clear in the four following chapters (4 through 7), where data is filtered through the theoretical lens of ODT, and in turn the data is used as a constant test of the architectural possibilities allowed or (more importantly) forced by ODT. The data is indigestible without the theoretical framework; the framework is untestable without a significant amount of data.

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1 I consider ‘descriptive linguistics’ to be a relatively meaningless term, in that theory and data cannot be dissociated from each other. If one attempts to divorce the act of observing (Popper 1972:46)—here: recording data—from the theoretical assumptions made while doing the observing (data-gathering), analytic incoherence must follow.

2 The question of what constitutes a significant quantity of data from any one language is obviously open to debate. I have aimed at the high end of the data continuum, seeking the widest range of tone patterns evidenced in the language. At the low end, one would at least need to present a non-trivial data fragment that allows the researcher and reader to establish the broad outlines of the grammatical parameters of the tone phonology and morphological paradigms possible in the language. The crucial thing is to honestly seek these patterns, and then to present all the data for those interested without sweeping the ‘unpleasant’ material under the proverbial rug. This note is intended to highlight the pervasive danger of making theoretical claims based on data from a language where that data is not elicited in a wide range of contexts, leading the researcher to make questionable claims. For example, a number of scholars working on tone in the last two decades have concentrated heavily on canonical moods (such as the indicative), sometimes even on a single tense (e.g. present indicative), and then have drawn a variety of implications from that paradigm as to the tone behaviour of that language, or of Bantu in general, or—worse still—of (register) tone languages in general. For example, in Nguni (including Phuthi, cf. Chapter 4 §4.5) it is only in the phrase-final (long form) present indicative, perfective indicative, present potential, present relative and present participial paradigms that the right-edge target of H tone expansion is the antepenult; in all other paradigms, it is the penult or ultima (cf. Chapter 2 §2.2.4); Chapter 6 §6.1 Tableau 1). Thus, the antepenult—frequently claimed to be the general H tone right-edge target in Nguni languages—is the slightly more unusual right-edge target, and not the default target overall. The central observation here is that lexical tone
3. 1. 1. Paucity of Data in Phonology

In general, the range of tone data available for any single Bantu language—out of the set of between 367 and 674 languages claimed for the Bantu family, cf. estimates gathered in Hinnebusch (1989)—is very limited. Early Bantu work (including Doke 1954, 1984) was happy to establish a set of tonal minimal pairs, and then proceed to document the morphology and phonology without further reference to tone. This work missed a vast area of empirical and thus theoretical material. Later, Bantu played a significant role in forcing the reshaping of phonological theory in the emergence of autosegmental theory (Goldsmith 1976); and yet tone has been continued to be invoked somewhat haphazardly to instantiate aspects of particular theories. A small set of researchers (including Bickmore, Cassimjee, Downing, Hyman, Kisseberth, Myers, Nash, Odden\textsuperscript{3}, Pulleyblank) has gone well beyond that early tradition, and has examined tone grammars in significant detail\textsuperscript{4}.

The present study does not claim to be an exhaustive account of tone in a single language, but does attempt to lay out a very wide range of Phuthi tone data, taken chiefly from verb paradigms (in Chapters 4 through 7), but augmented by data from noun paradigms (Chapter 5 §5.6, Chapter 7 §7.5, and in limited data sets elsewhere in these four chapters), and with the briefest outline of tone patterns (§2.2.2-2.2.6) from pronouns, adjectives and relatives, conjunctives, and adverbials.

\textsuperscript{3} Aware of the massive complexity of the tonology of a single language, Odden (p.c., 2000) has pointed out that it is more important to ‘get the facts right’ than to reshape theoretical phonology based on a very limited set of facts.

\textsuperscript{4} Even some of these researchers have sometimes presented only very partial accounts of tone patterns in a particular Bantu language that is their focus; these limitations are partly due to constraints placed by editors and publishers on length of scholarly articles. Fortunately, the web is changing this, and entire grammars can be placed online without effort (cf. some of the sources referenced at linguistlist.org, at www.yourdictionary.com and at www.rosetta.org).
3. 2. **Prosodic Theory**

I briefly review the recent history of phonological theory that impacts on tone (§3.2.1), and then consider the key properties of the Optimality framework (§3.2.2), under the headings architecture (§3.2.2.1), modules and primes (§3.2.2.2), underspecification (§3.2.2.3), autosegmental representation (§3.2.2.4), prosodic hierarchy (§3.2.2.5), and downstep, drift, float (§3.2.2.6). I turn to an examination of the ODT instantiation of OT in §3.3.

3. 2. 1. **Recent History of Prosodic Theory**

The history of research into the phonological properties of prosody (especially of tone) is of very varying quality until the mid to late 1970s. Within a structuralist paradigm, Harris (1944) had proposed ‘simultaneous components’, that is prosodic units that displayed a non-one-to-one relation with vowels or syllables; Firth (1948) similarly proposed ‘prosodies’ that acknowledged potential mismatch between prosody and segments. Neither approach was developed into a full model of tone; neither approach would suffice to model the much wider range of tone phenomena subsequently elicited and analysed in the 1970s and up to the present.

Generative Phonology (GP) allowed tone processes to be examined (summarised in part in the insights provided in Kenstowicz & Kisseberth 1979:264-286), but GP in its pre-autosegmental form failed to grant phonological tone prosody structural independence from the segmental tier (or later: from the skeleton) that has since come to be so salient. Proposals for tone invoked tone melodies as a string of a certain number of tone values (usually two: H, L) that were to be linked in some way (not necessarily one-to-one) to the segmental units—by default: vowels, later: moras (cf. Hyman (1985) on the mora point of departure). GP struggled to reveal asymmetry of H and L tones in a two-tone Bantu-type system to be manifest, since GP standardly assumed equipollent distinctive features and no (temporary or permanent) underspecification.

Around the time that Autosegmental Phonology (AP) was emerging in the mid-1970s, a variety of works began to address the phonological properties of tone (Leben 1973, 1978; Hyman 1973, 1978; Hombert 1978; Cheng & Kisseberth 1979, 1980, 1981) and the properties of stress (McCarthy 1979; Odden 1979; Hayes 1980). Driven largely by African tone systems (Odden 1995:444), the formal unbundling of certain features from the skeleton (ultimately all non-skeleton features) was admitted in the theory of AP first proposed in Goldsmith (1976),
which theory prompted researchers to properly think about non-linear phenomena for the first time, in particular, the study of tone. Both fields grew rapidly in the 1980s (Hyman 1989; Halle & Vergnaud 1987).

As AP was evolving, a second module of phonology was developing—metrical phonology—driven by a diverse array of stress phenomena (Hayes 1980, 1995; Halle & Vergnaud 1987; Kager 1999).

In addition to tone and metrical phenomena, a third empirical phenomenon began to be characterised as a tonal/metrical interface: the investigation of tone patterns with apparently metrical properties (Goldsmith 1987, Downing 1990a,b, 1996). There will be cause to refer to this tone/metric interface in the articulation of tone parameters in Phuthi (§3.2.3 below; Chapter 4 §4.1; Chapter 7 §7.8.2; Chapter 8 §8.2.2, §8.2.3).

In terms of general theory, the overgenerating Generative Phonology theory continued to evolve through the 1970s with the increasing role of morpheme structure constraints to patch up the overgeneration; in autosegmental phonology, the role of representations was made central, and the role of rules diminished, even while extrinsically ordered rules and the metaphor of time-sequenced rule application remained. The theoretical metaphor of rules and representations was finally abandoned in the work of Prince & Smolensky (1993, published as 2004), McCarthy & Prince (1993a), at which point a new framework was born: Optimality Theory (OT). In the generative phonology trade-off between rules and filters (patches), it had become clear that an account relying on rules failed in a number of crucial ways, perhaps the most central being the phenomenon of phonological ‘conspiracies’ first articulated in Kisseberth (1970), who had observed that there are cases where several rules conspire to achieve the same output from diverse inputs. GP and AP rules, in general, were telically specifying inputs and outputs, failing to observe that specific outputs were only the desirable (optimal) goal, irrespective of ways in which they were reached.

A large literature in the 17-year life of the OT framework has ensued, even while there remain very significant theoretical problems, such as the difficulty of eliminating all serialism (for example, the incorporation of apparently necessary sequencing (or outweighing) in the form of postlexical phonology over lexical phonology).

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5 A large part of this literature is to be found at http://roa.rutgers.edu.

6 The response to this particular impasse is in two things: (a) the careful articulation of the
One version of the optimality model—sympathy theory (McCarthy 1998, Jun 1999)—began to develop into what has been termed an alarming form of OT, making the framework apparently unconstrained, and as a result without prediction of any sort. Another form of the model appears to have cast itself as a phonetically accountable model of phonology (Kirchner 1996, 1997; Silverman 1995, 2000; Steriade 2000), where phonology is largely ‘reduced to’ phonetics. These moves have rendered OT in many ways wholly speculative, and are regarded by this author as a very risky theoretical direction to pursue.

Mohanan (1997, 2000) points out that Optimality Theory (OT) does not meet the criteria of a theory in and of itself, since it lacks testability (that is, Popperian falsifiability). Rather, it is a formal framework, a useful expository vehicle. Even if this be the case, there is a significant research programme that remains: OT is revolutionary in phonology in that ‘the theory is the constraints’ (Kisseberth, p.c., 1996), that is, the theoretically interesting content of the framework is the constraint body, and the universal (harmonic) vs. language-particular ranking of constraints in this body. The constraints are claimed each to be universal, and yet with varying surface effects, given varying dominance rankings in different languages (cf. §3.2.2 below).

Meanwhile, certain novel instantiations of OT have emerged that address certain classes of phenomena. One such instantiation is Optimal Domains Theory (ODT), developed at the University of Illinois from 1993 to 1996 by Charles Kisseberth and Jennifer Cole (and additionally by Kisseberth and Farida Cassimjee), to account for a range of prosodic long-distance phenomena, including vowel harmony (Cole & Kisseberth 1994, 1995a, 1995b, 1997) and tone (Cassimjee 1997, Cassimjee & Kisseberth [hence: C&K] 1998, C&K 2000, C&K 2003). ODT is driven, in large part, by the desire to retain the central phonological insight into locality (Kiparsky 1981, Levergood 1984, Steriade 1987, Halle & Vergnaud 1987, A&P 1994), which ODT preserves (in a constrained manner), where other OT instantiations fail to address locality in this fashion at all.

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constraints that may effectively invoke either lexical or postlexical domains, e.g. the Phuthi present tense indicative phrase-final form attracts a H tone to the ante penult (avoiding the heavy penult), but a phrase-medial form attracts H to the penult, since there is no heavy penult to avoid (cf. discussion in Chapter 4 §4.5, Appendix A, paradigms A vs. C); (b) the domain of application for any particular constraint may need indexing as lexical or postlexical (thus transferring the derivational sequence to a domain-specified ranking).
This dissertation is written in the ODT framework. The general theoretical assumptions of OT are given in §3.2.2, and my explicit ODT assumptions in §3.3.

3.2.2. Optimality Theory

3.2.2.1. Architecture

OT\textsuperscript{7} assumes the following architecture: (a) two levels for any lexical item: a lesser\textsuperscript{8} specified underlying representation (UR), and a more fully specified phonetic (surface) representation (PR); (b) a set of positively or negative framed constraints (CON) which constrain the output PR for any lexical item; (c) an explicit dominance ranking among these constraints for every language\textsuperscript{9}; (d) a generator (GEN) that issues an infinite output candidate set, based on any one UR lexical input form; (e) an evaluation function (EVAL) that sorts among the candidates for the unique form that satisfies the ranked constraint set in a particular constraint grammar.

I assume that unless commented on further, each architectural assumption (a-e) remains valid for an ODT grammar\textsuperscript{10}.

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\textsuperscript{7} The structure of an OT grammar has remained relatively stable since the classic texts of Prince & Smolensky (1993 [2004]), McCarthy & Prince (1993a, 1993b), albeit that enrichment has been proposed to internal structure of the constraint set (e.g. harmonic vs. non-harmonic constraints, cf. summary in Archangeli & Pulleyblank (1995)), and the principle of containment was eliminated fairly early on (insertion and deletion processes were reconfigured as segmental correspondence, cf. McCarthy & Prince (1995)).

\textsuperscript{8} Pre-OT assumptions were more clearly drawn: lexical minimality in the UR, and full specification in the PR (Steriade 1995). Cf. discussion of underspecification in §3.2.3.3.

\textsuperscript{9} It will become clear that within a single language—here: Phuthi—there is strong evidence for co-phonologies (re-ranked subgroups of the constraint body) within a single language, cf. Chapter 5 §5.6.2. This challenges unnuanced uniform ranking of constraints within a single language and across languages.

\textsuperscript{10} In fact, every assumption listed at the start of §3.2.2.1 has been challenged: (a') phonology may be monostratal (Cole, p.c., 1997); (b') constraints may be framed only negatively; (c') a grammar may contain co-phonologies (Inkelas 1998, Inkelas & Zoll 2003), that is, re-ranked subgroups of the constraint body (triggered by morphological paradigm); (d') the candidate set may be finite, curtailed by various pragmatic restrictions placed on the construction of the set (Kraska-Szlenk 1995); (e') EVAL may be unable to select a fully unique form, that is, there may be systematic ambiguity among some constraints.
3. 2. 2. 2. Modules and primes

There has been no clear theoretical separation of phonology from morphology in current linguistic research, and it is doubtful there ever will be. It is not in the ambit of this dissertation to attempt to resolve the phonology-morphology relationship, though it will become clear after the discussions in Chapters 4 through 7 that the phonology is required to access morphological information at a variety of points. Bantu languages such as Phuthi provide very strong evidence that the phonology and the morphology are intimately interconnected, perhaps more messily than was suggested in Lexical Phonology (LP) (Mohanan 1982, Pulleyblank 1986).

There has also been no consensus on the nature of the phonological units invoked by OT. In some sense, all bets have been off, given the diminished emphasis on the phonological facts claimed to fall out of the representation per se (as was very much the case under AP). Constraints have been proposed in OT that use a very mixed set of phonological and morphological elements: features, segments, sequences of segments, moras, syllables, morphemes (cf. Prince & Smolensky 2004), and also new evaluative concepts (often rather somewhat weakly claimed to reflect phonetic and physiological facts), such as ‘difficult’ and ‘lazy’ (Kirchner 1996, 1997, 2004), and the large body of nearly 1000 papers on the Rutgers Optimality Archive at [http://roa.rutgers.edu](http://roa.rutgers.edu). The issue of atomic constituents in OT remains unresolved.

There is also no unified opinion on the way that the primes relate to each other structurally in OT, for example, feature geometry—the highly structured subsegmental variation of autosegmental theory that emerged from the mid 1980s (Clements 1985, Steriade 1987, Clements & Hume 1995, McCarthy 1988)—is not fundamentally in conflict with OT, and yet its contribution is no longer clear.

3. 2. 2. 3. Underspecification

The much vaunted role of featural underspecification—both radical (Archangeli 1988, Steriade 1988, Archangeli and Pulleyblank (=A&P) 1994) and contrastive—has been dramatically reassessed as being vacuous (Steriade 1995), especially since the assumption that surface forms must exit the phonology fully specified has been surrendered, and the lexical minimality of the input may need to be revoked too in the light of claims about richness of the base (McCarthy & Prince 1995). But coupled with feature privativity and permanent
underspecification in the phonology, crucial parts of the earlier interactional simplicity can be rescued. This is the assumption the current work operates under: I follow the widest trend in Bantu tone studies of the past 20 years, based on insights provided by Meeussen (1954), Stevick (1969), Carter (1971), (1972), Odden (1981), that is, only High tones are phonologically specified. That is, the binary surface tone distinction between High (H) and Low (L) is distributed asymmetrically: L syllables receive no specification at all, that is, they are toneless. Their distribution falls out of the phonological grammar of H tones. Given the assumption of privativity, these toneless (non-H) syllables exit the phonology without specification.

The role of tone depression is considered at length in Chapter 7, where depression is generated in the simplest case by syllables whose onsets are phonologically breathy (§7.2) and in the extended case by a variety of syllables depressed grammatically according to paradigm (§7.5, §7.6.2; §7.8.1, §7.8.2). It will be concluded in Chapter 7 that there is strong evidence for a second privative tone, L (Low), resulting in a three-way tone system: H, L, toneless (permanently underspecified).

Similarly, [voice] will be maintained to be a privative feature, as Steriade (1995) has compellingly argued (cf. discussion in Chapter 7 §7.2.3 footnote 22); segmental voicelessness is thus straightforwardly the permanent absence of phonological [voice].

3. 2. 2. 4. Autosegmental representation

No clear position has been reached on whether autosegmental feature linkings are necessary in an OT construal of phonology: some researchers have retained them (Itô, Mester & Padgett 1993, Bickmore 1996), others have abandoned them (cf. ODT in §3.3. below, where autosegmental representations are rejected as both unnecessary and insufficient).

3. 2. 2. 5. Prosodic hierarchy

The prosodic hierarchy standardly assumed in the considerable literature on prosodic morphology (McCarthy & Prince 1995—and references therein) continues to hold in OT (1a), reconfigurable in a non-arboreal way as (1b) with the assumption that each nested bracketed level entails strictly dominated\(^\text{11}\) constituent membership in the immediately larger scope domain.

\(^{11}\) There is no overt proviso made in (1b) for nonexhaustively parsed material (such as a
In this dissertation, explicit reference needs to be made to each prosodic level in various constraints. The prosodic word (PrWd) right edge will be seen to be apparently instantiated twice in certain nouns (2): an absolute pre-pausal right-edge for the segmental word (PrWd_1), but also a second right-edge (PrWd_2) preceding the diminutive and augmentative suffixes for the mid-vowel harmony word (Chapter 2 §2.1.6.4); the PrWd_1 right-edge is referred to in rightwards widescope tone alignment (Chapter 4 §4.1).

Bounded feet (made up of syllables, and aligned to the PrWd edge) play a limited role in Phuthi; a single trochaic foot will be invoked in three instantiations, in order to identify a site for prosodic prominence: as the weight-accent projection site (the penult) in §4.1.4.6, as the tone-accent projection site (misaligned through non-finality to the antepenult) in §4.1.4.6, and as the depression-accent projection site (penult), in Chapter 7 §7.8.2.2).

Headedness, as reflected in the Line 1 asterisks in both projections\textsuperscript{12} here (3), is a property of feet; moreover, this headedness will play a role in identifying the only obligatory H-tone

\textsuperscript{12} This is a version of the illustration of the tone-accent and weight-accent projections given in Chapter 4 §4.1.4.6 (51).
prosodic position to be included structurally within a H domain (Chapter 7 §7.4.3.2, Chapter 8 §8.2.3): the (derived) HEAD.

The syllable is the unit of parsing for the feet just mentioned, irrespective of the prominent heavy (bimoraic) penult in phrase-final forms.

(3) PrWd-aligned feet are built from syllables

| Line 1 | * \( \sigma \) \( \sigma \) \( <\sigma> \) TAP head |
|---|---|---|
| Line 0 | \( \sigma \) \( \sigma \) weight-accent projection (WAP) |
| Line 1 | * \( \sigma \) WAP head |
| bá-yá-límísí sé laa na |

It is the mora (as the subpart of a bimoraic syllable), however, which is the unit and level where successful parsing of both L and H tones is assessed in situ on the heavy penult (Chapter 7 §7.2.5), in (4a), and for which successful right-edge expression of H in a H domain is assessed (Chapter 7 §7.4.1, §7.4.3.2), in (4b).

(4) H expression succeeds on a single stem mora

a. si-ya-[\{yʊ\}u]na we harvest

b. [bá-yá-{yʊ}l]íša they help harvest

The successful expression of H on at least one of the two penult moras will be shown to fall out of competing principles (anti-contour, minimal expression, faithful Low voicing expression); cf. Chapter 5 §5.3.1-5.3.2.

3. 2. 2. 6. Downdrift, downstep, float

A theoretical issue that remains unresolved in OT relates to automatic and non-automatic downtrends of the pitch register of H tones, traditionally called downdrift (automatic) and downstep (non-automatic). In autosegmental theory, downstep was characterised in the representation by a floating L tone (Pulleyblank 1986). It is not clear whether floating features are available in OT as a theoretical notion. While Bickmore (1996, 1997) makes use of float, and Yip (2002) of *FLOAT to induce tone association, Cole & Kisseberth (1994, 1995a,b, 1997) make
conscious use of the parse/express ODT architecture to avoid the notion of float (cf. §3.3.6). Downstep will be claimed to uniquely fall out of the commencement of a domain left edge.

3. 3.  Optimal Domains Theory

The core claims of Optimal Domains Theory (ODT) will be examined under these headings: narrowscope and widescope domains (§3.3.1); preservation of locality (§3.3.2); ODT principles (§3.3.3); expression: proper, improper, minimal, fatal (§3.3.4); metrical feet and headedness (§3.3.5); OCP, fusion, downstep (§3.3.6).

3. 3. 1. Narrowscope and Widescope Domains

ODT was developed initially by Cole & Kisseberth (1994,1995a,b,1996) as an instantiation of an optimality grammar in every way, except that an additional formalism is made explicit: every phonological feature F is licensed to parse only by its associated feature domain (FD), as articulated in the first ODT claim (5) which frames harmony, and the second claim (6) which indicates the formal status of domains in the grammar (Cole & Kisseberth 1994:102).

(5) **ODT claim 1:**
‘Harmony is the requirement that a feature [F] be uniformly realized on anchors in a F-domain.’

(6) **ODT claim 2:**
‘F-domains are explicit aspects of phonological structure, with the same status as structures for the syllable, foot, word, etc.’

By default, the domain of a feature (indicated by subscript ‘FD’) is in situ (narrowscope, that is: basic alignment): the prosodic unit that sponsors the feature (7a) is the domain of the parsed (and expressed) feature (7b). The domain of the parsed feature F can also extend left or right beyond the sponsor (7c-e), creating a widescope structure, if that language tolerates harmonic assimilation, that is, if there is a tension stronger than basic alignment which overrides faithfulness of the sponsored feature to its sponsor position (cf. 10-11 below).
Basic and Widescope Alignment are framed in (8-9), based on Cole & Kisseberth (1994:103), where F-domain stands for ‘feature domain’, PCat for ‘prosodic category’ and MCat for ‘morphological category’.

(8) **Basic Alignment** (BA)
   a. BA-Left Align (Sponsor_Anchor, Left; F-domain, Left)
   b. BA-Right Align (Sponsor_Anchor, Right; F-domain, Right)

(9) **Widescope Alignment** (WSA)
   a. WSA-Left Align (F-domain, Left; PCat/MCat, Left)
   b. WSA-Right Align (F-domain, Right; PCat/MCat, Right)

The schematic widescope harmony domain in (7c-e) reflects the ‘optimisation of constraints on the structure of F-domains with other constraints on the realisation of [F]’ (Cole & Kisseberth 1994:103). Specifically, Cole & Kisseberth (loc. cit.) propose two principles of feature behaviour: a processing constraint on speech perception (10a), and a production (possibly also perception) constraint on the phonological system (10b).

(10) **Principles of feature behaviour**
   a. **Perceptibility**: Features should be perceptible.
   b. **Articulator stability**: Minimize changes from the neutral, steady state of the articulators.

These two principles are best satisfied by extension of a domain, that is, by a widescope domain (11).
(11) **Extension** (Cole & Kisseberth, loc. cit.)

Extend a feature over longer stretches of sound in order to maximize Perceptibility and Articulator Stability.

Furthermore, every eligible feature-bearing unit inside the domain *expresses* the domain-parsing feature by a principle (and constraint) of expression (12), exemplified for proper (full) expression in (13a-b).

(12) **Expression** (Cole & Kisseberth, loc. cit.)

[F] must be affiliated with every anchor in an F-domain.

(13) **Proper Expression**

a. \([\text{FD} \sigma_f]_{\text{FD}}\)

b. \([\text{FD} \sigma_r \sigma_e \sigma_f]_{\text{FD}}\)

Proper (or default) expression can be less than fully optimal (14a-c), however, under certain circumstances, including the situation when expression is interfered with by a class of antagonistic anti-express constraints termed CLASH in the grounding model of A&P (1994). In that case, perfect or proper expression of (13a-b) contrasts with the imperfect or improper expression in (14a-f), a subset of which displays fatal expression (14d-e) as no F-bearing unit in the F-domain expresses F at all, indicating that the domain contrast is completely neutralised\(^{13}\). (14f) is a special case where the domain is properly expressed for all the feature-bearing units inside the domain, but the domain sponsor is not incorporated into the domain itself\(^{14}\).

---

\(^{13}\) The issue of empty F-domains has been argued for in Cole & Kisseberth (1997), but was subsequently withdrawn by Cole (p.c., 2002). A minimal expression constraint—Express_H(\(\mu\))—is motivated in Chapter 5 §5.3.2.2 (72). Evidence in Chapter 7 §7.2 will clearly support this minimal H expression, even if that domain needs to expand itself even further rightwards than normal (§7.4.1, §7.4.3), typically called depressor shift (or depression-triggered H tone shift). In a marginal (but robust) configuration in §7.7.1, we will see what appear to be overlapped HDs (that is, appearing to violate claimed universal strict linearity). In effect, depressor-containing domains that appear to overlap (and fuse) will seem to surface empty (that is, where the domain trigger, H, is unexpressed). But it will be shown that, rather, the tone trigger (sponsor) of the domain lies outside the domain—an unincorporation configuration (cf. following footnote)—and that there is no empty domain. Thus, ‘fatal expression’ (14d-e) is never encountered in Phuthi.

\(^{14}\) This unincorporation configuration is encountered in Chapter 7 §7.7.1, and the result of a set of tone/voice interactions where the depression feature (L) appears to force domain overlap of
Improper Expression

a. $[\sigma \sigma \sigma \sigma]$  
b. $[\sigma \sigma \sigma \sigma]$  
c. $[\sigma \sigma \sigma \sigma]$  
d. $[\sigma \sigma]$  
e. $[\sigma \sigma \sigma \sigma]$  
f. $\sigma \sigma \sigma \sigma$

3.3.2. Preservation of General Locality

This decoupling of domain-parsing and domain-expression allows ODT to retain the crucial universal principle of locality at the centre of phonological theory. General locality (or ‘relativised locality’, cf. discussion in §3.3.3.1 below) has been widely assumed in autosegmental phonology, articulated in the work of Kiparsky (1981), Levergood (1984), Steriade (1987), A&P (1994). (General) locality can be phrased as (15).

(15) Locality

Phonological relations are local, that is, phonological relations can only be established between constituents that are adjacent on one prosodic morphological tier.

Adjacency, the structural configuration which locality appeals to, can be defined for any prosodic morphological tier as the absence of intervening eligible feature-bearing units. This assumes the prosodic hierarchy already presented in (1) above, and augmented below by the presence of subsegmental (or submoraic) features (F), to be parsed into F domains (16).

---

The claims for locality extend beyond phonology to syntax as well.

Adjacency normally indicates absolute chronological adjacency (relativised in a CVCV sequence to the ‘adjacent’ consonants (C...C) and the ‘adjacent’ vowels (V...V). Locality subsumes abstracted adjacency on a feature geometrical tier, such as two tones more than one syllable apart, with perhaps several intervening toneless syllables.
Thus, in (17) locality would be in violation, because the configuration is gapped at one prosodic level: represented autosegmentally (17a), reinterpreted in domains terms (17b); only the first and third moras carry the autosegmental link to feature $\alpha$ (17a), only the first and third moras reflect featural property ($\alpha$) in (17b). This ill-formedness of gapped configurations follows from violation of a principle of precedence (A&P 1994:38), given here in (18).

(17) Gapped configurations violate locality
    a. $* \mu_i \mu_j \mu_k$
    b. $* ( [\mu_{(\alpha)}_i], [\mu_j] [\mu_{(\alpha)}_k] )$

(18) Principle of Precedence
    Precedence relations cannot be contradictory.

A&P (1994) go on to show that the principle of precedence rules out gapped configurations and also derives the ‘generally accepted prohibition against crossed association lines’. This can be reinterpreted in ODT as a ban on formally intersecting (overlapping) tokens of the same feature, to be framed in this work as the constraint *OVERLAP (19), given in Kisseberth (1994:134).
*OVERLAP
F-domains cannot overlap, that is, \([x...[y...]y]\) is incoherent\(^{18}\).

We will see below that locality will only appear to be violated in transparency configurations, but that in fact structural locality can (and must) be preserved at the level of the domain parse. That is, domain parsing of the same F cannot violate locality ever (20a-b)\(^{19}\). This is a universal claim.

(20) **Locality is inviolable in FD-construction**

a. \(* \, [\sigma_r \, \sigma \, \sigma_r] \, \sigma_r \)**

b. \(* \, [\sigma_r \, \sigma \, \sigma_r] \, \sigma_r \)**

But proper Expression can be violated to satisfy a Clash constraint, such that transparency effects are derived in certain harmony systems (21a), exemplified in (21b-c).

(21) **Transparency**

a. \(\text{WSA}_F >> \text{Expression}_F\)

b. \([\sigma_r \, \sigma_e \, \sigma_r] \) \(\sigma_e\) is transparent (and antagonistic) to the harmonic trigger feature F at the right edge

c. \([\sigma_r \, \sigma_e \, \sigma_r] \) \(\sigma_e\) is transparent (and antagonistic) to the harmonic trigger feature F at the left edge

Conversely, opacity effects are derived from the ranking of Expression over WSA (22a), exemplified in (22b-c).

---

\(^{18}\) The expensive but indispensable cost of adhering to *OVERLAP is the unincorporation configuration to be encountered in Chapter 7 §7.7.1. Cf. footnotes 13, 14 above.

\(^{19}\) These configurations would be tolerable, only if the sponsor-feature fissions itself, so that the non-sponsors in (20a,b) also become sponsors, that is, if there is full fission of the sponsor feature. This strategy is employed by A&P (1994) in the analysis of apparently locality-violating vowel harmony phenomena in Wolof. But fission is a very powerful strategy: it must be a last resort to solving harmonic non-locality. And the conditions for invoking fission must themselves be subject to significant constraint. Cf. the fission candidate in §3.3.4.1 (28b) below. There will be an innovative claim made by Ní Chiosáin & Padget (1997, 2001), also discussed in §3.3.4.1 that locality is strict, that is, that no relativisation of locality is phonologically licit. They acknowledge—reluctantly (and erroneously, I argue)—the possibility of tone feature fission.
(22) **Opacity**

a. Expression$_f$ $\gg$ WSA$_f$

b. $\sigma\sigma_e[\sigma_e]$ $\sigma_e$ is opaque (and antagonistic) to the harmonic trigger feature F at the right edge

c. $[\sigma_f]\sigma_e\sigma$ $\sigma_e$ is opaque (and antagonistic) to the harmonic trigger feature F at the left edge

3.3.3. **ODT Principles**

C&K (1998:43-45) have proposed to replace the standardly assumed IDENT-IO constraint (M&P 1995)—or constraint family—with a set of basic domain construction constraints (23) that ensure a faithful relationship between underlying features and surface domain configuration.

(23) **Principles of ODT**

a. Domain Correspondence (F-sponsor);

b. Incorporate (F-sponsor);

c. Uniqueness (F-sponsor);

d. Express (F).

**Domain Correspondence** indicates perfect faithfulness between input F-sponsors and output F-domains (and is violated by widescope domain effects); **Incorporate** indicates that the sponsor should be incorporated into the F-domain that it sponsors; **Uniqueness** indicates that there should be precisely one F-domain per F-sponsor; **Express (=Expression)** we have already seen: in the absence of other interference, every eligible F-domain prosodic unit (e.g. syllable) should express the feature F (proper expression).

This full set of ODT domain-parsing principles is necessary to highlight the range of domain-parsing and -expressing variables in tone languages.

**Domain Correspondence** subsumes the correspondence principles which ensure perfect correspondence between underlying and surface representations. Perfect faithfulness in the Correspondence Theory instantiation of OT (McCarthy & Prince 1995) is implemented by two constraints which—when undominated—ensure no deletion of underlying elements (through

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20 One could say ‘in tone and vowel harmony languages’, but the two sets of long-domain effects are frequently very dissimilar; the ODT principles in (23) are necessary in tone systems, but not in vowel harmony systems (except for Express).
MAX\_F, that is, Maximisation of feature F) and no insertion of elements at the surface (through DEP\_F, that is, Dependence of every output feature F on a corresponding input F); these two correspondence constraints (often conflated as FAITH, that is, faithfulness) together subsume IDENT I-O (that is, ‘identity input-output’) by assuming that MAX and DEP govern features directly, as proposed in Myers (1997).

In ODT, respect of MAX is assured by narrowscope domains (Basic Alignment) which defaultly parse every feature, or by the widescope domains which supersede the basically aligned narrowscope domains (MAX itself is not violated by widescope alignment; only its default basic alignment execution is violated).

Phuthi is not a language where tone insertion and deletion play a significant role. But MAX will be violated in the few grammatical tone paradigms, where there is no reflex of lexical H tone (Chapter 6 §6.2). Similarly, in all grammatical tone paradigms where a grammatical H is inserted into both toneless/L and H stem paradigms, DEP will be violated (§6.2-§6.4).

Domain Correspondence (that is, narrowscope Basic Alignment of both left and right domain edges) is violated by the widescope right-aligning H domains posited in Chapter 4 and Chapter 5, illustrated in (24).

(24) **Widescope Alignment violates Domain Correspondence**

<table>
<thead>
<tr>
<th>( \sigma \sigma \sigma \sigma \sigma )</th>
<th>Widescope Align</th>
<th>Domain Correspondence</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [ \sigma ] \sigma \sigma \sigma \sigma \</td>
<td>****</td>
<td></td>
</tr>
<tr>
<td>(b) [ \sigma \sigma ] \sigma \sigma \sigma \</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>(c) [ \sigma \sigma \sigma ] \sigma \sigma \</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>(d) [ \sigma \sigma \sigma ] \sigma \</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>(e) [ \sigma \sigma \sigma \sigma \sigma ]</td>
<td>****</td>
<td></td>
</tr>
</tbody>
</table>

INCORPORATE (23b) is almost never violated in Phuthi (but cf. the unincorporation configurations in Chapter 7 §7.7.1 (and Chapter 8 §8.3.7), where INCORPORATE violation is preferred to the incoherence that would result from *OVERLAP violation). UNIQUENESS (23c) will
be seen to be violated only by the parse requirement on (adjacent) H tones overriding the OCP-violating configuration, resulting in H-domain fusion\(^{21}\) (Chapter 5 §5.2), exemplified in (25b).

(25) **Fusion overrides Uniqueness**

<table>
<thead>
<tr>
<th>/σ σ/</th>
<th>Fusion</th>
<th>Uniqueness</th>
<th>Domain Correspondence</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [σ</td>
<td>σ]</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [σ σ]</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) [σ]</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

3.3.4. **Expression: proper, improper, minimal, fatal**

The final of the four ODT faithfulness constraints, **Express**, may be prevented from proper execution by anti-Express constraints such as *Express F (‘Do not express feature F’). Expression failure has been seen in (14) above; if fully successful, it would block all expression, rendering fatal expression, as in (14c,d), considered in (26d) below.

If Express does fail completely, then featural contrast is lost completely unless the presence vs. absence of the empty domain structure (26d) would impact the behaviour of other domains either preceding or following this empty domain.\(^{22}\)

(26) **Express vs. *Express**

<table>
<thead>
<tr>
<th>/σ σ σ/</th>
<th>Express</th>
<th>*Express</th>
<th>Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [σ</td>
<td>σ</td>
<td>σ]</td>
<td></td>
</tr>
<tr>
<td>(b) [σ σ</td>
<td>σ]</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>(c) [σ σ</td>
<td>σ]</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>(d) [σ σ σ]</td>
<td>***</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

\(^{21}\) I will not need to refer to uniqueness in that account, because the highly ranked ban on adjacent H domains will override the Basic Alignment constraint (BA-Lf) that parses the left edge of the output domain. Uniqueness will also seem to be violated in the case of disjoint H domains (Chapter 7 §7.7.2, Chapter 8 §8.3.7.2); it is shown, however, that even there Uniqueness remains unviolated.

\(^{22}\) This is the claim for Yawelmani made in Cole & Kisseberth (1997), that an empty F-domain plays a role in the behaviour of other phonological structure which interacts with that position. Cole (p.c., 2002) has subsequently withdrawn the claim that empty F-domains have any role to play in phonology. Cf. comments on fatal expression in this section, and in Chapter 8 §8.2.3.1.
In the course of this dissertation, several anti-EXPRESS constraints will be considered, such as might give rise to imperfect (but not fatal) expression; each such anti-EXPRESS constraint remains conditional, however, on successful preservation of featural contrast (indicated again by CONTRAST), which contrast is never forfeited to anti-EXPRESS satisfaction.

These anti-EXPRESS constraints include: (a) positional EXPRESS failure on the ultima: *EXPRESS_ULTIMA (27a), motivated in Chapter 5 §5.4.2.6; (b) a morphological category-specific violation: *EXPRESS OBJECT_PREFIX (*Express OP), as in (27b), motivated in §5.4.2; (c) an inter-domain expression relation, where the L tone feature (as a reflex of a distinct tone domain triggered by the sponsor feature, Low) almost always succeeds at outexpressing the H feature: EXPRESS_L >> EXPRESS_H (27c), motivated in Chapter 7 §7.2ff.

But a H domain is always rescued from fatal expression (complete neutralisation) by expression of the parsed feature, H, on at least one member of the domain; I term this ‘minimal expression’.

The general anti-EXPRESS constraint, *EXPRESS, given above in (26), can be invoked in a variety of Bantu languages, including Xhosa (Cassimjee 1998, Zulu (C&K 2000), Eerati (C&K 2003). This general anti-EXPRESS constraint attempts to suppress all instances of successful expression, but is always stopped from fatal expression by the imperative to maintain the domain constrast (27e); the single successful EXPRESS instance is always in a rightmost position, proposed

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23 Minimal expression can also characterise a HD that results from fusion (Chapter 5 §5.2); thus, (27b) [σ - σ] can result from the same morphological configuration (OP preceding first syllable of verb stem), but where the second of the two syllables ‘was’ the first syllable of a high verb stem: [σ - σ]; in this instance, there are two sponsors. But the output is the same: only the rightmost syllable is expressed as H. Thus, fusion is a theoretical device sought out here (in part) to explain the underexpression in such a sequence (the alternative would be that the OP remain unexpressed in its own HD, thus violating minimal expression). A final discussion of this effect is found in Chapter 8 §8.3.9.

24 On the face of it, it seems more straightforward to say: *EXPRESS_H >> EXPRESS_H, but the domain for where H fails to express here is not straightforward. The body of Chapter 7 deals with these patterns, demonstrating the need for a distinct tone feature, L (Low), in §7.2-§7.3.

25 In Cassimjee (1998:31), C&K (1998:57) and C&K (2003), the constraint proposed to force anti-expression in all but the domain-rightmost position is: *(H, NONHEAD), that is, ‘no H on a non-head syllable’. But this is problematic: (a) phonological constituents are being referred to by what they are not (‘non-heads’), that is, by properties that they lack; (b) the notion of HEAD is never well defined, though the case for the rightmost element in a H domain in Nguni (including Xhosa) being the HEAD is good.
to reflect domain headedness (Cassimjee 1998, C&K 1998, C&K 2003); cf. discussion of headedness in §3.3.5 below.

Anti-Express vs. Express is instantiated here with a H tone domain\(^{26}\), and a potentially expressable H feature; thus \([\sigma_r]\) is now rendered as \([\check{\sigma}]\).

(27) \textbf{Anti-Express}\(^{27}\)

a. \([\sigma, \sigma] = [\check{\sigma} \sigma]\) \quad \text{*Express_Ultima} \gg \text{Express} \quad [\text{si-ya-[\tilde{u}-\text{pha}]_]}

b. \([\sigma - \sigma_r] = [\sigma - \check{\sigma}]\) \quad \text{*Express_OP} \gg \text{Express} \quad [\text{si-ya-[ti-lf]miisa]}

c. \([\{\sigma\} - \sigma_r] = [\{\sigma\} - \check{\sigma}]\) \quad \text{Express_L} \gg \text{Express_H} \quad [\text{si-ya-[\v{u}\n\text{laana}]_}]

d. \([\{\sigma \sigma\} - \sigma_r] = [\{\sigma \sigma\} - \check{\sigma}]\) \quad \text{Express_L} \gg \text{Express_H} \quad [\text{si-ya-[tshe\_g\_i\_s\_e\_laana]_}]

e. \([\sigma \sigma \sigma - \sigma_r] = [\sigma \sigma \check{\sigma}]\) \quad \text{Contrast} \gg \text{*Express_H} \gg \text{Express_H} \quad [\text{si-ya-[b\_n\_i\_s\_e\_laana]_}]

(27e) does not reflect a Phuthi pattern, but rather a pattern found in closely related Nguni languages (including Xhosa, exemplified in parentheses). The Phuthi equivalent of Xhosa \textit{si-ya-[bons\_e\_laana is si-ya-[b\_n\_i\_s\_e\_laana (both items glossed ‘we show for each other’). The parallel minimal expression pattern, where only a single rightmost syllable in a HD is expressed H, is encountered in Phuthi as the result of the competing expression from the L feature (27c,d).

3. 3. 4. 1. Strict vs. general (relativised) locality: violations and non-violations

The notion of locality referred to in the literature cited in §3.3.2 above considers consonants to be adjacent on a consonant tier, or on a tier where segmental skeletons identify consonants, such as C-place (Clements & Hume 1995); similarly, vowels are adjacent on a vowel tier, or at the level of the vocalic node (subordinate to V-place). That is, consonants are frequently transparent for harmony phenomena; vowel articulations cannot be transparent for

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\(^{26}\) I do not supply the evidence here for the tone category of the stems used in the examples. Cf. Chapter 4 §4.1, or the lexicon in Appendix D.

\(^{27}\) Glosses are: (27a) ‘we give them [Cl.10]’; (27b) ‘we help them [Cl. 10] cultivate’; (27c) ‘we harvest for each other’; (27d) ‘we sell for each other’; (27e) ‘we show for each other’.

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consonant processes since the entire C-place node of consonants would spread and vocalic is a configurational daughter of C-place.

This locality has been termed ‘relativised locality’ by Ní Chiosáin & Padgett (1997, 2001), who argue against any such notion of non-strict locality. All units at the same prosodic level in a domain are ‘legitimate targets’. Thus, in a vowel harmony system, consonants are legitimate targets, and must bear the vowel harmonic feature that the domain parses. This strict (non-relativised) locality is by hypothesis only.

I will argue in Chapter 7 §7.2.6 that strict locality is certainly untenable, given the tone facts from Phuthi. I will argue that (28a) violates proper expression, but faithfully retains a domains-based construal of (‘relativised’) locality. But only (28b) would satisfy the Ní Chiosáin & Padgett (1997, 2001) criteria for strict locality: every prosodic anchor in the harmony domain bears the harmonic feature (H), even in the embedded L domain. As a result the segments C_{L,H} and V_{L,H} are unparsable in any non-finessed way, as a syllable (or vowel or mora) cannot straightforwardly be specified as both H and L simultaneously. On the other hand, a disjunctive (fissioned) tone domain (28c) is clearly in violation of the ODT principle of uniqueness28.

(28) General vs. strict locality

a. \([\text{H}_\text{H}_{\alpha}\sigma\ldots\{L_{\beta}\sigma\sigma\ldots\}\sigma\sigma\ldots]\text{H}_{\alpha}\) general locality preserved (\text{EXPRESS} violations)
b. *\([\sigma\text{H}_{\alpha}\sigma_{H}\ldots\{\sigma_{L_{\beta}}\sigma\sigma_{L_{H}},\ldots\},\ldots\}\text{H}_{\alpha}\) strict locality: incoherent (L,H) specification
c. *\([\text{H}_{\alpha}\sigma\sigma\ldots]\text{H}_{\alpha}\{L_{\beta}\sigma\sigma\ldots\}\sigma\sigma\ldots\text{H}_{\alpha}\) \text{UNIQUENESS} violated: disjunctive H domain

The strength of ODT is in the separation of domain parsing and domain expression. Apparent locality violations (28c) are still licit, but can only arise from expression failure, not from discontinuous domain structure parsing a single feature. Thus, the apparent discontinuity of the H domain in (29a-e) involves an interruption of perfect expression inside the single H tone domain present in the representation: such apparent locality-violations will all be shown in Chapter 7 §7.2ff. to arise from the \text{EXPRESS} constraint competition instantiated in (27c,d) above:

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28 Candidate (28b) assumes that the F-sponsor has fissioned, a strategy pursued by A&P (1994) to account for the harder cases of non-local vowel harmony in Wolof (cf. footnote 19 above). But this strategy allows the grammar enormous power. A theory of fissionability conditions is called for.
EXPRESS_L >> EXPRESS_H. Thus, Low (L) domains can be parsed inside {...} formalism. In (29a,b), the L domains are coextensive with breathy voiced trigger syllables; in (29c-e), the L domains are widescope-aligned leftwards to a salient morphological boundary (the stem edge); this left-edge L domain realignment (‘depression anticipation’) receives lengthy discussion in Chapter 7 §7.3.

(29) Apparent violations of general locality
   a. [kʊ-{yʊ}lé]laana to open for each other
   b. [kʊ-{bhe} {bhei}sé]laana to help carry on the back for each other
   c. [kʊ-{mabhe}té]laana to delay one another
   d. [kʊ-{patalage}tá]niisa to help pay indiscriminately for one another
   e. [kʊ-{limalimag}tá]niisa to help e.o. cultivate indiscriminately now and then

3. 3. 5. M**ETRICAL FEET AND HEADEDNESS**

    ODT has not yet made any explicit claims about headedness. Yet if F-domains are to be incorporated as aspects of the formal architecture of the prosodic morphology (the conceptual subpart of the grammar identified in M&P (1995), and references therein), then one possibility is that headedness is a relevant parameter for these domains.

    Headedness reflects an insight into stress systems dating from Liberman (1975): stress is a phonetic means for marking linguistic groupings called feet, which feet have one element more prominent than the other(s): the head. Similarly, tone marks off linguistic units, called domains in ODT. But differently to stress, the tone domain property, e.g. H tone, can be evenly distributed across all eligible feature-bearing units (e.g. syllables).

    Metrical feet have several salient parse properties: (a) boundedness: feet can be bounded (binary) or unbounded; (b) headedness: both foot types have one element more prominent than the other(s) in the foot, which head is located at either the left or the right edge of the foot; (c) directionality: feet can commence propagation at either left or right edge of a word (or of another domain). Metrical heads are constituents than can be referred to by other grammatical constraints; non-heads cannot be referred to.
In the analysis of tone in Phuthi, domains will be seen to be triggered by the lexical location of a syllable specified as H in the underlying representation. The behaviour of Phuthi nouns and verbs is distinct, as is the case in many Bantu languages, including Venda (Cassimjee 1986 [1992]), Xhosa (Jokweni 1995). In these languages, and in Phuthi, nouns are fully contrastive 29 tonally; that is, a 2-σ stem can contain any combination of H and toneless syllables (cf. discussion in Chapter 5 §5.4: H0, 0H, HH, 00 (conventionally labelled HL, LH, HH, LL).

Phuthi (and Venda and Xhosa) parse the H tone of verb stems from the tone class High (as opposed to Low / toneless) at the left edge of the verb stem (Chapter 4 §4.1). Tone domains extend rightwards in unbounded fashion from the stem-initial syllable (subject to a set of right-edge anti-align constraints that in most phrase-final lexical tone paradigms deflect the unbounded foot from perfect alignment with the right edge of a word). Unlike in alternating stress languages, these Phuthi tone domains are not subject to any principle of absolute binarity, but they are subject to a principle of minimal bisyllabic (to be instantiated in §4.2 as HD-MIN, that is: ‘High domains must be at least two syllables in length’, or ‘A High domain cannot consist of a single syllable’).

Thus, Phuthi H domains are unbounded, and parsed left-to-right. In the non-depression grammar (Chapters 4 to 6), there is no evidence for either edge of the H tone domain being the head. Evidence for headedness is argued to emerge in the depression patterns from Chapter 7 §7.4: the Head position relative to every H domain sponsor (lexical trigger) must be included inside the H domain (§7.4.3.2). This Head is defined as the position selected by the full interaction of widescope (re)align constraints; in the default case, the Head of (the rightmost) H tone in a phrase-final word is the antepenult position (Chapter 4 §4.1ff.); phrase-medially it is the penult (§4.5); in grammatical paradigms, the rightmost position will be shown to be either antepenult, penult or ultima. Head position will be identified (§7.4.3.2) by the metaconstraint in (30), itself containing a full 30 (nested) set of right-edge alignment and anti-alignment constraints (each to be argued for individually in Chapters 4 and 5).

29 There is an intermediate set of languages whose nouns are also distinct from verbs, but where there is a constraint on the range of H tones, specifically, only one H occurs per noun stem in Ciga (Kisseberth & Ndabarasa 1993), Haya (Hyman & Byarushengo 1984), Nyambo (Bickmore 1989). Thus, HH 2-σ stems are lacking.

30 Crucially, this HEAD-H metaconstraint excludes the HEAD-IN-HD structural constraint enforcing the inclusion of the Head in the H domain, and also excludes the right-edge expression
The (right edge of the) Head of domain X is the interaction of these six constraints, subject to paradigm $\pi$-specific ranking of a right-edge subset.

For any H tone—say, $H_x$—the rightmost position of the well-formed $H_x$ that parses $H_x$ is defined by the subset of domain-edge alignment constraints in (30), that is: the rightmost position is the one which is most widely right-aligned (WSA-Rt), but not violating the penult ($\text{AvoidProm}$), or—even worse!—the ultima ($\text{NonFin}$), and which is minimally two syllables in length ($\text{HD-Min}$), but where that minimality does not entail a configuration with adjacent HD edges ($\text{*AE}$), nor entails extending onto the ultima. The instantiations of each $H_x$ constraint that aligns the parsed feature $H_x$ together form a set of constraints that ‘derive’ the Head position for $H_x$, but in a non-derivationally ranked way.

The diacritic $\pi$ in the metaconstraint (30) reflects that some paradigms rerank $\text{NonFin}$, $\text{AvoidProm}$, and WSA-Rt, so that the right edge (and, therefore, head) becomes the penult, as in Chapter 4 §4.5 for phrase-medial lexical tone and in Chapter 6 §6.3.1, or even the ultima, as in Chapter 6 §6.3.2. The $\text{HEAD}$ constraint rankings in (30) are always identical to the rankings that exist for the morphological paradigm $\pi$ containing the HD in which the $\text{HEAD}$ finds itself.

$\text{HEAD}$-H is argued in this way for Phuthi, given the choice of the tone grammar never to shrink smaller than the Head position in the case of L/H tone clash at that position. Rather, the language will be shown always to over-expand the HD to (the first mora of) the penult, in the case of the phrase-final present indicative form. This is indicated in (31-32)\textsuperscript{31}, cf. §7.4.3.2.

(31) **Head is always inside the H domain**

<table>
<thead>
<tr>
<th>Sponsor (trigger)</th>
<th>Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. pre-antepenult</td>
<td>antepenult\textsuperscript{32}</td>
</tr>
<tr>
<td>b. antepenult</td>
<td>penult (if stem morpheme boundary intervenes: antepenult)</td>
</tr>
<tr>
<td>c. penult</td>
<td>penult (if phrase-medial: ultima)</td>
</tr>
<tr>
<td>d. ultima</td>
<td>ultima</td>
</tr>
</tbody>
</table>

\footnote{constraint that rescues the expression of the H domain: $\text{EXPRESSIONEDGEGE}$.}

\textsuperscript{31} Glosses for (32): (a) ‘they help cultivate’; (b-c) ‘they help open’.

\textsuperscript{32} This does in part depend on whether there is a single H sponsor in a word domain (as is assumed in this typology). If there is more than one, then OCP effects may induce the domain $\text{HEAD}$ to be earlier in the word than the antepenult, cf. (33) below.
(32)  **Head, is always in HD,**
  a.  [bá-ya-\(\text{-}(\text{l})i\)isa]  antepenult head is inside HD, by default
  b.  \([bá-ya-{(\text{vu})}\text{l}i\)isa\text{...}\]  antepenult head is inside HD by \(\text{HEAD}_s\) and \(\text{HEAD-IN-HD}\); H domain expands even further right to antepenult, to avoid clash with L domain \(\{\text{...}\}\) at antepenult (\(\text{HEAD}\)) position
  c.  \(*[bá-ya-{(\text{vu})}\text{i}i\text{...}\)]\)  antepenult head is not inside HD; HD shrinks to avoid clash with L domain \(\{\text{...}\}\) at antepenult (\(\text{HEAD}\)) position

The rightmost edge of the depressor-bearing H domain is always expressed as H in Phuthi, rescued from neutralisation by the constraint \(\text{EXPRESS}\_\text{EDGE}\), given in §7.4.3.2 (117).

The domain right-headedness of Phuthi receives confirmation comparatively from the choice in other Nguni languages such as Xhosa\(^{33}\) (Jokweni 1995, Cassimjee 1998, C&K 1998) to express only the rightmost syllable in the HD as H (33)\(^{34}\), where the Head syllable is (\(\sigma\)).

(33)  **Head evidence**

<table>
<thead>
<tr>
<th>Phuthi</th>
<th>Xhosa</th>
<th>Head-only is H in Xhosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>[bá]-ya-[bó(n)í(sé)]laana</td>
<td>[bá]-ya-[bó(n)í(sé)]laana</td>
<td>Head-only is H in Xhosa</td>
</tr>
<tr>
<td>[bá-ya-{(\text{vu})}\text{l}i\text{...})]laana</td>
<td>[bá-ya-{(\text{vu})}\text{l}i\text{...})]laana</td>
<td>Head-only is H in Xhosa</td>
</tr>
</tbody>
</table>

In addition to tone and metrical phenomena, the investigation of a third empirical phenomenon began to emerge in the 1980s: tone patterns with apparently metrical properties (Goldsmith 1987; Downing 1990a,b, 1996). There will be limited cause to refer to this interface in the articulation of tone parameters in Phuthi (Chapter 4 §4.1; Chapter 7 §7.8.2, Chapter 8 §8.2.2, §8.2.3). Specifically, I will suggest that there are up to three instances of a single, right-aligned syllabic trochee that identifies the penult as a prosodic position which attracts prominence (34-35)\(^{35}\) or that identifies the antepenult, when combined with phrase-final extrametricality (referring to \(\text{TAP}\)). These feet are examined in Chapter 4 §4.1 (\(\text{WAP, TAP}\)) and Chapter 7 §7.8.2 (\(\text{DAP}\)), and considered further in Chapter 8 §8.2.2.

\(^{33}\) Unlike Phuthi, the \(\text{HEAD}-\text{H}\) configuration in Xhosa (and other Nguni) is unrelated to the role of depression. Comparative Nguni tone and metric properties are further reflected on in Chapter 8 §8.2.

\(^{34}\) Glosses for (33): (a) ‘they show for each other’; (b) ‘they help open’.

\(^{35}\) Glosses: (34) ‘they cultivate intensively for each other’; (35) ‘I do not cultivate’.

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One may expect a typology of potential tone and metrical interaction to emerge from the ODT architecture, invoking the full range of align, anti-align, express and anti-express constraints mentioned in this chapter, and to be proposed in the following four chapters. Such a combinatorial typology is considered in Chapter 8, where it will be concluded that the Phuthi prominence phenomena laid out in Chapters 4 through 7 are grouped around the last two syllables in a word, focusing most saliently on two boundaries: (a) the antepenult-penult boundary phrase-finally, and the penult-ultima boundary phrase-medially. It will be confirmed uncontroversially that universal expectations of prominence are that it is asymmetrical: the right edge of a phonological string is weaker, and more likely (after Krämer 2003) to display anti-align and anti-express effects than the left edge.

3. 3. 6. OCP, Fusion, Downstep

These three phenomena are closely linked in an ODT grammar, and will be demonstrated to be so linked in the tone/voice grammar of Phuthi36.

A phonological configuration violates the Obligatory Contour Principle (OCP) if two identical features are parsed adjacent (where adjacency is read off any prosodic feature or feature-bearing tier: feature, mora, syllable). Despite the clear evidence that the OCP is a ‘soft universal’ because it does not truly apply universally at all levels to all features (Odden 1988,

36 The OCP is handled primarily in Chapter 5 §5.1 and §5.2, fusion primarily in §5.2 (as a result of the OCP) and §5.4 (from the adjacency of OP and H stem), downstep in §5.2, §5.3 (concerning antepenult/penult H syllables; cf. (38c) below), united in §5.5 with the special ultima downstep indicated in (39a-b) below). Finally, the downstep phenomena are concluded with the unified presentation of Register Domains in §7.9, including the downstep triggered in any position by the presence of depression (L tone), cf. (40a-c) below.
Kenstowicz 1994), Phuthi will be shown to behave as many other Bantu languages do: there is a strong dispreference for adjacent tone features—either two H features or two L. Based on proposals in Kisseberth (1993, 1994), Cassimjee (1998) and C&K (1998), it will be argued that OCP effects on adjacent features are read off the position of domain edges: a feature domain right edge that is adjacent to the left edge of a feature domain parsing a distinct instantiation of the same feature constitutes an OCP violation, as in (36a-c).

(36) **OCP violation: clashing edges**
   a. \( \sigma_1 \) [ \( \sigma_{n+1} \)  
   OCP violation: any sequence of two identical features
   b. \( \sigma_H \) [ \( \sigma_H_{n+1} \)  
   OCP violation: sequence of two H features
   c. \( \sigma_L \) [ \( \sigma_L_{n+1} \)  
   OCP violation: sequence of two L features

The phenomenon of downstep—discrete lowering of the H tone pitch register—will be argued in the general case to be triggered automatically in ODT by the left edge of a H domain, cf. proposals made in Kisseberth (1994:146), Cassimjee (1995, 1998). Thus, if the configuration in (36b) exits the phonology as is (as happens in certain configurations, depending on the position of metrical prominence (Chapter 5 §5.2, §5.4; cf. (38c) below), domain \( \sigma_{n+1} \) will be discretely lower than \( \sigma_n \), as in (37a).

Similarly (but without the complication of possible interference from the OCP), the second H domain in (37b) will be discretely lower (Chapter 5 §5.1).

(37) **Downstep**
   a. \( [\sigma_n ] \uparrow [\sigma_{n+1}... \)  
   downstep cued by HD\(_{n+1}\) left edge (even if immediately successive to HD\(_r\) right edge)
   b. \( [\sigma_n ] \sigma \uparrow [\sigma_{n+1}... \)  
   downstep cued by HD\(_r\) left edge

It will be argued there that the effects of the OCP in Phuthi are revealed in two distinct ways: (a) a H feature (parsed by a H domain) which can potentially expand rightwards to a toneless syllable fails to do so, if the resulting configuration would violate the OCP (cf. §5.1), as in (37a) where the two HDs have adjacent domain edges; (b) two (or more) H features lexically
sponsored adjacent (as in (37a) above) are parsed in situ (never underparsed), and are generally fused, that is, the adjacent H domains are fused together, as in (38b).

Phuthi will be seen, however, to prevent fusion in one configuration (38c): at the antepenult-penult juncture two distinct H features will parse separate HDs, since downstep is perceived there. That is, (38a) is completely illicit; (38b) is the general response to Hs sponsored adjacently; (38c) is when the fusion tendency is overridden due to a prominence consideration (one of the interactions of Phuth tone and prominence, cf. Chapter 4 §4.3, Chapter 5 §5.2).

(38) **OCP vs. fusion vs. downstep**

a. \(\sigma_1 \ldots \sigma_n \ [\sigma_{n+1}^{+1}\) OCP violation: HD overexpands

b. \([\sigma_1, \sigma_{n+1}]\ldots\) HD\(_n\) and HD\(_{n+1}\) are both parsed, but fused: no downstep

c. \([\sigma_n, \sigma_{n+1}^{+1}\) Fusion fails at antepenult-penult boundary: downstep

There will be an additional special H tone configuration which triggers downstep at the penult/ultima boundary internal to a single (fused) HD: a high ultima will be shown to downstep after a long high penult (cf. Chapter 5 §5.5), because the penult H is manifest as a falling (that is, as a H-L sequence), due to a further consideration of phrase-edge intonation declination.

(39) **Ultima downstep**

a. [kùu-ˈpʰá] to give

b. li[mfiˈsá] help cultivate!

Finally, it will be shown in Chapter 7 §7.8.1.9-10 that L tone domains (reflecting tone depression) interrupt proper expression of H tone domains (40a), that is, the L tone triggers downstep (indicated as ‘|’) even internal to a single HD (40a); and, further, that a particular configuration of L tone domain nested within a H domain can prevent successful fusion of the adjacent H domains (40b-c).

In (40b), the input on the left reflects two HDs with a toneless syllable between them, and a depressed σ at the right edge (HEAD position) of both HD\(_x\) and of HD\(_y\). Under these conditions (broadly: any LD at the right edge of a HD, preceding a second HD), fusion fails, and downstep ensues. The output is in (40b) on the right: there is depressor shift from HD\(_x\) into the following
toneless (domainless) syllable (that is, the first HD expands), resulting in H domain adjacency, but without fusion of the two H domains (HD_x and HD_y); (40c) exemplifies the output of (40b).

(40) **Depression interrupts H domain; obstructs fusion**

   a. | [kú-{yu} | lé]laana | to open for each other | post-depressor syllable downstepped relative to prefix H; toneless/low stem

   b. [⋯⋯]_x σ [⋯⋯]_y ⇒ [⋯⋯σ]_x [⋯⋯]_y

   c. agi-lí'baáli | a[gi-]lí[báá]li | I don’t forget

Thus, the configurations that trigger downstep will include not only the left edge of a H domain but also the right edge of any L domain. The downstep configurations will be unified under the notion of Register Domain (cf. Chapter 7 §7.9 for the fullest presentation of Register Domains: an account of all the pitch anchors involved in systematic H downtrends).

Thus, the OCP, fusion and downstep phenomena will be shown to be closely related in Phuthi, and will serve as one test of the full range of interactional possibility provided by the domain structure of the ODT framework.

### 3. 4. Conclusion

A typology of possible H and L tone configurations falls out of the structural possibilities offered by the Optimal Domains architecture. In turn, Phuthi provides phonological and morphological configurations which allow almost every permutation of the H/L feature domain relationship to be tested.

Domain edges will be key to assessing successful edge-alignment, but also anti-edge-alignment (in the case of conflicting feature domains).

A key theme of the work will be the crucial architectural possibility of preserving general locality (even across nested tone domains) offered by Optimal Domains Theory. This will only be possible through the separation of domain parsing and feature expression.

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37 A final subset of data from the present negative paradigm in Chapter 7 §7.8.1.9-§7.8.1.11 will suggest that L domains fuse, and also fail to fuse under certain morphological conditions (anti-fusion, and pseudo-anti-fusion).
Key tone (tone/voice) phenomena that are to be addressed in this work include general H tone expansion (‘spread’) parameters\textsuperscript{38}, including the role of phonological minimality (for both H domains\textsuperscript{39} and L domains\textsuperscript{40}), and the interaction of minimality with morphological edges\textsuperscript{41}; the operation and violation of the Obligatory Contour Principle\textsuperscript{42}, the analytic role of H domain fusion\textsuperscript{43} and later L domain fusion\textsuperscript{44}; downstep among H domains\textsuperscript{45}, within H domains\textsuperscript{46} and within L domains\textsuperscript{47} (including declination, catathesis and final lowering\textsuperscript{48}); the role of metrical structure in selecting the prominence of one or more right-edge syllables (antepenult, penult or ultima)\textsuperscript{49}, and the elaborate ways in which morphological (and phrasal) structure interferes with the identification of the prominence site(s)\textsuperscript{50}; the phonological distinctions that characterise morphology in the noun\textsuperscript{51} and (lexical and grammatical) verb paradigms, and in the relations between a specific affix class (the OP\textsuperscript{52}) and verb stem, yielding complex variations\textsuperscript{53} on the basic antagonism relationship between H and L domains (masked depression and quasi-depression); the local and massively non-local effects\textsuperscript{54} that segmental (and grammatical) voice settings (breathy/depressed, reinterpreted as L tone) have on the implementation of H domains; the shift\textsuperscript{55}/block\textsuperscript{56} effects driven by the phonological salience required at the tonal/metrical prominence position (HEAD\textsuperscript{57})—achieved through constraint nesting; the

\textsuperscript{38} Chapter 4 §4.1; Chapter 6 §6.1, and all following parts of the chapter for a range of parameterised right edges: antepenult / penult / ultima.
\textsuperscript{39} Chapter 4 §4.2;
\textsuperscript{40} Chapter 7 §7.5.
\textsuperscript{41} Chapter 4 §4.3.
\textsuperscript{42} Chapter 5 §5.1, §5.2.
\textsuperscript{43} Chapter 5 §5.2.
\textsuperscript{44} Chapter 7 §7.8.1.9
\textsuperscript{45} Chapter 5 §5.2, §5.5.
\textsuperscript{46} Chapter 5 §5.3.
\textsuperscript{47} Chapter 7 §7.9.
\textsuperscript{48} Chapter 5 §5.5.
\textsuperscript{49} Chapter 4 §4.1;
\textsuperscript{50} Chapter 4 §4.4; §4.5; Chapter 5 §5.6; Chapter 6: all sections.
\textsuperscript{51} Chapter 5 §5.6.
\textsuperscript{52} Chapter 5 §5.4.
\textsuperscript{53} Chapter 7 §7.6.
\textsuperscript{54} Chapter 7 §7.2, §7.3.
\textsuperscript{55} Chapter 7 §7.4.1.
\textsuperscript{56} Chapter 7 §7.4.2.
\textsuperscript{57} Chapter 7 §7.4.3.2.
grammatical use of the L tone/voice feature in specific morphosyntactic formations, including the copula\(^{58}\), the associative, and a range of lexical items\(^{59}\); the rare violation of a fundamental ODT principle (incorporation, yielding to unincorporation\(^{60}\)), in order to satisfy parse/express requirements which themselves are impeded by the presence of L and H tone domains competing for scope over the same segmental material; the non-conflatability of the L feature and phonational breathy voice in the form of non-shifting L domains\(^{61}\); the need for distinct lexical and grammatical tokens of H\(^{62}\), and of L, and the (rare) possibility of entirely neutralising lexical stem tone\(^{63}\); the importance that the phonology of at least this language gives to edges: morphological\(^{64}\) and phonological\(^{65}\) edges that are signalled by requirements on the presence of H tone pitch.

The very wide range of tone interaction displayed in Phuthi will provide perhaps the most rigorous test of the ODT framework to date.

\(^{58}\) Chapter 7 §7.5.
\(^{59}\) Chapter 7 §7.8.2.
\(^{60}\) Chapter 7 §7.7.1; discussion in Chapter 8 §8.3.7.
\(^{61}\) Chapter 7 §7.8.
\(^{62}\) Chapter 6 §6.2.1.
\(^{63}\) Chapter 6 §6.2.2.
\(^{64}\) Chapter 7 §7.7.2 (prefix+stem edge, resulting in disjoint H domains).
\(^{65}\) Chapter 7 §7.4.1, §7.4.2 (HEAD inclusion: domain right-edge).
Chapter 4

Lexical Tone I

Having seen the basic outline of Phuthi grammar (Chapter 2) and an outline of the Optimal Domains Theory framework within which aspects of tone and voice in the language will be analysed (Chapter 3), I turn in this chapter to tone data from a range of Phuthi morphological paradigms, focusing centrally on the most productive subsystem: the verb morphology (I reserve examining tone in noun paradigms for Chapter 5 §5.6). The central goal here is to elucidate a wide range of basic tone patterns in Phuthi, where a single H tone is active, and to begin to assemble the constraint grammar that emerges from these patterns.

I restrict the central focus in this chapter to verb paradigms whose morphological roots are characterised by ‘lexical’ tone, that is, paradigms whose surface tonal contours can be accounted for if we know whether a H tone is underlyingly associated with the lexical representation of the particular stem we are examining from that paradigm, or not. It will be demonstrated below that there is never\(^1\) more than a single H tone span inside the verb stem of any lexical\(^2\) tone paradigm.

The basic morphological configurations we now examine consist of what I argue below to be toneless\(^3\) or tone-bearing\(^4\) roots, with toneless or tone-bearing prefixes (to follow in all sections of this chapter, and the next)\(^5\), as schematised in (1) and (2).

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\(^1\) This will require a marginal exceptional pattern in Chapter 7 §7.7.2, where a depressor-shifted H can ‘overlap’ with an emptied part of its own stem-internal HD, resulting in a disjoint HD, that is, two excursions of H inside a single stem: one at the left edge (required by \textsc{expressprefix}), and one at the right edge (required by \textsc{expressedge}).

\(^2\) I will show subsequently in Chapter 5 §5.4 that a surface H tone span (where ‘H tone span’ indicates one or more surface-H syllables in sequence) in any of the lexical paradigms is invariably the product of a single underlying H tone.

\(^3\) The ‘toneless’ category signifies what traditional Bantu grammars call ‘low tone’.

\(^4\) For tone-bearing, I indicate, for now, ‘H’ (that is, High). Later, in Chapter 7 §7.6.2.1, §7.8.1.5, §7.8.1.11, it will be argued that toneless stems might be reconceptualised as ‘L’, that is, Low tone, but that the evidence for this reconceptualisation is inconclusive. Tonelessness is considered to be equivalent to ‘non-High’ throughout the work.

\(^5\) Phuthi does have one tone-bearing suffix in the nominal system (augmentative -\textit{kájí}, cf. Chapter 2 §2.2.1.5), and one tone-bearing suffix in the grammatical tone subsystem of the verb.
Starting in this fashion with *lexical* tone patterns will allow us to examine the simplest surface manifestation of tone-carrying words, where there is a single contrastive tone—if any at all—in the verb stem itself. Once we have established the most basic parameters of the Phuthi tone system in this chapter, we will move on to more complex lexical tone combinations, requiring a range of additional responses from the tone grammar (Chapter 5), where stems will be characterised as having up to four underlying H tones present at once. We will then move to an examination of the significantly distinct paradigms of *grammatical* tone (Chapter 6), allowing us to examine the interaction of lexical and grammatical tone structure, both in stems and affixes.

In a sense the lexical/grammatical paradigm split is artificial, since—even in grammatical paradigms (Chapter 6)—verbs will be seen in almost every instance to reserve a particular prosodic position (stem-initial syllable) to indicate their lexical class affiliation. In other words, almost without exception⁶, Phuthi verb stems will be seen to retain some surface indication of their tone category. Partitioning the discussion of verbs in the way I propose, however, makes for a somewhat more transparent exposition of the full range of tonal paradigms.

In keeping with the central focus of this chapter, I omit any examples with depressed syllables in them—either in stems or affixes—since breathy voice and its tone manifestation (Low (L)) will be seen to significantly interfere with the surface tone contours, and will introduce startling complexity—even opacity—to the analysis (Chapter 7).

In the interests of a maximally transparent discussion, paradigms will not always be presented with all stem syllable lengths present at once, since certain word lengths (and certain affix-stem combinations) display constraints at work that I will deal with only a little further on.

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⁶ The H vs. toneless/low category distinction is neutralised in just a very few paradigms, including the long present relative (Chapter 6 §6.2.2.1) and the present subjunctive without Object Prefix (§6.2.2.2).

(inclusive -nĩ, cf. Appendix A, paradigm V), but these are not relevant for the lexical paradigms. Both are low-frequency morphemes.
Relatively complete lexical paradigms are provided in Appendix A, to which the reader is referred throughout.

Although the main focus of this chapter (through §4.4) is phrase-final prosodic words—that is, pre-pausal forms—the distinctive tonal behaviour of phrase-medial (non-pre-pausal) forms is also be briefly considered, in §4.5.

In Section §4.1 of this chapter, I establish that Phuthi H tone domains stretch optimally from the left edge of a sponsor syllable—for verb stems this is always the left edge of the stem—to the antepenult syllable; two right-edge anti-align constraints will jointly select the antepenult as the target of rightwards spread (achieving what elsewhere in the literature has been argued to be avoidance of a proscribed final metrical foot). In Section §4.2, a tone minimality effect is demonstrated: the language has significant preference for H domains (hence: HDs) no shorter than two syllables (subject to certain conditions). In Section §4.3, we see morphological and prosodic interference in the way minimality can be satisfied: HDs will fail to extend to a heavy penult syllable, if a stem boundary intervenes. I propose a conjoint constraint, linking phonological (penult length) and morphological (stem boundary) conditions. Section §4.4 will introduce perplexing wrinkles in the form of reduplication: reduplicated 1-σ stems’ fail to satisfy minimality, while an apparent minimality effect in 3-σ stems is overgenerated. These patterns provide us with further evidence that the last two syllables of a word—to be circumscribed metrically—constitute a privileged prosodic domain. Section §4.5 will offer paradigm-specific parameterisation of rightward targets for H expansion: this variation will come both from Mpapa Phuthi (the focus of this dissertation) and from a closely related dialect (Sigxodo Phuthi). Section §4.6 will conclude the chapter.

4.1. Lexical Tone Targets the Antepenult

As presented in Chapter 3, under an Optimal Domains Theory (ODT) approach any phonological surface manifestation of the faithful parsing of underlying phonological features is reflected in the surface domain parsing the feature in question. Thus, a stretch of surface H

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7 ‘n-σ’ will be used throughout for a stem of n syllables in length.

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syllables indicates a surface domain which parses an active underlying feature specification (F-specification)—in this case, ‘High’ (H).

As also indicated in Chapter 3, the issue of feature specification or underspecification in OT and ODT is not resolved. If redundant feature specifications are encoded by grounding conditions (Archangeli & Pulleyblank 1994) that apply both in the UR and PR, then full specification of the PR is quite compatible with the theory. Nevertheless, the contrasts that occur in the Phuthi non-depression tone grammar require reference only to contrastively H syllables. I will thus refer only to the presence of the feature domain, HIGH (H). All non-H syllables will be considered to be tonally featureless. This follows in the Bantu theoretical tradition of nearly two decades which refers only to the functionally active tone in the phonology (almost always H).

The issue of active tones and specification is reexamined in Chapter 7, where we will see that a three-way tone distinction is necessary in the surface phonology; I will argue there that a feature Low (L) does indeed play an active role.

Throughout Chapters 4 to 6, however, the syllable will be used as the tone-bearing unit (hence: TBU) in Phuthi. The syllable is uncontroversially presented as the TBU, since there is no lexical vowel length distinction in the language. Yet there is a small set of constraints that will be seen to need to refer to the mora separately from the syllable (EXPRESS_H(µ) vs. EXPRESS_H(σ) in Chapter 5 §5.3.2.2, Chapter §7.2; and the minimal (moraic) violation of an anti-edge constraint, AVOIDPROM, by EXPRESSEDGE in Chapter 7 §7.4).

Before seeing any H tones at work, data is presented to show that tonally unspecified prosodic words surface as low in the PR. The present indicative long (i.e. phrase-final) form exemplifies this entirely uncontroversial pattern.

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8 The L to be introduced in Chapter 7 will mostly be connected explicitly to depressor phonation, and is quite distinct from the ‘Low’ tone used in a wide variety of earlier works on Bantu languages to characterise non-H syllables. In §7.8, evidence will be presented that there is an active grammatical L tone in the language too, whose surface manifestation is purely tonal and not phonation-related.

9 ‘Long’ and ‘short’ for the present indicative and perfective indicative signify not merely ‘phrase-final’ and ‘phrase-medial’, but also morphological distinctness. The long present indicative contains the (almost pan-Bantu) toneless morpheme -(y)a- (which indicates phrase-final-ness); the short present lacks it, cf. Chapter 2 §2.2.4.7 (116a). The long and short perfectives are tonally quite distinct: while the long perfective bears lexical tones only, the short perfective is categorised with the grammatical tone paradigms (see cf. Chapter 2 §2.2.4.7 (116g, 117a); Chapter 6 §3).
4. 1. 1. Words With No H Tone

4. 1. 1. 1. Toneless prefix + Toneless Verb Stems

Present indicative long form

(3) 1-σ stems
   a. si-yaa-ta we come
   b. si-yaa-wa we fall

(4) 2-σ stems
   a. si-ya-liima we cultivate
   b. si-ya-yeeta we make/do
   c. si-ya-ːːla we cry

(5) 3-σ stems
   a. si-ya-limiisa we help cultivate
   b. si-ya-lebuuka we thank
   c. si-ya-woteela we become drowsy

(6) 4-σ stems
   a. si-ya-limelaana we cultivate for each other
   b. si-ya-libatiisa we delay
   c. si-ya-yamukeela we receive, earn

(7) 5-σ stems
   a. si-ya-limiselaana we help one another cultivate
   b. si-ya-tepelʃiisa we cause to slow down
   c. si-ya-libatisaana we delay each other

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Concerning the prosodic surface length, throughout this dissertation, words are given with prosodic surface length indicated: phrase-final forms (as given here) display a long penult, whereas phrase-medial forms do not. The contrastive length only becomes relevant when the penult moras behave differently (first in Chapter 5 §5.3, then in Chapter 7 §7.2ff.). The only other instance where a non-penult displays contrastive length is in the remote past (Chapter 7 §7.6.2).
All the forms given above are phrase-final, that is, pre-pausal. All syllables in all forms are produced relatively low (that is: not high) in pitch. They could equally have been given in the more traditional descriptive Bantuist tradition (English, Belgian), with grave accents, for e.g. (7) as (7)' below, but, for theoretical reasons just given, I leave all such syllables without any tone marking.

(7)  5-σ Phuthi stems, in traditional Bantuist tone orthography
    a. sì-yà-lìmìsèlàànà  we help each other cultivate
    b. sì-yà-tèpèlììsà  we cause to slow down
    c. sì-yà-lìbàtìsàànà  we delay each other

The morphological construction of the forms in (3) to (7) above, and of the present indicative verb forms to follow in this section (§4.1), is some substring of the following.

(8)  Present tense indicative (long form) verb morphology
    < SP + -ya- + {ROOT {+suffixes} + -a}_{stem} >

The range of morphological possibility for the subject prefix (SP), suffixes (including verb extensions) and related phenomena has been laid out above in Chapter 2 §2.2.4.

These words are pronounced with contrastively low F0 pitch, relatively even across all pre-penult syllables, descending a distance of only about 40Hz from moderately low (±133Hz for male voices) to even lower (±94Hz for men) in the course of the utterance. The most significant downtrend takes place during the phonologically and phonetically long penult syllable, even in toneless words such as given above (I provide a fuller discussion of the phonological downtrend effects in Chapter 5 §5.5). Figure 1 (the audio waveform of 6a above) illustrates the typical pattern for a 4-σ stem (6-σ in total) toneless Phuthi word12.

12 The five recordings displayed graphically in this work are: Fig. 1 below; Fig. 2 (§4.1.2.1); and the three figures in Chapter 5: Fig. 1 in §5.2.1.1, Figure 2 and Figure 3 in §5.3. All were made in Mpapa village, Lesotho, in June 1995 (part of a larger body of recordings that reflect the data in this work). The speakers are Maloro Matlama and Khethang Rateleki. The utterances are recorded on a Sony TCD-D8 Digital Audio Tape recorder; the display is from WinCECIL (SIL).

A range of data for female voices is also needed. My main consultants up to the time of writing have been male, however. All indications from female speakers is that the same set of tone constraints apply throughout the language, with a comparable range of frequencies, as in the
Figure 1
Low pitch trace in citation form toneless stem: siyalimelaana ‘we cultivate for e.o.’

The Y-cursors in the image mark (a) the left edge of the stem, that is, the beginning of the vowel -i- in the syllable -li-, and (b) the left edge of the penult syllable -laa-. Table 1 gives frequency and time measurements, taken at the start of each full wave in the vowel portion of each syllable\(^{13}\).

\(^{13}\) The figures and tables in this section are not intended to serve as a properly representative set of pitch data. Rather, they are intended to provide some indication of what the reader will have to accept as representative pitch traces for words with these and comparable phonological and morphological constituency in the language. Fuller results of Phuthi pitch and duration measurements (with an examination of downtrend, and the effects of breathiness on pitch) are provided in the author’s ongoing research materials.

data supplied by males (though adjusted significantly lower for female voice range).
Table 1
Pitch and duration measurements (lexical paradigm: toneless prefix + toneless stem)

<table>
<thead>
<tr>
<th>σ</th>
<th>segments</th>
<th>vowel-onset pitch (Hz)</th>
<th>pitch change (Hz)</th>
<th>X-axis time (s)</th>
<th>syllable duration (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(s)i</td>
<td>133.4</td>
<td>—</td>
<td>0.29</td>
<td>188&lt;sup&gt;14&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>(y)a</td>
<td>121.8</td>
<td>-12.4&lt;sup&gt;15&lt;/sup&gt;</td>
<td>0.38</td>
<td>125</td>
</tr>
<tr>
<td>3</td>
<td>(l)i</td>
<td>115.5</td>
<td>-6.3</td>
<td>0.59</td>
<td>157</td>
</tr>
<tr>
<td>4</td>
<td>(m)e</td>
<td>113.6</td>
<td>-1.9</td>
<td>0.69</td>
<td>204</td>
</tr>
<tr>
<td>5</td>
<td>(l)aa</td>
<td>108.6</td>
<td>-5</td>
<td>0.93</td>
<td>279</td>
</tr>
<tr>
<td>6</td>
<td>(n)a</td>
<td>93.9</td>
<td>-14.7</td>
<td>1.25</td>
<td>206</td>
</tr>
</tbody>
</table>

The duration figures provide only a very approximate indication of syllable length. Clearly, the pitch fall is greatest (14.7Hz) during the longest syllable: the penult (279ms).

Uncontroversially, this data entirely lacks any F-specification for H, and therefore survives the phonology without tone domains of any sort. Ideally, the Low-to-Lower pitch pattern which has its fulcrum at the antepenult-penult boundary requires formal modelling. I leave this issue open here.

The pattern of UR tonelessness corresponding to surface lowness is repeated across all other Phuthi lexical paradigms involving toneless stems. Two examples from each of the reduplicate (9) and perfective (10) paradigms confirm this.

**Present indicative reduplicative: long form**

(9) 6-σ (= 2σ + 4σ) stems
a. si-ya-limalimelaana we cultivate for each other now and then<sup>16</sup>
b. si-ya-libalibatiisa we delay now and then<sup>17</sup>

<sup>14</sup> The [s] of the first syllable is unusually long, and the vowel is unusually short: the speaker paused slightly during consonant production. Total duration of [s] is 249ms; a more typical duration would be 100ms, which would bring syllable 1 a more ‘normal’ length of [s] 100 + [i] 88= 188ms. Syllable durations were measured from consonant onset to consonant onset.

<sup>15</sup> The somewhat high pitch onset in syllable 1 is due to the influence of the voiceless fricative [s].

<sup>16</sup> The morphological structure is: -lima-lim-el-aan-a = - REDUPLICATE.STEM - STEM (ROOT - APPLICATIVE - RECIPROCAL- TENSE/ASPECT). Cf. Appendix A, paradigm B.

<sup>17</sup> The morphological structure is: -liba-libat-iis-a = - REDUPLICATE.STEM - STEM (ROOT - CAUSATIVE - TENSE/ASPECT).
Perfective indicative: long form

(10) σ-stems
   a. si-limisiseleene we have cultivated for one another intensively\(^{18}\)
   b. si-libatisisiiye we have caused to delay\(^{19}\)

Appendix A provides full the reduplicative paradigm (B) and perfective paradigm (E).

Likewise, toneless nouns in the UR are surface low: prefixless toneless nouns are invariably low (11), and other prefix-bearing nouns are low in the syntactically post-negative (semantically non-specific) form (12).

Nouns

(11) Prefixless nouns (class 1a)
   a. Mooroosi (proper name)\(^{20}\)
   b. ú-ŋna, ŋna his mother\(^{21}\), his mother [vocative form]\(^{22}\)

(12) Indefinite nouns
   (i.e. in a post-negative syntactic configuration: where the otherwise obligatory prefix H is removed)
   a. (akúkhō) mu-tfwaana (there is no) child vs. mú-tfwaana
   b. (akúkhō) ba-tfwaana (there are no) children vs. ébá-tfwaana

Nothing further need be said about these toneless words, in terms of the PR tone patterns: they are entirely inert.

\(^{18}\) The morphological structure is: \(-lim-isis-el-eene = STEM - INTENSIVE - APPLICATIVE - RECIPIROCAL.IMBRICATED(embedded).PERFECTIVE\). Cf. Appendix A paradigm E.

\(^{19}\) The morphological structure is: \(-libat-isis-iiye = STEM - INTENSIVE - PERFECTIVE\).

\(^{20}\) Mooroosi was the most famous Phuthi chief (cf. Chapter 1 §1.1.3). This is the only unambiguously Phuthi name I have identified. Unusually, this name is typically spelt with a long vowel in the first syllable (and typically not in the second syllable, but I have regularised this taking phrase-penult length into consideration). Prosodically, this seems to be accurate.

\(^{21}\) The UR tone sponsor position is not marked until §4.1.3, when stem H tones are introduced.

\(^{22}\) Except for use by and to children, and in certain registers of narrowly described discourse contexts, ú-ŋna 'his/her mother'—and especially ú-nyoko 'your mother'—are taboo lexical items.
4. 1. 2. Words with one H tone

We turn now to words with a single active H tone: firstly, those where the H source is the stem itself (§4.1.2.1), and then to those where the H source is the prefix (§4.1.3.1).

4. 1. 2. 1. Toneless Prefix + H stem

Lexically High stems are exemplified (13-18) with up to five syllables in them, although by addition of verbal suffix extensions, theoretically limitless stem length can be achieved (though unambiguous interpretation and error-free production become increasingly strained). Reduplicates (29-30 below) will allow us to exemplify greatly extended word length (though, due to their somewhat anomalous behavior, I will reserve the discussion of certain stem lengths for later: 1-σ H stems (until §4.2.1.3); and 3-σ H stems (until §4.2.1.1).

Present Indicative (long form): toneless prefixes + H stem

(13) 1-σ stem
   a. si-ya-phá    we give
   b. si-ya-khá   we draw (water)

(14) 2-σ stem
   a. si-ya-bóona   we see
   b. si-ya-búúta  we ask

(15) 3-σ stem
   a. si-ya-bóníisa we show *si-ya-bóniisa
   b. si-ya-bútáána we ask one another *si-ya-bútaana

(16) 4-σ stem
   a. si-ya-sébétiisa   we use
   b. si-ya-bútélaana we ask for one another

(17) 5-σ stem
   a. si-ya-bónísélaana we show for one another
   b. si-ya-bútísísaana we ask one another intensively
(18) **6-σ stem**  
   a. si-ya-sébétísélaana we use for one another  
   b. si-ya-khúlúméláana we speak on behalf of one another

In the words above, a single H span is observed in each instance, commencing at the left edge of the morphological verb stem, and extending through the antepenultimate syllable. Phonetically, the F0 level is high (an average of ±145Hz, for this male speaker) and almost perfectly unwavering until the onset of the penult, over which it falls rapidly (±145-106 Hz). Figure 2 (the audio track of 17a above) offers a certain visual confirmation of this phonological categorisation. Note that this word is one syllable longer than the toneless example given above.23

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**Figure 2**  
L-H*-L pitch trace in citation form High stem: *siyabónísélaana* ‘we show for e.o.’

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23 For various technical reasons, the most appropriate data, with the least amount of consonant interference in the pitch traces, forced me to choose a H-stem word one syllable longer than its toneless counterpart above. This choice also helps to visually articulate the H plateau.
Again, as above, Y-cursors are lined up with the vowel onset in the stem-initial syllable, and the penult, respectively\(^{24}\).

### Table 2

Pitch and duration measurements (lexical paradigm: toneless prefix + H stem)

<table>
<thead>
<tr>
<th>σ</th>
<th>segments</th>
<th>vowel-onset pitch (Hz)</th>
<th>pitch change (Hz)</th>
<th>time (s)</th>
<th>syllable duration (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(s)i</td>
<td>148.6</td>
<td>—</td>
<td>0.05</td>
<td>134ms</td>
</tr>
<tr>
<td>2</td>
<td>(y)a</td>
<td>135</td>
<td>-12.4</td>
<td>0.26</td>
<td>77ms</td>
</tr>
<tr>
<td>3</td>
<td>(b)o</td>
<td>136.9(^{25})</td>
<td>19</td>
<td>0.44</td>
<td>174ms</td>
</tr>
<tr>
<td>4</td>
<td>(n)i</td>
<td>146.7</td>
<td>98</td>
<td>0.52</td>
<td>86ms(^{26})</td>
</tr>
<tr>
<td>5</td>
<td>(s)e</td>
<td>156.2</td>
<td>95</td>
<td>0.76</td>
<td>239ms(^{27})</td>
</tr>
<tr>
<td>6</td>
<td>(l)aa</td>
<td>136.9</td>
<td>-19.3</td>
<td>0.99</td>
<td>233ms</td>
</tr>
<tr>
<td>7</td>
<td>(n)a</td>
<td>106.6</td>
<td>-30.3</td>
<td>1.18</td>
<td>183ms</td>
</tr>
</tbody>
</table>

Again, these figures provide only rough approximation of time and pitch in general (this is not a statistical norm), but they do suffice to confirm the phonological categorisations imposed on the Phuthi datum above (though only in the context of many dozens of similar pitch traces from the same paradigm). The high plateau extends from σ 3 through 5.

In a constraint-type (non-representational) theory such as ODT, the issue of how to associate tonal melodies with the segmental tier via moraic or syllabic units does not really arise, because OT is primarily concerned with how to most closely get at surface generalisations, not at representational simplicity. Thus although some OT works—such as Cassimjee (1995) and Bickmore (1996, 1997)—do posit floating tones, which must then be de-floated and anchored (or linked) to syllabic units, this is not a necessary step in OT, and certainly not an interesting step in ODT. Unless there is some surface-meaningful difference between a tone that floats and one that is anchored, and there is some generalisation that cannot be expressed without floating tones,

\(^{24}\) Note that the orthographic -(l)aa- does not line up exactly with the Y-cursor position, since the pitch trace could not be perceived, even with a lower threshold of voice sensitivity until 11ms later (0.844s).

\(^{25}\) The apparently very small difference between this pitch and that of the preceding ‘toneless’ syllable is due to the high onset of syllable 2.

\(^{26}\) Notice this very short duration: high vowels [i i u] tend to reduce in voicing and in duration, especially after nasal onsets.

\(^{27}\) This syllable appears unusually long: the [s] again has long duration.
then float is an unnecessary maneuver. On the contrary, under the richness-of-the-base hypothesis (McCarty & Prince 1995), features can be freely inserted anywhere in the UR; in this case, a H tone could be inserted anywhere, the only place a H will surface, however, is one that is faithful to where it is sponsored (as we shall see): at the left edge of the stem.

4.1.3. Parsing a Lexical H Tone

Beckman (1995, 1997, 1998) and Lombardi (1999) have extensively documented the phonological and morphological positions of privilege in phonological strings. As in a wide variety of other Bantu languages, the stem-initial syllable in Phuthi is positionally privileged: it is only here that lexical tone can anchor, as we have begun to see in the examples above; this is the single morphological position where tone is fully contrastive. The remainder of this Chapter, and Chapter 5, lay out processes of tone manipulation in Phuthi—expansion and shrinking of tone domains—all of which involve faithfulness to the privileged tone-bearing ‘sponsor’ syllable at the left edge of the stem. It will turn out to be exceedingly rare in Phuthi that true neutralisation between the toneless and H lexical stems is ever achieved (but see Chapter 6 §6.2: present subjunctive; present relative).

The morphological property of tonal H-ness is a marked one: it is lexically (or grammatically, cf. Chapter 6) encoded, distributionally restricted, and perceptually salient; it is thus an obvious candidate for displaying positionally peculiar behaviour. The perceptual and articulatory grammars (Boersma 2001)—all other things being equal—both seek to faithfully preserve categorially salient information. And it appears that Phuthi goes to great lengths to preserve this contrast (more robustly demonstrable in Chapter 6).

Basic H parsing in a stem which includes an associated H in the UR requires three constraints, informally: ‘no deletion’, ‘align to the left edge of a stem’, ‘no insertion’.

In the present analysis, then, I will follow the well-worn route (traditional among tonologists since the middle 1990s) of parsing the requisite tone UR-sponsored feature (here: H

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28 The term ‘sponsor’, to be used throughout in this dissertation, arises in the work of Farida Cassimjee and Chuck Kisseberth in the 1990s; ‘sponsor’ refers to the particular prosodic position (usually a syllable, although it could be a mora too) which is lexically specified for a certain feature (here: H tone). Thus, in *si-ya-bóóna* ‘we see’, the (underlined) penult syllable *bóó*- is the sponsor of the H feature. By convention, I underline only the vowel(s) in the sponsor syllable.
tone) within OT—more precisely, within the Correspondence Theory variety of OT (M&P 1995) —by a Max constraint (replacing Parse in the ‘classical OT’ of Prince & Smolensky 1993 [2004], given initially in (19), refined in (20).

\[(19)\] **Max-H** (first version)
Maximise an underlying H tone.
All input (UR) segments must surface—in the same sequence—in the output, that is: no phonological deletion.

In keeping with the discussion in Chapter 3, I collapse this ‘no deletion’ correspondence constraint with its identity-ensuring counterpart (Ident) that can ensure featural identity along a variety of parameters, in this case: identity of H tones. The constraint is formalised as others have used it—explicitly (Ham 1996:28) or implicitly (C&K 1998)—in (20).

\[(20)\] **Max-H** (final version)
Max H (Input-Output), i.e. (I-O)
Every H tone in the input (UR) must have an identical correspondent H output (PR).

Proper location of this active UR tone is achieved by align constraints (McCarthy & Prince 1993). Thus, we need an align constraint (instantiated as ‘anchor’\(^{29}\)) targeting the left edge of a stem to ensure the proper location of the UR H feature (21)—anticipating the subsequent action of BA-LF \(\text{Anchor}_H_{(\text{Lex})}\) will be rephrased in (21’) below.

\[(21)\] **Anchor_H_{(LEX)}**
Align (MStem, Lf, H, Lf)
Align the left edge of every morphological stem with the left edge of some H tone.

To prevent gratuitous insertion and gratuitous anchoring of H tone by Gen, there is a Dep constraint\(^{30}\) (22)—replacing Fill in classical OT formulation (P&S 1993)—with the ranking interaction in (23).

---

\(^{29}\) The term is borrowed from Bickmore (1996). A single instance of sponsor misalignment will be seen in Chapter 7 §7.7.1, not through failed anchoring, but through failure of the ODT principle Incorporation (Chapter 3 §3.3.3, Chapter 5 §5.2.2).

\(^{30}\) In an ODT grammar, Dep-H is used in two ways: (a) to forbid the arbitrary insertion of fresh H-specifications (and therefore of the domains associated with them); and (b) to stop the
(22) **Dep-H**  
Dep-H (Input-Output)  
All output (PR) features must correspond uniquely to the input (UR) features, that is: no phonological insertion.

I assume uncontroversially the general operation of a **LINEARITY** constraint that ensures no reordering of input segments (or tones) relative to output ones.

The three constraints are ranked simply in (23).

(23) **Basic ranking for preserving UR H-feature contrast**  
Max-H >> Anchor_H_(Lex) >> Dep-H

The optimal output anchors only the lexically specified H tone; the ‘(...)’ notation\(^{31}\) indicates the anchor position (not the H domain itself, which follows in the discussion immediately below).

(24) **Tableau 1: Anchoring a sponsored H**  
*S-i-y-a-bóóna*, 'we see'

<table>
<thead>
<tr>
<th>/si- + -ya- + -bon-a/</th>
<th>Max-H</th>
<th>Anchor_H_(Lex)</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) siya(boo)na</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) si(ya)(boo)na</td>
<td><em>!</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) si(ya)boona</td>
<td><em>!</em></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(d) siyabo(oo)na</td>
<td><em>!</em></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(e) siyaboona</td>
<td><em>!</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{31}\) This ‘(...)’ is not generally used in this dissertation, as **BASIC_ALIGNMENT** subsumes anchoring, in (25) below. The notation is used just once again, to indicate the location of the tone **HEAD** position in Chapter 7 §7.4.3.2: (114), Tableau 6 (115).
si-ya-liima, ‘we cultivate’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -lim-a /</th>
<th>Max-H</th>
<th>Anchor_H_(Lex)</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(no stem tone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) si-ya-liima</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) si-ya-(lii)ma</td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>(h) si-ya-lii(ma)</td>
<td></td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

- Here and throughout, an underlined syllable (in the H stem) indicates that this is the sponsor (UR prosodic feature-bearer\(^{32}\)) of a H tone.
- ‘(...)’ indicate the location of an anchored H domain feature, without commitment yet to proper domain parsing and phonetic expression or not.
- Anchor_H_(Lex) requires only one H to be anchored to the stem left edge position.

A constraint such as Anchor_H_(Lex) does not force a H to be realised in this stem-initial position in the absence of a H-sponsor in the UR. This is because the functions of instantiating and aligning are understood to be separate (cf. discussions of anchoring and basic alignment in Chapter 3 §3.3.1; domain correspondence in §3.3.3; instantiation vs. alignment in Chapter 6 §6.3.1.3, §6.3.1.4).

Even though there are other means one could imagine for achieving an output where a UR H is correctly left-aligned to the stem-edge (cf. discussion in Chapter 3), Anchor_H_(Lex) suffices. I observe that this alignment constraint specifically refers to locating an underlying H sponsor, whereas the alignment we turn to in the remaining sections of this chapter, refers to the re-alignment of the edges of an already anchored lexical H feature.

As presented in Chapter 3 §3.3.1, §3.3.3, under assumptions bound up with ODT there are two fundamental constraint types reflecting featural faithfulness between UR input and PR output: basic alignment, and expression (Cole & Kisseberth 1995b:11, C&K 1998). Basic Alignment—the most basic domain construction constraint—cannot take place unless a sponsor constituent is identifiable, so that basic domain edges can be locally constructed around the relevant feature (I assume here that the syllable is the H-bearer). This neatly captures the encoding of input-output faithfulness in an OT-type grammar. Anchor_H_(Lex) will therefore ensure that a stem sponsor is aligned locally, around its sponsor; Basic_ALIGNMENT (BA-LF and

\(^{32}\) See footnote 28, for comment on the use of the term ‘sponsor’.
BA-Rt) will then ensure that the UR sponsor has surface domain encoding, in the form of a HD which parses the feature H, and fulfils basic faithfulness. The constraints in (25) illustrate.

(25) **Basic Alignment** (Basic_Align)
    
a. BA-Lf = (Align, H, Lf, HD, Lf)
b. BA-Rt = (Align, H, Rt, HD, Rt)

Align to the left and right of every (anchored) H the left and right edges of a H domain.

One of the insights built into ODT is that domain construction around a triggering feature (that is, the underlying domain of a feature), and actual surface expression of the feature itself, are potentially independent of each other. Perfect domain alignment can take place but with imperfect F-expression (see discussion of transparency / opacity in harmony systems, in Chapter 3, §3.2.2). This ‘imperfect’ expression will be seen to be at the heart of the analysis of depression in Chapter 7. **Express_H** will phonetically and automatically implement the HD-feature, for now (that is, before commencing the discussion of unexpressed Hs in Chapter 7 §7.2ff); **Express_H** must outrank **Dep-H** (27).

(26) **Express_H**
Express HD, H
Express all syllabic material in a H-domain as H (i.e. with a high F<sub>0</sub>).

(27) **Express_H >> Dep-H** every syllable in the H-domain bears an expressed H tone
    
- BA-Lf unranked with respect to (Express_H >> Dep H)
- Max-H unranked with BA-Lf

(28) **Tableau 2. Expressing basic alignment of a correctly Lf-aligned lexical H**
    
    si-ya-boâøna, ‘we see’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -bon-a / anchored stem H-sponsor</th>
<th>Max-H</th>
<th>BA-Lf, BA-Rt</th>
<th>Express_H</th>
<th>Anchor_H_ (Lex)</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>a (a) si-ya-[bóó]na</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b (b) si-[yá]-boona</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c (c) si-ya-[boo]na</td>
<td></td>
<td></td>
<td>*!</td>
<td>0; *</td>
<td></td>
</tr>
<tr>
<td>d (d) si-[yá]-boona</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e (e) si-ya-boona</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td>0; *</td>
</tr>
</tbody>
</table>
- the D_{\text{ep}}-H violations are measure as (i) violation by inserting the sponsor; and (ii) violation by inserting the surface H-feature.
- the HD in (28a) has its sponsor correctly left-aligned to the stem edge, and the domain is properly expressed; (b) fails \texttt{ANCHOR\_H\_LLEX}, because the sponsor is not located in the stem \(\sigma 1\) position; (c) fails on H-expression, even though the HD is well-constructed; (d) fails on \texttt{BASIC\_ALIGN (BA-LF/Rt)}, since the basic edges are not parsed around the sponsor itself.

Cassimjee (1998) and C&K (1998) propose a principle of \texttt{INCORPORATION} to force a H-sponsor to surface inside its own HD; at present the highly ranked BA-LF will cover this principle by forcing every sponsor to begin a domain to its Lf. But we will see in Chapters 6 and 7 that because BA-LF is ranked lower in the hierarchy than the necessary OCP constraints (Chapter 5 §5.1-§ 5.2), some higher order principle \textit{must} limit the proper generation of HDs, so that each sponsor parses its own unique HD, and the sponsor is included inside that domain\textsuperscript{33}.

Returning to the data laid out in (13-18) above, the significant generalisation arising there is that (a) a H in Phuthi always surfaces, at least on its sponsor syllable—the ultima in (13), the penult in (14); and (b) the H optimally extends to the antepenult syllable (16-18). Additional data which confirms that lexical Hs prefer to target the antepenult includes the following (29-30; for fuller paradigms of the present indicative reduplicative, cf. Appendix A, paradigm B; for the perfective indicative (long form), cf. Appendix A, paradigm E).

**Present indicative reduplicates: toneless prefixes + H stem**

(29) \(6-\sigma\) stem
   a. si-ya-[bónibóní]saana we show each other now and then
   b. si-ya-[búťbútí]saana we ask each other intensively now and then

**Perfective (long form): toneless prefix + H stem**

(30) \(6-\sigma\) stem
   a. si-[šběťšfši]siyiye we have used intensively
   b. si-[hlóníphů]liiye we have been disrespectful

\textsuperscript{33} I return to the issue of sponsor incorporation in §4.2.1.3 and §4.4.1 where reduplicates are discussed; then, again, in Chapter 5 §5.2.2.
In (16-18), and again in (29-30), the lexical stem H which targets the antepenult is implemented perfectly level across all high syllables, until the onset of the penult. Thus the length of a H domain plays no distinct role in the realisation of the pitch contour.\footnote{Phuthi is quite different in this respect to most other Nguni languages, which express as H only the rightmost syllable inside a HD (only observable where $|\text{Length}|_{\text{HD}} > 1\sigma$); cf. discussion of expression-related headedness parameter in Chapter 8 §8.2.3. The parameters of tone variation between Phuthi and Xhosa—other than domain expression—are limited, in the non-depression lexical tonology (that is, Chapters 4-5). Thus, the two languages serve as a very nice comparison of various domain-related tone settings. Nevertheless, I will propose certain innovations from these earlier analyses in the sections that follow.}

4.1.3.1. H prefix + toneless stem

In addition to the combination of \{toneless prefix\}+\{H stem\} just seen, the tonally opposite combination of \{H prefix\}+\{toneless stem\} in (31-34) produces the same surface tone configuration, as in (13-18) and confirmed in (29-30) above.

- In these examples, and all that follow, the ‘sponsor’ of the H tone will be indicated by underscoring: $\sigma$.
- All 3rd person SPs are H in Phuthi; all non-3rd persons in lexical paradigms\footnote{Some SPs from grammatical paradigms are H (e.g. the participial, in Chapter 6 §6.2.1.1). The lexical toneless/low vs. grammatical H conflict in SPs is dealt with in Chapter 7 §7.6.2.} are toneless (cf. robust exemplification in Appendix A).

**Present Indicative: H prefix (+ toneless prefix) + toneless stem**

\begin{align*}
(31) & 2-\sigma\text{ stem} \\
& a. \quad [bá-yá]-liima \quad \text{they cultivate} \\
& b. \quad [bá-yá]-hlaaba \quad \text{they stab}
\end{align*}

\begin{align*}
(32) & 3-\sigma\text{ stem} \\
& a. \quad [bá-yá-lí]baala \quad \text{they forget} \\
& b. \quad [bá-yá-pá]taala \quad \text{they pay}
\end{align*}

\begin{align*}
(33) & 4-\sigma\text{ stem} \\
& a. \quad [bá-yá-límé]laana \quad \text{they cultivate for each other} \\
& b. \quad [bá-yá-líbá]tiisa \quad \text{they delay}
\end{align*}
(34) 5-σ stem
   a. [bá-yá-límísé]laana they help cultivate for each other
   b. [bá-yá-libáltí]saana they cause each other delay

Thus far, then, the location of the H-sponsor seems to be irrelevant for the rightwards expansion of tone. (Below, it will be shown that H sponsors just in antepenult or penult position are in fact relevant for the surface H contour).

I now consider the treatment of this HD-extension to the antepenult. We have now seen a non-stem morpheme sponsoring H, where the surface HD is aligned to the left edge of this constituent too (even though the leftness of the alignment is vacuous here, since the prefix is only one syllable long). Thus ANCHOR_H_(LEX) needs to refer more generally to the left edge of the sponsor’s associated morphological constituent—its lexical sponsor or ‘source’ (Ham 1996)—whatever the nature of that constituent is. (21) can thus be rephrased more generally as (21’).

(21’) ANCHOR_H_(LEX) (Anchor H) (final version)
    Align MCon, Lf, H, Lf
    Align the left edge of every Morphological Constituent with the left edge of a H tone.

    Additional constraints are needed to achieve the antepenult alignment evident in the data presented so far. In dealing with the antepenult question, and in much of what follows, I draw heavily on proposals made in Kisseberth (1993), Cassimjee (1995, 1998), and C&K (1998), all of which focus on Xhosa, a (Zunda) Nguni language closely related to Phuthi (cf. footnote 34 below).

4. 1. 4. WIDESCOPESOLUTIONS

At least three ways of achieving H-extension to the antepenultimate syllable have been proposed, each with merits: (i) the first—which I will adopt—is non-metrical, but makes reference to prominence properties; (ii) the second is metrical; (iii) the final analysis involves a single input-output domain misalignment.

Three observations (35) have driven each of the proposed analyses, and need to be built into any analysis of widescope tone realignment in a language such as Phuthi.
Facts that correlate with antepenult H targets

a. H extension never occurs onto the ultima syllable, and almost never onto the penult (this will be elaborated on in §4.2.1.1-§4.2.1.3);
b. the penult is surface-long (2 moras);
c. the right edge of the H span is the antepenult.

4. 1. 4. 1. Aligning right

Optimal Domains Theory (Cole & Kisseberth 1994:7, 1995a,b; 1997)—as observed in Chapter 3 §3.3.1—identifies two types of alignment (36).

Domain alignment scope in ODT

a. Basic_alignment: the faithfulness constraints reflecting the domain edges of a sponsor feature (= the PR location if the scope of the feature fails to expand either leftwards or rightwards);
b. Widescope_alignment: reflecting the wider scope of some features seeking to extend their visibility in the surface realisation (e.g. harmony features, tone features).

The widescope domain alignment evident in the data above is now encoded in (37), as a general right alignment constraint, modelled after Kisseberth (1993), C&K (1998), Bickmore (1996)—all of whom are simply reconfiguring an unbounded spread rule, that is, an iterative left-to-right H-spread rule (Goldsmith 1976) from autosegmental tonology in the 1980s.

Align (H, Rt, PWord, Rt)

Align the right edge of every H tone to the right edge of a prosodic word.

(37) will be referred to straightforwardly as (38).

Widescope_alignment (HD, Rt) (WSA-Rt)

The ‘instability’ of H in Phuthi, that is, its surface extension beyond its basic feature alignment, puts Phuthi into the class of ‘wide domain’ Bantu languages, in the terminology of C&K (1998:48ff). Further examples of wide domain languages are provided in (43) below.
4. 1. 4. 2. Imperfect right alignment

No Bantu language, to my knowledge, is completely faithful to the WSA-RT constraint in (37/38): all languages misalign their domain right-edges in one or more paradigms, albeit minimally. Observed to be an instantiation of the broader category of extraprosodicity, NonFinality is the OT constraint first proposed by Prince & Smolensky (1993 [2004]) to achieve non-edge stress in a penult/peninitial stress system. Here, as in Kisseberth (1993), I use it to deflect H from possibly surfacing on the ultima.36

(39) NonFinality (NonFin)
NonFinal (PWord, σ)
The final syllable of a prosodic word is excluded from being a prosodic target for a H tone—i.e. cannot be interior to a HD.

In addition to NonFinality, I later indicate the possibility of using NonInitiality (Chapter 6 §6.3.1.4, footnote 37)—an almost mirror-image constraint of NonFinality—to deflect grammatical tone from attaching to the left edge of a stem; NonInitiality constitutes a possible alternative analysis of the lexical tone slot reserved in most grammatical paradigm verb stems (FaithLexTone).

‘NonInitiality’ and ‘NonFinality’ do not do full credit to what I suggest is the more general principle which underlies both constraints: the most peripheral position37 of a morphological entity is not attractive to a HD. I collapse these two into a single (parameterisable) constraint: *Align (Donnelly 1995a, Bickmore 1996).

Formulating the constraint in this fashion is in one sense functionally more appealing too: it makes explicit that the reason for not allowing the initial or final syllable in a string to be accessible to a prosodic feature (here: H) is grounded in the fact that a misalignment is preferred, pace the strong tendency towards alignment of phonological and morphological categories observed in Prince & Smolensky (1993 [2004]).

36 We will see shortly that H can, in fact, surface on the ultima, but only if its sponsor is the word (or phrase) ultima.
37 For NonFinality, the right-edge anti-align target is the ultima (of the stem/word); for NonInitiality, the left-edge anti-align target would be the first stem syllable (not the word-initial or even macrostem-initial position); but, again, the effects of NonInitiality are subsumed by FaithLexTone.
There is some potential support for this edge-avoidance tendency in the phonetics: H
intonation appears to require more effort (Silverman 1997a), since it typically demands greater
horizontal and vertical tension of the vocal folds, higher subglottal pressure, higher airflow
across the glottis, greater glottal aperture, and a greater volume of air. This greater effort in
producing H intonation would violate the universal tendency to phonological lenition both
word-finally and phrase-finally.

As articulators are beginning to reduce dynamic energy expenditure towards an utterance
end, the effort of keeping H intonation as ‘high’ is simply outweighed by the diminishing kinetic
resources remaining in the prosodic system: a whole set of intonational downtrend effects follow
(cf. further discussion in Chapter 5 §5.5, and in Pierrehumbert & Beckman (1988) for a catalog
of Japanese effects; Herman (1996) for comparable effects in the Bantu language, Pare).

The general anti-edge reformulation of NonFinality is given in (40).

\[
\text{(40) } \textbf{*ALIGN-H, Rt} (\textbf{*ALIGN-Rt})
\]

\[
\text{Align (HD, Rt, PWord, Rt)}
\]

A HD must not be aligned with the Rt edge of some prosodic word.

Further, *ALIGN-Rt reflects the well-established observation that attrition processes
favour the ends of phonological strings, that is, prosodically weak positions. Clearly, then, the
failure of the H-domain in Phuthi to extend successfully to the right-edge of a string of syllables
in a word results from the interplay of (a) the desire to extend— that is, assimilate—rightwards as
far as possible (in ODT terms: to prolong the surface visibility of the parsed feature), but which
is counterbalanced by (b) the physical demands on maintaining the system’s pitch delivery steady
to the very end of the string.

And yet, there are two good reasons to prevent us becoming smug about ‘explaining’
away the failure of a phonological H to reach the right edge of the stem which it is characterising:
(a) we shall see Phuthi paradigms in Chapter 6 which do this very thing: extend their
(grammatical) H to the ultima position (cf. §6.3.3); (b) there are a number of other Bantu
languages which do allow a H tone to spread to the ultima position of a word, even a phrase-final
word (though this pattern often only arises in a small number of phonologically or

I am not aware of any Bantu language that is completely faithful to the WSA-Rt constraint in (37/38)—for phrase-final forms—although a variety of the wide-domain languages do target the penultimate position (either phrase-penult, or word-penult). The minimally imperfect widescope H alignment in such languages, including Phuthi, is achieved as in (41).

(41)  
**Edge ranking**  
NonFinality >> WSA-Rt

Although I will continue to use the NonFinality formulation above, the equivalent anti-align/align formalism for (41) is given in (42).

(42)  
**Edge ranking**  
*Align-Rt >> Align-Rt

Importantly, because of the nature of an OT grammar, the anti-align requirement in (40,42) is satisfied by a single misalignment, which is what Phuthi delivers in phrase-medial forms (to follow in §4.5 below), and what it would deliver everywhere if a second misalignment constraint were not to interfere (in §4.1.4.5 below).

4. 1. 4. 3. Spread or shift: HD headedness

Among the penult-targeting languages, there are typically two flavours of language: those that ‘spread’ a H to the penult (43a)—where all syllables intervening between sponsor and target are H too—and those that ‘shift’ a H to the target alone (43b), away from its lexical sponsor.

(43)  
**Penult-targeting wide-domain languages**

a.  H ‘spreads’ to penult\(^{38}\)
   ii. Shambaa (C&K 1998:54, data from Odden 1982)
   iii. Lungu (Bickmore 1996:11, data from Bickmore & Doyle 1995)

\(^{38}\) This is the phrase-medial target position for Phuthi H widescope alignment; cf. §4.5.
b. H ‘shifts’ to penult
   i. Zigula (Kenstowicz & Kisseberth 1993)
   ii. Bondei (C&K 1998:51-52)
   iii. Digo (Kisseberth 1984, abstracting away from phonetics of final rise-fall)

In line with proposals in Cole & Kisseberth (1994a, 1995a,b, 1997), the difference in constraint interaction between the languages in (43a) and (43b) is merely one of perfect or imperfect expression of a HD. In both sets of languages, a sponsor syllable crucially ‘remembers’ that it is the H-sponsor, but only in the (a) cases are non-rightmost syllables expressed as surface H as well.

Phuthi is quite transparent in this regard: all syllables inside H-domains are expressed as H (apart from the patterns of tonal depression to come in Chapter 7). No ‘reconstructing’ of sponsor position need be done, since sponsors also remain surface-H. Constraint interactions modelling this situation are given in (44) below.

(44)  All syllables in domain are H
   a. Express_H >> everything nothing can prevent expression of HD as H
   b. BA-Lf >> everything. nothing can realign a H leftwards of its sponsor (from the data in (13-18) above)

Cassimjee (1995, 1998) and C&K (1998) have suggested that this parameter of Express-rightmost-HD-syllable-as-H vs. Express-all-HD-syllables-as-H is one of headedness. The rightmost TBU (syllable or mora) inside a H domain is the head of that domain. Languages like Xhosa care only about expressing that particular position as surface-H; Phuthi, however, expresses the entire HD as H. Headedness returns as an issue in the Phuthi tone/voice requirements in Chapter 7 §7.4 (HEAD-IN-HD, EXPRESS_EDGE), where we see robust evidence that

---

39 This position is the phrase-*median* target for Nguni languages such as Xhosa (Cassimjee 1995, Jokweni 1995, C&K 1998), Swati (own field notes; Bradshaw 1999), Zulu (Khumalo 1987). In other words these languages finesse ‘penult’ according to syntactic phrase position. Phuthi will be seen to behave similarly in §4.1.4.4, §4.1.4.5; §4.5.

40 We can characterise ‘non-rightmost’ as ‘non-head’, after a notion of HEAD is introduced in Chapter 7 §7.4.3.2; and cf. integrated discussion of headedness in Chapter 8 §8.2.3.

41 This will be revised in the light of anti-expression conditions (invoked after breathiness/depression is introduced in Chapter 7 §7.2ff.), chiefly: EXPRESS_L >> EXPRESS_H.

42 This will be revised after the OCP and fusion facts are considered in Chapter 5 §5.1, §5.2.
in Phuthi, too, the domain right-edge TBU counts as the head of the phonological tone domain. The headedness discussion is resumed and integrated in Chapter 8 §8.2.3.

4. 1. 4. 4. Penult prominence

Returning to Phuthi, we must still refine the constraint set and interaction to target the antepenultimate position. Far fewer are the languages which follow this as a default pattern. Examples do, however, include all of Nguni (Khumalo 1987, Claughton 1992) and some Tswana dialects (Creissels 1998), with the proviso in each of these languages that only some of the tone paradigms behave in this fashion.

Importantly, in most of the languages listed in (43), the penultimate position is identified as the prominence position, often correlating with vowel length. Some accounts—especially for the shifting languages—target this position in a metrical fashion: establish a left-headed binary foot at the right word/phrase edge and align a H to it—e.g. for Zigula (Kenstowicz & Kisseberth 1990). Other accounts mark off the ultima syllable as extrametrical, allowing the penult to become, in effect, the right word-edge.

But these penult accounts are clearly incomplete for Phuthi (and for other antepenult-targeting languages). Essentially three accounts have proposed to account for the data as found in Phuthi.

The first approach—which I will adopt—to antepenult alignment invokes a constraint repelling H from the prominence position in Phuthi, that is, from the long penult. This follows thinking developed in Kisseberth (1993) and C&K (1998:79ff)—using a constraint entitled AVOIDPRONINCENCE, as follows (formalism mine).

(45)  **AVOID** **PRONINCENCE** (AvoidProm)  (to be revised, in 55)

   *[σ]**

   /\  \     \   μ μ

   Keep a prominent (that is: bimoraic) syllable out of a H domain.

   This constraint, too, can be optimally characterised as a type of anti-alignment (or misalignment) at the prominent syllable, and should be reformulated, I suggest, as (46).
This analysis is proposed by C&K (1998), with the admission that \textsc{avoid prominence} is ‘the most speculative’ of the constraints they propose. C&K are uncomfortable with a constraint that appears to do exactly the opposite of what tone-to-accent rules or constraints (Goldsmith 1976, 1987, Downing 1990a, 1996) are argued to do: attract a tone to a prominent position (not repel it from such a position). And yet the weight (syllable length) of the penult enhances its ‘strength’ to a prominent position that makes it more resistant to the general assimilation of word right-edges, which right-edge neutralisation (to tonelessness) in both ultima and penult positions otherwise confirms Krämer’s (2002:2) observation that there is general left-right asymmetry in phonology: word right-edges are less resistant to neutralisation than word left-edges\(^{43}\). (Penult prominence is taken up further in the following section, §4.1.4.5).

The interaction of all the edge constraints in the ODT grammar of Phuthi up to this point works as follows (47-48), graphically demonstrated in (49).

\begin{enumerate}
\item \textsc{nonfinality} (i.e. OT extrametricality for the right edge of a string) removes the final syllable from being a possible target for ‘H-spread’;
\item \textsc{avoid prominence} (Kisseberth 1993) makes the penult also ineligible to bear a tone domain;
\item H reaches as far to the right as possible (\textsc{align H, right});
\item The interaction of (a-c) uniquely achieves the (right edge of the) antepenult syllable:
\end{enumerate}

\begin{enumerate}
\item \textsc{nonfinality} $\gg$ \textsc{wsa-rt}
\item \textsc{avoidprom} $\gg$ \textsc{wsa-rt}
\end{enumerate}

The interaction of these constraints can now account for the data containing a single lexical H tone, presented in (13-18), now demonstrated in Tableau 3 (49).

\footnote{Phrased differently, the left edge of words is more resistant to neutralisation; and since the left edge is the root-initial position, this confirms Beckman’s (1998:56) claim that the first syllable of a root is positionally faithful (‘first syllable root faithfulness’).}
(49) **Tableau 3.** H phrasal target is the antepenultimate syllable  
*si-ya-sébétsésélaana*, ‘we use for one another’

<table>
<thead>
<tr>
<th>/si- + -ya- + sébétsé-sel-an-a/</th>
<th>Express_H</th>
<th>NonFinality</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>equivalent <strong>ALIGN encoding</strong> →</td>
<td><em>Align_H, Rt</em></td>
<td><em>Align_H, Prominence</em></td>
<td>Align_H, Rt</td>
<td></td>
</tr>
<tr>
<td>(a) <em>si-ya-[sébétsé]laana</em></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(b) <em>si-ya-[sébétsí]laana</em></td>
<td></td>
<td></td>
<td></td>
<td><strong>†</strong></td>
</tr>
<tr>
<td>(c) <em>si-ya-[sébétséláá]na</em></td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(d) <em>si-ya-[sébétsélááná]</em></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) <em>si-ya-[sébetsí]laana</em></td>
<td><em>!</em>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Redundant penult length is indicated here, to highlight the prominent syllable.
- WSA-Rt counts syllables, not moras.
- **EXPRESSION** is listed highest, since it is almost never violated in the non-depression grammar, even though it is not strictly ranked yet with respect to these other constraints.
- The widescope antepenult is successfully achieved in (a), despite the imperfect satisfaction of widescope alignment; imperfect alignment in (b) is excessive.
- The prominent penult in (c) and right edge in (d) violate anti-edgeness.
- The tone domain in (e) displays correct scope (reaching the antepenult), but three unmotivated **EXPRESSION** failures undermine optimal surface expression. This *is*, however, the correct PR in languages such as Xhosa, Swati and other ‘shift’ Nguni varieties where H is expressed solely at the right edge of the HD. Cassimjee proposes a notion of headedness for Xhosa, where non-head syllables inside a HD fail to surface as H by the constraint: *(H, NON-HEAD)*. The discussion of the **HEAD** notion is resumed in Chapter 7 §7.4.3.2 (where the rightmost TBU in a HD is argued to be the Head, to which **EXPRESSION** requires reference), and in Chapter 8 §8.2.3.1.

I observe that the constraints and rankings in (46) are sufficient to account for all the single-H-sponsor patterns in (13) to (18), with the exception of 3-σ stems such as *si-ya-bányísa*, which we focus on in a subsequent section of this chapter (§4.2).

4. 1. 4. 5. Non-attraction to prominence? Attraction to non-prominence?

C&K (1998) suggest that **AVOIDPROM** ‘reflects the fact that less prominent syllables are universally more prone to assimilation than prominent syllables’ (1998:53). In other words, pre-penult syllables can be assimilated to a H specification more easily than the penult which is prominent, and which therefore resists being assimilated to H. This appears to be true in some sense in the case of Phuthi, but it is clearly not true for the penult-targeting languages in (43)
above, which do have prominent penults. For example, Digo has long penults and they are selected as targets for rightwards H shift, not as targets to be avoided by the expanding HD.

An OT/ODT response to such penult-targeting languages would be that languages like Digo simply have the constraint \textit{AvoidProm} ranked lower in their constraint typology. This is possibly (and untestably) the case, but the issue cannot be done justice here: it needs much more careful unpacking, and consideration of rich data sets on prominence from a wider range of wide-align languages.

The constraint analysis proposed here is troubling: it seems fortuitous that the penult has special properties just in Phuthi (and in all other Nguni languages) that enable it to be identified as having some particular property to be avoided, allowing the constraint in (45/46) to be functionally plausible in some sense. This is unsatisfactory: why avoid the prominent syllable? Since ODT seeks maximally functional constraints, and since the only empirically interesting and testable part of OT is the constraint set (Mohanan 1997, 2000), the formulation of a constraint such as (45/46) is important.

Under the present approach, one must simply live with the analytic strangeness that construes the prominent penult as a prosodic position to be avoided. Before pursuing the analysis maintained here, with \textit{AvoidProm}, we turn briefly to a second possible analysis of the widescope facts (§4.1.4.6).

4.1.4.6. Metrical construction

Prior to the C&K proposals above, Downing (1990a,b) had convincingly argued that in Nguni languages—Xhosa, Zulu, Swati, Ndebele, and by inference now Phuthi—tone is attracted to the antepenult position because the antepenult is \textit{metrically} prominent. She articulates this prominence by (a) marking off the phrasal ultima as extraprosodic, then by (b) building a syllabic trochee (a left-headed binary foot) at the right word-edge, and finally by (c) selecting the footform\textsuperscript{44} ‘trochaic’, that is, the metrically strong syllable (the foothead) is the antepenult, which in turn is the desirably prominent position for tone to shift to, in the case of Xhosa H tone (50) which shifts (rather than expands and is uniformly expressed in a H domain).

\textsuperscript{44} Downing (1990b) does not use the terms ‘footform’ and ‘trochaic’, but rather builds a trochee foot with a left-aligned line 1 asterisk, in the metrical model of Halle & Vergnaud (1987).
Now, in addition to Downing’s metrical foot built on the antepenult-penult, we are forced to concede that a similar device—perhaps metrical—is needed to identify the penult itself as the site for assigning syllable-lengthening prominence. All Phuthi (and other Nguni) phrase-penult syllables are redundantly long, as I have been indicating since the start of this chapter. I propose, therefore, that the penult itself is identified as the heavy left element (head) of a single, right-aligned, binary stress foot, that is a syllabic trochee in the Hayes (1995) typology (cf. further comments on foot form and binarity in §4.2 below). Headedness here entails being heavy, exemplifying the weight-to-stress principle (cf. 51 below).

The left syllable is the trochee head, and serves as the target of weight attraction (mora-insertion). We now have two distinct trochees at the right word-edge in a Nguni language such as Xhosa (51), with identical right-edge foot construction for Phuthi (to demarcate the rightmost position for H tone expansion, and to indicate penult length).

(51)  **Two stress/prominence tiers**

\[
\begin{array}{l}
\text{targeting the antepenult metrically} \\
(x \ .) \langle \sigma \rangle \\
\ \text{ba-ya-limisi sé laa na} \quad \text{‘they cultivate intensively for each other’}
\end{array}
\]

\[
\begin{array}{l}
\text{tone-accent projection (TAP)} \\
\text{weight-accent projection (WAP)}
\end{array}
\]

The tone-accent projection observes extrametricality (which will turn out to be revocable in §4.5). Meanwhile, the weight-accent projection is oblivious to extrametricality. While this may seem a clumsy approach at first, with two independent metrical projections, clearly both are needed, but to perform prosodically separate tasks. Hyman (1989) has already observed this problem of apparent duplication in setting up an accentual account of the Xhosa/Zulu penult, precisely because there is a second position of prominence: the antepenult. Hyman remarks wryly (and accurately) that it looks like we need ‘one metrical structure per prosodic feature’ (1989:119), based on what we find in Nguni.
I will continue to approach Phuthi tone using the constraint set articulated in §4.1.4.4 above, for the simple reason that the Kisseberth (1993) solution (then later sketched in Cassimjee (1995,1998), C&K (1998) needs only to target a single position for weight (the penult), and then to avoid that position in the extending of a H feature. In this way, the two processes are related to each other. On the other hand, the double metrical tier approach requires two separate processes without any necessary link between the two.

Moreover, it will be seen in §4.5 (for Mpapa Phuthi) that a H targets the penult (and not the antepenult) phrase-medially. While Downing (1990a,b) could achieve this by the absence of extrametricality phrase-medially, she cannot link this analytically to the changed (no longer heavy) status of the penult syllable. This seems to be a critical link, but unexpressable in her model. By using the AVOIDPROM constraint, however, its evaluation simply becomes vacuous once the penult is no longer prominent.

The redundant adding of a mora to a phrasal penult to make it prominent, as outlined for the ‘weight accent projection tier’ requires a set of constraint statements such as (49-51), which identify the penult as the stressed position (49-50) and then make that metrically strong position (the foothead) heavy, by the SWP (51). These constraints are motivated and instantiated in P&S (1993), Kager (1999), among others.

(52) **ALIGN-Wd-RT**
Align (PrWd, Right, Foot, Right)
Every prosodic word ends in a foot.

(53) **Rhtype=T**
Feet have initial prominence (that is: feet are trochaic, not iambic).

(54) **Stress-to-Weight Principle (SWP)**
Stressed syllables are heavy, that is, (µµ).

There is a significant weakness even in my approach: in most grammatical tone paradigms (Chapter 6 §6.3), the H domain expands to the penult or even to the ultima, even though the penult is heavy phrase-finally, as it is in this present indicative paradigm. And when the penult weight (length) is revoked phrase-medially in those grammatical paradigms, the rightwards H tone expansion does not change (unlike in §4.5 of this chapter, where the revoked penult weight allows H domain expansion to extend beyond the antepenult to the penult). The suggestion will be that as grammatical H tones override any lexical tone status for more syllables in most paradigms (sometimes excepting the root-initial position, which faithfully preserves the lexical tone contrast), so their rightwards expansion overrides any consideration of penult length.

In Phuthi, other metrical constraints that have been proposed such as RIGHTMOST (‘the head foot is rightmost in the PrWd’) and ALL-Ft-RIGHT (‘every foot stands at the right edge of the PrWd’) are unnecessary, as the language has an ‘incomplete’ metrical system: there is no evidence for further footedness in the language beyond this cluster of phenomena within the last three syllables of the word. (There is one wrinkle: the constraints must apply twice, with respect to different prosodic phenomena (tone, and then length/weight), yet both tone and length/weight have implications for the H tone domains we are busy constructing; this will become clearer below).

I will return to the weight accent projection (\textit{WAP}) from (51)—which we have now built with (52-54)—as an important domain, in §4.4 of this chapter.

The avoidance of the penult syllable (45=46) by an expanding HD can now be rephrased, again, as an anti-align constraint keeping a H feature off the \textit{WAP} head (55).

\begin{equation}
\text{(55) }
\textbf{AVOID\_PROMINENCE} \quad \text{(AvoidProm) (revised)}
\end{equation}

*Align (H, \textit{WAP}-Head)

Don’t align a H tone with the head of a weight-accent projection (here: the penult).

I observe that this constraint is of a mixed nature: while it appears to be a faithfulness constraint that circumscribes a sponsor feature (H) on the surface, it is also something like a member of the class of \textit{CLASH} phonoconstraints\textsuperscript{46}. \textit{CLASH} constraints address featurally ungrounded configurations which themselves emerge from the earlier theoretical apparatus of feature cooccurrence constraints. When \textit{WAP} is used later in this chapter (§4.4) to circumscribe the domain in which a reduplicate stems’s base sponsor can occur, the nature of \textit{CLASH} will become clearer.

\textsuperscript{46} A \textit{CLASH} constraint which will emerge in Chapter 7 §7.2, when the full antagonism of breathy voice (with its triggered depression domains) and H tone becomes clear. But the clash effect will be subsequently deconstructed into a set of anti-expression constraints.
For now, NonFin and AvoidProm remain not yet strictly ranked with respect to each other (though it will become clear in (67) and (76) that NonFin >> AvoidProm, through transitive ranking with HD-Min).

4. 1. 4. 7. H prefix + toneless prefix + toneless stem

Additional data from the paradigms partially exemplified above is now adduced to confirm the patterns already established in (13-18, 29-30), and to confirm that longer stems (56-62) play no role at all in the parameters of the tone domain expansion pattern.

Present indicative reduplicate: H SP + toneless T/A prefix + toneless stem

(56) 6-σ stem
   a. [bá-yá-límálímél]laana they cultivate for each other now and then
   b. [bá-yá-líbálíbá]tiisa they delay now and then

(57) 7-σ stem
   a. [bá-yá-límálímísé]laana they help cultivate for each other now and then
   b. [bá-yá-líbálíbátí]saana they delay each other now and then

Perfective (long form): H SP + toneless stem

(58) 6-σ stems
   a. [bá-lébúkísí]siiye they have thanked intensively
   b. [bá-lúmélí]síyi they have caused to greet

(59) 7-σ stem
   a. [bá-límálímísé]leene they have helped cultivate for each other now and then
   b. [bá-líbáltísísí]siiye they have delayed very intensively

Infinitive: H prefix + toneless stem

(60) 5-σ stem
   a. [kú-líbátí]saana to delay one another
   b. [kú-tépé]liisa to cause to slow down

(61) 6-σ stem
   a. [kú-líbátísí]saana to delay each other intensively
   b. [kú-tépé]li]saana to cause each other to slow down
Nouns: H NPref + toneless stem

(62) \(4-\sigma\) stem
   a. [mú-líbá]tiisi  delayer
   b. ...mu-[sèbè]tiisi  user

These additional data sets have confirmed the antepenult H target in lexical verb and noun data, where a single H is present in the UR, be it stem-initial (13-18 above), or word-initial (56-62).

4. 1. 4. 8. Extrametricality + binary foot: cross-level misalignment

Finally, in the way of hypotheses to account for the antepenult H pattern, there has been a third proposal, Bickmore (1996), who has suggested theoretical apparatus to locate the antepenult as the target of H-expansion in a single cross-level anti-align constraint that makes no reference to prominence or headedness at all. This is done by ‘minimally misaligning the right edge of the HTS [high tone span] and the left edge of the word-final TBU [tone-bearing unit]’ (1996:24), phrased in (63-64).

(63) Antepenult target by right-edge misalignment
   *Align HD, Rt, \(\sigma\)\textsubscript{PWord}, Lf
   The right edge of the (rightmost) H tone span (=H domain) must not align with the left edge of the word-final syllable.

(64) Right-edge misalignment (after Bickmore 1996)
   *...\(\sigma\)\textsubscript{HTS} (\(\sigma\)\textsubscript{PWord})

The sleight-of-hand with the formulation in (63) is that an extra parameter is being expressed in the form of ‘rightmost syllable in the prosodic word’. This introduces two three-parameter clauses to the (*\textsc{Align}) predicate logic, which massively increases the potential power of align formulation. Bickmore justifies this formulation with data from Zezuru Shona and Sukuma, where a H shifts two syllables to the right, in apparently non-local fashion\textsuperscript{47}.

\textsuperscript{47} The data he is grappling with are certainly perplexing. However, Cole & Hsiao (1997)
The power inherent in a constraint such as (63) is similar to proposals in Halle & Idsardi (1995), where edges of stress domains can be independently aligned to either edge of a syllable. The dramatic expansion of expressive power in such proposals gives cause for grave concern. Importantly, it also fails to link the surface pattern in a language such as Phuthi or Xhosa to the prominent penult, which prominence seems to be the phenomenon driving the surface behaviour of H.

For the present, I continue to pursue the analysis of H alignment using the WSA-Rt, NonFin and AvoidProm constraints motivated in the first of the three proposals above; also, the weight-accent foot motivated in the second proposal will continue to be analytically useful in what follows. The foot targeting the antepenult metrically will not be a necessary part of the theoretical equipment in the remainder of this work. The third, overly powerful approach will also not be utilised here.

4.1.5. Constraint Summary

After each section of each chapter in this dissertation, I summarise the constraint set motivated up to the end of that section, along with the necessary rankings. The first set is given in (65/66).

(65) Constraint set summary, version 1 (new rankings)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Max-H &gt;&gt; everything</td>
</tr>
<tr>
<td>b.</td>
<td>Dep-H &gt;&gt; almost everything</td>
</tr>
<tr>
<td>c.</td>
<td>Anchor_H_(Lex) &gt;&gt; Dep-H (from 23)</td>
</tr>
<tr>
<td>d.</td>
<td>BA-Lf; BA-Rt (from 25)</td>
</tr>
</tbody>
</table>

have proposed an analysis comfortably accounting for the Sukuma data, where they posit the interaction of a NonInitiality constraint and a right-headed binary foot. The analysis can straightforwardly be extended to Shona, and to data from other languages which similarly extend a tone domain two syllables away from the sponsor, such as Bangubangu, cf. own notes, data from Meeussen (1954). In Chapter 6 §6.3.1.4 footnote 37, I indicate the possibility of using NonInitiality—an almost mirror-image constraint of NonFinality—to deflect grammatical tone from attaching to the left edge of a stem; NonInitiality constitutes a possible alternative analysis of the lexical tone slot reserved in most grammatical paradigm verb stems, which I reject in favour of a contrast maintenance condition (FaithLexTone). All in all, NonInitiality is expected universally to be much rarer than NonFinality, given the edge phonological asymmetries documented in Krämer (2003).

48 But the tone-accent projection amounts to the HD right-edge as it falls out of the NonFin and AvoidProm ranking. I will refer to the TAP again in Chapter 8 §8.2.2.2.
e. Express_H >> Dep-H (from 27)
f. NonFin >> WSA-Rt (from 41)
g. AvoidProm >> WSA-Rt (from 48b)
h. NonFin, AvoidProm >> WSA-Rt >> BA-Rt

(66) **Total constraint ranking (partial): version 1**

- **H-extension rankings**
  Max-H >> NonFin, AvoidProm >> WSA-Rt >> BA-Rt

- **Expression rankings**
  Express_H >> Dep-H >> almost everything

I will re-present the constraint rankings throughout this work in the commonly used vertical dominance representation; this allows us more graphically and more comprehensively to see the multiple inter-constraint relationships. The first graphic representation is in (67).

(67) **Constraint rankings, version 1: dominance orderings**

```
Max-H     Express_H
    \   /     \
NonFin, AvoidProm
      \ /     \
     WSA-Rt
      \     \
       BA-Rt
```
4. 2. Minimal H Domains

I have demonstrated with sets of verbs and nouns above that the widescope target of a H is the antepenult, targeted by the interaction of a wide-driving domain realignment constraint (WSA-Rt) with two anti-alignment constraints which keep the H off the last two syllables of a word (AvoidProm and NonFinality).

There is, however, robust evidence that a HD in Phuthi seeks—all else being equal—to be at least two syllables long, even at the expense of spreading onto the prominent penult syllable, in other words: a prosodic minimality effect (McCarthy & Prince 1986, 1995). In spread terminology, local spread must occur, even if unbounded spread (WSA-Rr) cannot. Most Bantu languages that do not have unbounded spread or unbounded shift do indeed have this local (bounded) spread, e.g. Southern Sotho (Khoali 1991). The data in (68-69) demonstrates the effect in Phuthi.

Present Indicative (long form): toneless prefixes + H stem

Minimality effects can be seen in the 3-σ stems in (68-69), contrasted with the constraint set and ranking proposed in §4.1 which would predict the incorrect forms given in the right-hand column below.

(68) 3-σ stem
   a. si-ya-[bóñíí]sa we show *si-ya-[bó]niisa
   b. si-ya-[bútáá]na we ask each other *si-ya-[bú]taana

Perfective (long form): toneless SP + H stem

(69) 3-σ stem
   a. si-[bóñíí]ye we have seen *si-[bó]niyiye
   b. si-[bútíí]ye we have asked *si-[bú]tiyiye
   c. si-[bútíé]ne we have asked each other *si-[bú]teene

In ODT terms, a HD seeks minimally to be binary. This binarity property emerged in the stress literature as a constraint on metrical foot form, as proposed in McCarthy & Prince (1986), Hayes (1987), to account for the typological findings on foot form presented in Hayes (1980

(70)  Foot types  
   a. iambic LH (light-heavy)  
   b. iambic LL (light-light)  
   c. iambic H (heavy)  
   d. trochaic H (heavy)  
   e. trochaic LL (light light)  
   f. syllabic $\sigma\sigma$ quantity-insensitive  

The full range of foot types is not explicitly needed in Phuthi. I have already invoked a left-headed syllabic trochee (70f) in §4.1.4.6 above. Significantly, the typology lacks a degenerate foot form consisting of just a single light syllable. This typological gap is accounted for by a principle of binarity (71), as in McCarthy & Prince (1995:321)—based on Prince (1980), M&P (1986, 1991).

(71)  Foot Binarity  
Feet are binary under syllabic or moraic analysis.

Tone studies have revealed that binarity is a minimal condition of ‘at-least-ness’: a H tone domain must be at least two TBUs (syllables, or moras) in length. Constraints achieving this have been schematised in two ways in the literature (my own interpretative wording for each constraint), as one-syllable-is-too-short (72), or as be-two-syllables-in-length (73).

(72)  Monosyllabic HD is too short  
   a. $\textbf{EXTEND HD}$ (Kisseberth 1993)  
      Extend (HD, Rt)  
      Extend a HD rightwards from its sponsor syllable (at least by one syllable).  
      $^*\sigma_{HD}$  
      A H domain cannot consist of a single syllable.
(73)  Binarity requirement
a. \( \text{FTBin} (\sigma) \) (Ham 1996)
   A foot must consist of two syllables.

b. \( \text{Domain Binarity (DomBin)} \) (Bickmore 1996)
   A H domain must consist of exactly two syllables.

(72a,b), (73a) have been hypothesised for Xhosa, and also for a range of other Bantu languages. (73b) has been proposed to model data from Gusii, among other languages. The articulation of the four proposals varies according to emphasis on process (70), sub-minimal violation (71) and exact size (72-73). I articulate the particular instantiation of binarity in Phuthi as the minimality condition in (74), similar to (72a,b), since H domains are frequently longer than two syllables (but are never—optimally—shorter).

(74)  High Domain Minimality  (HD-Min)
*\( [\sigma]_{\text{HD}} \)
   A H domain cannot consist of a single syllable.

It should be noted that with HD-Min, as with the metrical foot constructed in §4.1 above, there is only a partial metaphoric overlap between the kinds of constraints that Phuthi instantiates and a true metrical system. I have phrased HD-Min as a minimality constraint, not a binarity constraint, because a two-syllable HD in Phuthi is the exception, something unusual (but simply better than a one-syllable HD). The language, generally, aims at HDs much wider than two syllables.

I will demonstrate later in §4.3 that HD-Min in Phuthi is constrained by a highly ranked prohibition on crossing a lexical stem boundary in the middle of the minimally extended HD constituent, but for now (74) requires no modification.

As we have seen, HD-Min forces an antepenult sponsor to expand its HD to the penult, confirming the ranking in (75).

(75)  Minimality ranking
   HD-Min >> AvoidProm
4. 2. 1. 1. Antepenult sponsor: HD-Min >> AvoidProm

HD-Min effects are only visible towards the right edge of a word, where there are usually non-H syllables, because (a) BA-Lf—that is, left-alignment of a HD around a H feature—is almost never violated, and (b) pre-antepenult H sponsors will already initiate HDs stretching to the antepenult, thus being at least two syllables long, and vacuously satisfying HD-Min.

It is worth noting that some other Nguni languages have certain three-syllable H stems which do contain patterns such as the incorrect ones given in the right-hand columns above (15;68-69), since such languages retain a tonal reflex of historically long vs. short vowels (in a very restricted number of morphological paradigms); this contrast was found in Proto-Bantu (Meeussen 1980, Guthrie 1967-71), but was lost in most Nguni (and Sotho) languages.

In Xhosa, for example, both consultants in Cassimjee (1995:62) have the HD-Min domain patterns seen in (68-69) for Phuthi, but only one uses the sub-minimal tonal forms which are not possible in Phuthi, as indicated in (76).

<table>
<thead>
<tr>
<th>(76)</th>
<th>Some Xhosa varieties</th>
<th>Phuthi equivalent</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>ndi-ya-[má]meela</td>
<td>gi-ya-[máméé]la</td>
<td>I listen</td>
</tr>
<tr>
<td>b.</td>
<td>ndi-ya-[tshá]yeela</td>
<td>gi-ya-[tshányéé]la 50</td>
<td>I sweep</td>
</tr>
<tr>
<td>c.</td>
<td>ndi-ya-[bú]laala</td>
<td>gi-ya-[búláá]ya</td>
<td>I kill</td>
</tr>
<tr>
<td>d.</td>
<td>ndi-ya-[sé]beenza</td>
<td>gi-ya-[sébéé]ta</td>
<td>I work</td>
</tr>
</tbody>
</table>

In this respect, Phuthi has entirely lost any memory of the Proto-Bantu long/short vowel distinction 51.

HD-Min does not, however, override the NONFin ban on a H reaching the ultima, as can be clearly seen from the following forms (77-79), where the H-sponsor is the penult, but H does not surface on the ultima.

---

49 Cf. the discussion on HD fusion triggered by an OCP dispreference for adjacent sponsors, in Chapter 5 §5.2.
50 The ‘[...]’ notation here reflects the H domain, not IPA notation. Xhosa <tsh> = [tʰʃ] (aspirated); Phuthi <tsh> = [tsʰ].
51 Phuthi has also lost a considerable amount of other synchronically irregular (lexically specified) material: unlike all other Nguni languages, it has no vowel verbs (of either sort), no latent -i- verbs (cf. Chapter 2 §2.2.4.5), fully regularised verb ‘sense’ -va (cf. Zulu -(i)zwa, Xhosa -(i)va).
4. 2. 1. 2. Penult sponsor: NonFin >> HD-Min

**Present Indicative: toneless SP + toneless prefix + H stem**

(77) 2-σ stem

a. si-ya-[bóó]ña we see *si-ya-[bóróá]

b. si-ya-[búú]ta we ask *si-ya-[búútá]

**Perfective (long form): toneless SP + H stem**

(78) 1-σ stem

a. si-[phíí]ye we have given *si-[phííyé]

b. si-[khíí]ye we have drawn (water) *si-[khííyé]

**Infinitive: H prefix + toneless stem**

(79) 1-σ stem

a. [kúú]-ta to come *[kúú-tá]

b. [kúú]-wa to fall *[kúú-nyá]

Additional data confirming these HD-M IN facts will be produced for the short present tense indicative paradigm in §4.5 below.

The facts in (77-79) confirm the ranking in (75), and indicate further (80) that HD-M IN does not dominate NonFINALITY (80).

(80) Minimality Ranking
NonFin >> HD-Min >> AvoidProm

Tableau 4 (81) and Tableau 5 (82) illustrate the updated interaction.

---

52 Clearly the short H stem sponsors the H, but only the root onset of the lexical stem remains; thus anchoring a floating H is subject to the presence of all stem morphology, including the perfective suffix -iiye. The long perfective indicative morphology has been introduced in Chapter 2 §2.2.4.7 (116g), and is fleshed out in Appendix A, paradigm E; the infinitive morphology is examined in §2.2.4.9 (125), and continued in Appendix A, paradigm D.
(81) **Tableau 4**: H-domain minimality (HD-M\textsubscript{IN}) in three-syllable stems

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{syllables} & \text{NonFin} & \text{HD-M} & \text{AvoidProm} & \text{WSA-Rt} \\
\hline
\text{(a) si-ya-[bóníí]sa} & & * & * & \\
\text{(b) si-ya-[bó]niisa} & & *! & ** & \\
\text{(c) si-ya-[bónísá]} & *! & & * & \\
\hline
\end{array}
\]

- (81a) violates Avoid\textsubscript{Prom} and WSA-R\textsubscript{T}, but without effect; the HD in (b) is too narrow, and (c) too wide.

I observe that WSA-R\textsubscript{T} plays no active role in data of this shape; in fact, HD-M\textsubscript{IN} bleeds WSA-R\textsubscript{T} (if, instead, WSA-Rt >> HD-M\textsubscript{IN}, then we would expect all verbs to align their HD edge to the penult syllable).

Recalling at this point that EXPRESS >> everything and BA-L\textsubscript{F} >> everything, and observing that a sponsor H must be parsed on the surface, Tableau 5 (82) charts the expression of a narrowscope HD—one that cannot expand at all, but that must be parsed.

(82) **Tableau 5**: Penult sponsors cannot satisfy HD-M\textsubscript{IN}

\[
\begin{array}{|c|c|c|c|c|c|}
\hline
\text{syllables} & \text{Max-H} & \text{BA-Lf} & \text{NonFin} & \text{HD-M} & \text{AvoidProm} & \text{WSA-Rt} \\
\hline
\text{(a) si-ya-[bóó]na} & & * & * & * & \\
\text{(b) si-ya-[bóóná]} & & *! & & * & \\
\text{(c) si-[yá]-boona} & & *! & & & \\
\text{(d) si-ya-boona} & & *! & * & & \\
\hline
\end{array}
\]

- (82a) fails HD-M\textsubscript{IN}, but at least H is implemented, and not neutralised;
- (b)—spread onto the ultima—never happens in Phuthi, although it does happen in related Bantu languages: Tswana (Mmusi 1992), Ikalanga (Hyman & Mathangwane 1998), among others;
- (c) would avoid the murky waters of the last two syllables, and does at least implement H, but fails on the undominated BA-L\textsubscript{F} requirement (Phuthi never permits sponsor realignment\textsuperscript{53}, unlike Rwanda (own field notes, 1993));

\textsuperscript{53} Phuthi does, however, permit very limited surface (i.e. express) violation at certain domain left edges: these are ‘finessed’ realignments of the H, in the configurations (a) \{OP+stem\}, and (b) \{OP+monosyllabic H stem\}, cf. §5.4. There is also the single case of sponsor misalignment to its parsing domain, in the case of unincorporation (Chapter 7 §7.7.1).
• (d) vacuously satisfies HD-MIN because there is no HD, but this would entail the failure of undominated MAX-H, since there is no evidence of HD construction.

4.2.1.3. Ultima sponsor: Max-H >> NonFin

Finally, there are words which bear a H-sponsor on the ultima. These Hs do appear on the surface, contrary to the work of NONFINALITY elsewhere, the crucial observation being that here a H is sponsored on the ultima, not spread onto it.

Present Indicative (long form): toneless prefixes + H stem

(83) 1-σ stem
  a. si-yaa-[phā] we give
  b. si-yaa-[khā] we draw (water)

Recalling the examination of nouns in Chapter 2 §2.2.1, some nominal stems have the tonal structure ∅H—that is, a toneless-high sequence. In other words, there is a H sponsor on the ultima syllable. These Hs are parsed too: (84a) lacks an overt prefix (because Class 1a prefix is [∅]); (84b) is in the post-negative (indefinite) frame, where prefix tone (here: Class 5) is absent.

(84) Nouns: lexical H ultima
  a. mː[ma] mother
  b. ...li-qhwee[lé] piece of string

Even if any of the forms in (84) is configured phrase-medially, the ultima H still surfaces, in situ. Both these examples confirm the highly valued MAX-H ranking, assumed earlier, and now confirmed (85).

(85) Monosyllable parse ranking
Max-H >> NonFin

Tableau 6 shows why it might be supposed more optimal to either retract a stem-final H to the penult (86b)—universally rare in Bantu languages—or to delete the H entirely (86c)\(^{54}\).

---

\(^{54}\) We will see that while this kind of apparent sponsor deletion does appear to happen, it is
(86) **Tableau 6**: No retraction of ultima H-sponsor

<table>
<thead>
<tr>
<th>/ si- + -ya- + -ph-á /</th>
<th>Max-H</th>
<th>BA-Lf</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) si-yaa-[phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) si-[yáá]-pha</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(c) si-yaa-pha</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I am thus using BA-Lf, the basic alignment of a sponsor’s parsing HD, to force a domain to appear *in situ* on the ultima. This is achieved in C&K (1998:43) by INCORPORATE H: ‘a H sponsor must be incorporated inside the HD corresponding to it’. Cross-linguistically this constraint is motivated in a language like Phuthi because there are languages where (86b) would be the correct output, e.g. Rwanda (own field notes, 1993), that is, where retraction of H is used to misalign a surface HD and its UR sponsor, in order to better satisfy NONFINALITY. At this stage of the analysis, there is no data that can select between BA-Lf and INCORPORATE in doing the work of parsing the H ultima sponsor in Phuthi.

Even though BA-Rt, the matching basic alignment constraint, is ranked below WSA-Rt (87)—which overrides BA-Rt to achieve wide domains—nothing will block its action in (86a) where it successfully closes the domain around the ultima sponsor.

(87) AvoidProm >> WSA-Rt >> BA-Rt

I will return to the problem of ‘visibility’ of final Hs in the discussion of the OCP in Chapter 5 §5.4.2.3, §5.4.2.5, §5.4.2.6.

4. 2. 1. **Constraint Summary**

I summarise the new rankings (88), and the entire constraint set up to this point (89), with the dominance relations visually sketched in (90).

---

in one marginal morphological environment only: Object Prefixes (Chapter 5 §5.4). Ultimately, even there, it will be argued that the sponsor is *not* deleted; rather, is is only EXPRESS that fails.
(88) Constraint set summary, version 2: new rankings
   a. HD-Min >> AvoidProm (from 75)
   b. NonFin >> HD-Min (from 80)
   c. Max-H >> NonFin (from 85)
   d. BA-Lf >> NonFin (from Tableau 6)

(89) Total constraint summary (partial): version 2
   - H-extension rankings
     Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt
   - Expression rankings
     Express_H >> Dep-H >> almost everything

(90) Constraint rankings, version 2: dominance orderings

```
     Max-H  Ba-Lf  Express_H
      |     |       |
NonFin  |     |       |
      |     |       |
 HD-Min |     |       |
      |     |       |
AvoidProm |     |       |
      |     |       |
 WSA-Rt |     |       |
      |     |       |
 BA-Rt  |     |       |
```

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4. 3. Hedged Minimality: Conjoint Constraints

I will now show that the implementation of minimality (HD-MIN) is sensitive to morphological information, specifically to information about whether a H-domain is attempting to cross the boundary between affix and stem, or not. This is true for both verbs and nouns. This morphological sensitivity will be seen to be linked parasitically to another prosodic condition: the presence of penult weight prominence in the particular word being considered.

4. 3. 1. Crossing a Minor Boundary

Although we are somewhat limited as to which morphological boundaries we can test for ‘crossability’, it is clear that stemhood is the relevant morphological criterion in the implementation of HD-MIN: the crucial test configuration for HD-MIN is the antepenult-penult sequence, requiring that we examine stem boundaries preceding monosyllabic stems. Only two syllables can precede a monosyllabic verb stem in any of the lexical paradigms55, or in any of the noun stems. I turn to monosyllabic verb stems first.

Low (toneless) verb stems: 1-σ

(91) Toneless SP
   a. si-yaa-ta  we come
   b. si-yaa-wa  we fall

(92) High SP
   a. [bá-yáá]-ta  they come  *[bá]-yaa-ta
   b. [bá-yáá]-wa  they fall  *[bá]-yaa-wa

The surface forms in (91-92) pattern identically with the monosyllabic stem data in (68-69) above: the H from the SP morpheme stretches to the penult syllable. The starred forms in (92) are what would be predicted without HD-MIN being in effect.

55 Up to three syllables can precede the stem in a grammatical paradigm (e.g. perfective negative: así-taa-tí ‘we have not come’ (stem is double-underlined), but this is not useful to us, because a grammatical tone pattern is imposed on the word (which affects one or both of the penult and ultima syllables), cf. Chapter 2 §2.2.4.10 (127c), and Chapter 6 §6.3.3.2.
Most noun prefixes are monosyllabic, and therefore too short to test HD-MIN (in a pre-stem morphological domain). While there are examples of monosyllabic noun stems with bisyllabic prefixes (Class 2, 6), once the initial syllable disappears morphosyntactically (in the post-negative, indefinite form), the H tone from that prefix is deleted as well (93), and thus the toneless prefix pattern in (91a-b) cannot be replicated identically for nouns.

**Low (toneless) noun stems: 1-σ**

(93) **Noun prefix**
- a. ...baa-tfu ...(any) people cf. [ébaá]-tfu ‘(the) people’ (Cl. 2)
- b. ...maa-jwe ...(any) stones cf. [émáá]-jwe ‘(the) stones’ (Cl. 6)

But the citation form of monosyllabic stem nouns—with the definite initial vowel prefix still attached, and therefore with a H tone inside a pre-stem morphological prefixal domain—exactly parallels the verb tone HD-MIN pattern in (92) above.

(94) **H noun prefix**
- a. [ébaá]-tfu people *[é]baa-tfu
- b. [émáá]-jwe stones *[é]maa-jwe
- c. [émáá]-fu clouds *[é]maa-fu

Minimality in nouns is further considered immediately below in §4.3.2.

4.3.2. **Halting at a Major (Lexical) Boundary**

Yet these starred forms in (92) and (94) are precisely the tone shapes that do obtain in certain cases, that is, where an antepenult sponsor H fails to extend to the penult. Thus, an interesting asymmetry will be revealed concerning antepenult sponsors: a HD does extend to the penult, but only if there is no root morpheme boundary between these two syllables—that is, only if there is no intervening lexical (henceforth: ‘major’) boundary.

In the examples above, a H from the SP (92) extends onto present tense toneless prefix -ya- when the SP is H for verbs (here: sponsor  ba-, vs. toneless si-), or when the NP preprefix syllable is H for nouns (here: sponsor é- in both cases in 94a-c). A morphological boundary is
crossed inside the minimal H-domain, but with no effect on HD-construction. In the cases that follow, however, the presence of the root (major) boundary causes the failure of HD-MIN.

4. 3. 2. 1. Prefix sponsor preceding toneless stem

Initially we examine the tonal behaviour of a sponsor at the prefix+stem juncture: I present nouns which lack prefix tone (in this syntactic frame), to show that their stems are toneless (95a-d), contrasted then with their citation forms in (96a-d) and (97a-d), where their prefixes bear a H tone.

### Post-negative (indefinite) nouns

(95) **Toneless 2-σ stems**

a. ...mu-tfwaana child
b. ...ba-tfwaana children

c. ...si-liimo year
d. ...ti-liimo years

### Citation form nouns

(96) **Toneless 2-σ stems**

a. [mú]-tfwaana child *[mú-tfwaá]na
b. [bá]-tfwaana children *[ébá-tfwaá]na

c. [sí]-liimo year *[sí-líí]mo
d. [tí]-liimo years *[tí-líí]mo

This generalisation also applies to de-verbative nouns (97), whose stem tonelessness we can be independently certain of from their verb stem source.

(97) **Deverbative 2-σ nouns**

a. [mú]-liim-i farmer cf. si-ya-liim-a we cultivate
b. [bá]-liim-i farmers

---

56 The post-negative (‘axiomatic negative’) frame typically removes the é- preprefix and the prefix tone (cf. Chapter 2 §2.2.1.3). In some contexts, especially in Sigxodo Phuthi, the Class 2 nouns can occur without this e- too, while retaining the (pre)prefix H tone, as in (96b); the full form would be [ébá]-tfwaana. Cf. following footnote, and (97b,d).

57 In (97b,d) I omit the nominal pre-prefix é- which is typical, though to some degree optional, in both Sigxodo and Mpapa dialects (only infrequently omitted in Mpapa). If the
c. [mú]-yeet-ı  
   maker/doer  cf.  si-ya-yeeta  we make/we do  
d. [bá]-yeet-ı  
   makers/doers  

Yet if we extend the nouns in (96-97)—where HD-MIN has failed to apply—by adding a toneless diminutive suffix (-aana or -nyaana), we see that the surface pattern ‘returns’ to the regular antepenult H target\(^{58}\) (98).

\begin{equation}
(98)  \text{Suffixed toneless nouns select antepenult target}
\end{equation}
a. [mú-tfwá]nyaana  
   little girl  
b. [bá-tfwá]nyaana  
   little girls  
c. [sí-límó]nyaana  
   short year  
d. [tí-límó]nyaana  
   short years  
e. [mú-límí]nyaana  
   small farmer  
f. [bá-límí]nyaana  
   small farmers  

We might hypothesise that the conditions of application of HD-MIN for nouns and for verbs may be different (that is, morphosyntactically selective). But data from perfective and infinitive subsystems of the verb\(^{59}\) (99-100) indicates that the prefix-stem boundary is as impervious to HD-MIN for verbs as it has been shown to be for nouns.

**Perfective (long form): H SP + toneless stem**

\begin{equation}
(99)  1-\sigma \text{ stem}
\end{equation}
a. [bá]-tiyiye  
   they have come  
   *[bá-tíí]ye  
b. [bá]-wiiye  
   they have fallen  
   *[bá-wíí]ye  

---

pre-prefix does surface, then in both examples, -ba- would be the antepenult following the pre-antepenult sponsor; -ba- would be uncontroversially H; there would be no question of the penult being H. But since the pre-prefix is omitted, we do expect HD-MIN to extend the HD to the penult in these examples, but it does not.

\(^{58}\) Even though the surface forms in (97a-d) are not in any worse violation of WSA-Rt than we normally expect (from the two anti-edge constraints: NonFin, AvoidProm), they are in violation of the more highly ranked HD-MIN. In the longer (derived) forms given in (98), the influence of HD-MIN is masked by WSA-Rt, and so we can only be sure of the influence of WSA-Rt.

\(^{59}\) For the present purposes, it is irrelevant whether the infinitives in (100) are listed as verbs or as nouns, since the infinitive contains a morphological noun prefix (ku-) and a verb root, and it behaves syntactically as both noun and verb. Cf. Chapter 5 §5.6 for discussion on exceptional behaviour of deverbative nouns (but not infinitives) with respect to HD right-alignment.
Infinitive: \(H\) prefix + toneless stem

(100) \(2\-\sigma\) stem
a. \([kú]-liima\) to cultivate \(*[kú]-líí\)ma
b. \([kú]-yeeta\) to make/do \(*[kú]-yéé\)ta

Further evidence from Object Prefixes (OPs) in Chapter 5 §5.4 below will confirm the pattern of respecting the stem boundary seen in (99-100). Yet if these perfective and infinitive stems (99-100) are morphologically extended, then again the stem boundary is readily crossed by the HD (101-102), confirming that there is nothing lexically or morphosyntactically odd about any of these stems\(^{60}\).

(101) Extended perfective stems
a. \([bá-t-î]s-î\)ye they have brought (lit. ‘made come’), cf. \(kúú-t-a\) ‘to come’
b. \([bá-w-î]s-ii\)ye they have caused to fall, cf. \(kúú-w-a\) ‘to fall’

(102) Extended infinitive stems
a. \([kú-límf]siisa\) to cultivate intensively
b. \([kú-yétí]sisa\) to make/do intensively

4. 3. 2. 2. Stem + toneless suffix

A further set of data from (post-negative) nouns\(^{61}\) indicates that suffixes attached to nouns which ending on a H tone similarly fail to undergo HD extension into them at their antepenult-penult boundaries, which results in violation of HD-M\(_{IN}\), as in (103b) and (103d).

(103) Stem suffix boundary also halts HD-M\(_{IN}\)
  a. ...li-qhwe[lé] piece of string
  b. ...li-qhwe[lé]-nyaana little piece of string \(*li-qhwe[lé]-nyáá]na
  c. ...ma-bee[lé] sorghum plants
  d. ...ma-be[lé]-nyaana little sorghum plants \(*ma-be[lé]-nyáá]na

\(^{60}\) It is worth testing extended 1-\(\sigma\) stems (as opposed to underived 2-\(\sigma\) stems), because in some Nguni varieties (e.g. some Xhosa dialects), these two morphological configurations sometimes behave in a tonally distinct way.

\(^{61}\) We cannot demonstrate this stem+suffix configuration in respect to HD-M\(_{IN}\) for verbs, because no lexical verb terminates on a H tone (which could then be extended onto a toneless suffix).
Similarly, nouns with penult H sponsors, suffixed with a toneless locative (LOC) -eeni / -iñi ‘in/at/on/to/from’, display the same non-extension to the penult across a stem boundary (104).

(104) **Locatives: no HD-Min off antepenult of -H∅ (‘HL’) nouns**

| a. | ...si-[kóō]lo         | school          |
| b. | ...si-[kó]lw-eeni     | school LOC      |
| c. | ...mu-[táå]li         | parent          |
| d. | ...mu-[tá]l-ñiñi      | parent LOC      |

The stem-suffix boundary cannot be demonstrated for verbs because all derivational verb suffixes are incorporated into the stem domain, and thus do not constitute a major boundary. There is only a single one-syllable slot for grammatical verb morphemes, and that is in the ultima, which is of no relevance for hedged minimality.

Yet if the forms in (103-104) are extended, again the stem boundary poses no obstacle to widescope HD-extension (105).

(105) **Extended locatives respect HD-Min**

| a. | ...li-qhwe[lé-nyá]n-eeni | little piece of string LOC |
| b. | ...ma-be[lé-nyá]n-eeni   | little sorghum plants LOC |
| c. | ...si-[kólo-nyá]n-eeni   | little school LOC          |
| d. | ...mu-[tåli-nyá]n-eeni   | little parent LOC          |

The analysis of these anti-minimality—or, rather, conditioned, or hedged minimality—facts always involves three elements: (a) the shortest optimal prosodic structure (a 2-σ HD) is prevented from reaching (b) the prominence (penult) position, if to do so would involve (c) straddling a major (lexical) stem boundary.

There are, thus, four data configurations (106) that must be accounted for (‘+’ is a major stem boundary).

---

62 Prefix Hs are suppressed (cf. discussion of locatives in Chapter 2 §2.1.6.1, §2.1.6.2, §2.1.6.4 (harmony properties), and §2.2.1.4. Toneless stem syllables in nouns are labelled as ‘L’ for shorthand; in fact they are toneless, hence, ‘∅’.

63 The one suffix behaving differently from all others is inclusive -ni, but this introduces a H on the penult, and for OCP reasons cannot demonstrate this stem-suffix H-non-spread effect.
First, I offer an intuitively ‘likely’ account of these patterns. I then show that this account is only partially correct (it fails for longer stems). Next, I suggest an account which connects major morphological boundary to the prosodically privileged prominence foot of the prosodic word. Finally, I argue that a straightforward way to connect these two observations is by conjoining two extant constraints in a single conjoint constraint.

An intuitive account of the facts of hedged minimality presented above revolves around the apparent failure of a HD to behave normally when faced with the WSA-Rt requirement of crossing a major morphological boundary in the course of constructing a HD. It seems intuitive that Phuthi simply disprefers a HD edge which is not aligned—either to left or to right—with a major stem edge, but which is rather interrupted by such an edge, that is, which is not ‘crisp’. A constraint, termed CrispEdges, has already been instantiated in analyses of other prosodic systems, arising first in Itô & Mester (1994, 1999); an earlier NoStraddle constraint that achieved the same result had been formulated independently in unpublished work earlier by Adisasmito & Donnelly (1993a,b), where the Bantu language Rwanda was seen to require a metrically constructed series of binary tone feet to left-align to the left edge of a morphological macrostem in the verb morphology, or to misalign one syllable further leftwards if such misalignment would preempt a macrostem boundary interrupting (‘de-crisping’) a single binary tone foot. The key insight is that ‘the crisp-edge requirement and the general notion “alignment” are independent elements of the theory that must be decoupled’ (Itô & Mester 1999:206). An initial Phuthi crisp constraint is offered in (107).

(107) **CrispStem** (to be revised as 108)

*[^σ + σ]_HD*

A HD cannot straddle a morphological stem boundary: the edges of the two prosodic categories must be crisply aligned with respect to one another.
But the formerly unproblematic data of (102) and (105) cannot straightforwardly be included in this account with CRISPSTEM, unless the second syllable in the constraint is specified as the penult (named as such), or unless CRISPSTEM is beefed up with prominence architecture. In this latter case, the second syllable in the constraint would need to be specified with two moras (108).

\[
\text{(108) CRISPSTEM'} \quad \text{(to be revised as 114)}
\]

\[
*[(\sigma + \sigma)]_{HD} \\
\land \\
\mu \mu
\]

A HD cannot straddle a morphological stem boundary preceding a heavy syllable.

While (108) is technically sufficient to handle the set of hedged minimality data introduced in this section, the constraint as it stands runs contrary to the spirit of ODT (and, more broadly, OT), which is to encode only *functionally well-motivated* constraints that appear to identify truly universal tensions in Universal Grammar. I proposed that a constraint of this nature is far more powerful than a single constraint should be: while it can be neatly diagrammed, it refers to at least four separate pieces of prosodic information: (a) two syllables, (b) in immediate sequence, (c) H tones on both syllables, (d) the second syllable must dominate two moras.

There are at least two serious problems with the constraint in (108): (i) it is not clear why these particular pieces of prosody are configured with each other in the way that they are; (ii) there should be all sorts of comparable constraints in the languages of the world, which bundle together perhaps any amount of prosodic information in them; but there are not. This highlights a serious issue for any type of theory, including Optimality Theory, and including ODT: what is the nature of a possible constraint? Until OT has an adequate theory of possible constraints, it will be difficult to narrow down the class of possible grammars sufficiently, to reflect the phonological phenomena actually found in the languages of the world.

Without further reflection, we can dismiss CRISPSTEM' in (108) as an overly powerful constraint that also lacks explanatory adequacy. I now suggest how I believe an adequate ODT account of hedged minimality should look.

If we accept the original CRISPSTEM constraint proposed in (107) as it stands, then this crisp constraint would prevent any HD from crossing a Phuthi major stem boundary, which
would neatly account for 1-σ and 2-σ verb and noun stems, but would pose insurmountable problems for longer stems (3-σ, 4-σ and longer stems). This is demonstrated in Tableau 7 (109).

(109) **Tableau 7: CRISPSTEM and HD-MIN—insufficient account**

*bá-yáá-ta*, ‘they come’

<table>
<thead>
<tr>
<th></th>
<th>Crisp Stem</th>
<th>HD-Min</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ bá- + -ya- + -t-a /</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><em>(a)</em> [bá-yáá]+ta</td>
<td>Crisp Stem</td>
<td>HD-Min</td>
<td>AvoidProm</td>
<td>WSA-Rt</td>
</tr>
<tr>
<td><em>(b)</em> [bá]-yaa+ta</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

*si-ya-bóníusa*, ‘we show’

<table>
<thead>
<tr>
<th></th>
<th>Crisp Stem</th>
<th>HD-Min</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ si- + -ya- + -bon-is-a /</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(c)</em> si-ya+[bóníí]sa</td>
<td>Crisp Stem</td>
<td>HD-Min</td>
<td>AvoidProm</td>
<td>WSA-Rt</td>
</tr>
<tr>
<td><em>(d)</em> si-ya+[bó]niisa</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

**kú-liima**, ‘to cultivate’

<table>
<thead>
<tr>
<th></th>
<th>Crisp Stem</th>
<th>HD-Min</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ ku- + -lim-a /</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(e)</em> [kú]+liima</td>
<td>Crisp Stem</td>
<td>HD-Min</td>
<td>AvoidProm</td>
<td>WSA-Rt</td>
</tr>
<tr>
<td><em>(f)</em> [kú]+lííma</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

**kú-límísiisa**, ‘to cultivate intensively’

<table>
<thead>
<tr>
<th></th>
<th>Crisp Stem</th>
<th>HD-Min</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>/kú- + -lim-isis-a /</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td><em>(g)</em> [kú]+limísisa</td>
<td>Crisp Stem</td>
<td>HD-Min</td>
<td>AvoidProm</td>
<td>WSA-Rt</td>
</tr>
<tr>
<td><em>(h)</em> [kú]+lýísiisa</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td><em>(i)</em> [kú]+líímiisa</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

- HD-MIN is successful in (109a), because there is no overlap with the stem edge, which in this case precedes the ultima (the stem being monosyllabic); HD-MIN is equally successful in (c) because the entire domain is contained within the stem, and even though the HD extends onto the penult, it does not cross a stem boundary\(^{64}\); the HDs in (b) and (d) are too short, violating the more lowly ranked WSA-Rt.

\(^{64}\) (109c) would provide interesting evidence for lexical vs. grammatical boundaries, were we to adopt CRISPSTEM' with the richer encoding. In that case, (109c) would only not violate CRISPSTEM' if the post-root boundary were not considered to be a major or lexical boundary. Now, this all depends on how one categorises verb extensions, since the morphological parsing of the word is: *si-ya-bón-ís-a*, where *-ís-* is a causative suffix. Verb extensions have both derivational and inflectional properties. If the derivational properties of *-ís-* were to ‘win out’, then *-bon-ís-* would be a single lexical(ised) entity, a single stem, and CRISPSTEM' would evaluate it correctly.
• HD-MIN is unsuccessful in (e), but the stem edge is crisply respected; (f) violates crispness, and is not tolerated. This is the one clear case where CRISPSTEM does work correctly.

• (103g-i) display the real problem: the HD expansion is predicted to be blocked at the stem-edge as in (g), even though (i) is the correct output, with extension to the antepenult; candidates (h) and (i) both satisfy HD-MIN, but (g) should still be eliminated because of insufficient WSA-R extension, not by CRISPSTEM.

In conjunction with some form of CRISPSTEM constraint, I now propose a solution (§4.3.3) that takes up proposals by Mohanan (1995, 1997, 2000) and Smolensky (1993, 1995), who suggest that constraints may ‘gang up’ on one another, displaying a cumulative effect which they cannot achieve on their own; I will translate this ‘ganging up’ effect into the notion of local conjunction (Smolensky 1993, 1995, Kirchner 1996).

**4. 3. 3. Solution: Conjoint Constraints**

Mohanan (1997) suggests that propositions (here: ‘constraints’) may be relationally ranked, by assigning intrinsic strength to them, exemplified in Mohanan’s calculus in (110).

(110) **Intrinsic strength of propositions**

a. P ⇒ Q (strength: 0.7)
b. M ⇒ not Q (strength: 0.5)
c. S ⇒ not Q (strength: 0.4)
d. P & M & S
e. therefore: not Q

Proposition (e) is the result of the interaction in (d), because—in absolute terms—(0.4 + 0.5) > 0.7. In other words, constraints (b) and (c) ‘gang up’ on (a), whereas neither is strong enough on its own to outrank (a). As Mohanan (1997) points out, OT does not provide for this in its core formalism. One constraint must uniquely outrank another. If this ganging up effect is required, it necessitates an additional constraint calculus which allows relationships of the sort in (111).

But if -is- were to have more salient grammatical (inflectional) properties, then its left boundary may assert itself more strongly, which would pose a problem for CRISPSTEM'.
In addition to its own ranking, the strength of Constraint 110b is jointly evaluated with Constraint 110c, and (in this case) they outrank the individually more highly ranked 110a.

Applying this to Phuthi in the crisp edge problem, it is the significant combined effect of (a) a morphological stem boundary, and (b) penult prominence, that together force HD-MIN not to have the effect it should.

Neither (a) nor (b) on its own can (nor should) prevent CRISPSTEM from blocking HD-MIN. WSA-Rt ignores the stem boundary as it targets the antepenult in (109i). The proposal, then, is that CRISPSTEM has only a very weak blocking effect on its own (and is therefore ranked lowly), but in combination with AVOIDPROM (the already established anti-prominence constraint), CRISPSTEM asserts itself to help block a non-crisply constructed HD at the antepenult-penult syllable boundary.

We could assign intrinsic strength to these constraints such as in (112a), resolving the Tableau 7 data sets (a,c,e,g) as (112b-f).

(112) **Intrinsic strength**

<table>
<thead>
<tr>
<th>Data Sets</th>
<th>Constraints</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>HD-Min = 0.5; Avoid Prominence = 0.4; WSA-Rt = 0.3; CrispStem = 0.2;</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>[bá-yáá]+ta</td>
<td>HD-Min &gt;&gt; AvoidProm 0.5 &gt; 0.4</td>
</tr>
<tr>
<td>c.</td>
<td>si-ya+[bóníi]sa</td>
<td>HD-Min &gt;&gt; AvoidProm 0.5 &gt; 0.4</td>
</tr>
<tr>
<td>d.</td>
<td>[kú]+liima</td>
<td>(AvoidProm_&amp;_CrispStem) &gt;&gt; HD-Min (0.4 + 0.2) &gt; 0.5</td>
</tr>
<tr>
<td>e.</td>
<td>[kú+límí]siisa</td>
<td>WSA-Rt &gt;&gt; CrispStem 0.3 &gt; 0.2</td>
</tr>
</tbody>
</table>

To handle just such constraint interactions, local conjunction has been posited as an operation on the constraint set: a conjoined set of two or more constraints—such as (110b,c)—is violated just in case each of the conjoined constraints is also violated within the relevant domain, as formulated by Smolensky (1995), cited in Padgett (2002:2) as (113).

(113) **Local Conjunction**

The Local Conjunction of C₁ and C₂ in domain D:

a. C₁&C₂ is violated when there is some D in which both C₁ and C₂ are violated.

b. Universally C₁&C₂ >> C₁,C₂.
Kirchner (1996) has appealed to a notion of ‘distantial faithfulness’ to account in a unified fashion for stepwise restrictions in chain shifts generally, and in particular for raising in Etxarri Basque, Nzebi and Bedouin Hijazi Arabic. In each case, Kirchner observes that local conjunction of constraints to enforce this faithfulness is the most insightful approach\(^65\).

Local conjunction is nearly equivalent to the ‘ganging up’ effect that Mohanan discusses, except that it does not require intrinsic strength values. Instead, these values are implemented by (a) regular constraint ranking, and (b) ranking of the conjoined constraint.

One important potential further difference (which I cannot assess with the data at hand) is that intrinsic strength makes predictions about which constraints can be locally conjoined with which others. Thus, the intrinsic strength values assigned in (110) above predict that two weaker constraints such as (110d) [value=0.2] and (110e) [value=0.3] whose combined strength is still less than or equal to a higher one such as (110a), can never outrank this particular higher constraint, even in conjoined form\(^66\).

There is the related problem of unranked or unrankable constraints: intrinsic strength values in (110) suggest that \( (a) = (c+d) \) in (109). This would imply that \( (a) \) can never be ranked with respect to the combined effect of \( (c+d) \). It is, of course, highly unlikely that would find one language in which these various permutations were all simultaneously testable.

This mechanism of constraint conjunction is an area which requires much greater empirical testing and theoretical thinking, given that the proposed conjoining opens up an OT grammar to \( |constraint|! \) number of constraints, that is the factorial of the constraint inventory. This is a very powerful new set of possibilities, perhaps too powerful. Yet, if we abandon local conjunction, it is not clear how an insightful analysis of the hedged minimality effects in Phuthi might work.

\(^65\) Kirchner (1996) also observes that this conjunction is not crucial for the analysis. I suggest, however, that such conjunction is crucial for restrictions on Phuthi HD-expansion at the stem prominence location. Local conjunction has more recently been challenged as a poorer alternative to grounded subhierarchies (Padgett 2002). It is not clear that the Phuthi local conjunction ‘worst of the worse’ effect can readily be discarded in favour of Padgett’s ‘too much of a (single) bad thing’ subhierarchy, since the two constraints that are conjoined do not access a single scale of badness (such as sonority).

\(^66\) This could only be tested in a full implementation of an OT grammar, with all motivated ranked constraints. Under such conditions, it would be interesting to see if intrinsic strengths that conflicted were required.
Local conjunction produces a new constraint\(^{67}\) (114).

\[(\text{AVOIDProm\&CrispStem})\]

Fulfil the requirements of the two constraints, AVOIDProm and CrispStem, simultaneously in each evaluated candidate.

A local conjunction version of Tableau 7 reflecting the hypothetical relations indicated in (110) is provided in Tableau 8 (115).

\[(\text{Tableau 8: Non-crispness at the prominence/stem boundary with local conjunction})\]

<table>
<thead>
<tr>
<th>intrinsic strengths</th>
<th>0.4+0.2</th>
<th>0.5</th>
<th>0.4</th>
<th>0.3</th>
<th>0.2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AvoidProm_&amp;_CrispStem</td>
<td>HD-Min</td>
<td>AvoidProm</td>
<td>WSA-Rt</td>
<td>CrispStem</td>
</tr>
<tr>
<td>(a) [bá-yáá]+ta</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [bá]-yaa+ta</td>
<td></td>
<td>*!</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) si-ya+[bóníí]sa</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) si-ya+[bó]niisa</td>
<td></td>
<td>*!</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [kú]+liima</td>
<td></td>
<td>*</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [kú+líí]ma</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(g) [kú+limí]siisa</td>
<td></td>
<td></td>
<td>**</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(h) [kú+lí]misiisa</td>
<td></td>
<td></td>
<td>***</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(i) [kú]+limisiisa</td>
<td></td>
<td>*!</td>
<td></td>
<td>****</td>
<td></td>
</tr>
</tbody>
</table>

The conjoined constraint is only crucial in (115f), where both AVOIDProm and CrispStem are violated. The effect of CrispStem on its own is now hedged, that is, lowered in the rankings so that (115g) becomes a viable output candidate.

The local conjunction approach appears to be the most insightful way of resolving the crisp/minimality problem in Phuthi (contra Padgett (2002) where local conjunction is rejected in favour of grounded constraint subhierarchies). We will see that the same conjunction effect is

\(^{67}\) The instantiation of CrispStem here would be as in (107). A second instance of local conjunction (EXPress\_L \& EXPress\_H) will be claimed in the evaluation of present negative candidates in Chapter 7 §7.8.1 Tableau 20 (310n) and footnotes 199, 200.
necessary to characterise the area of sponsor non-copy for reduplicates (§4.4 below), and to identify the downstep location (Chapter 5 §5.5).

4.3.4. A **Right-Aligned Stem Foot?**

Before dispensing with the crisp/prominence data, it is worth briefly reflecting on a second way to resolve the hedged minimality conundrum without invoking new theoretical machinery in the form of conjoint constraints. Such an approach would begin with the observation that it appears, again, that the last two syllables in a Phuthi prosodic word are a privileged domain, in this instance a domain into which a HD may not intrude. The account would revolve around the optimal length needed for phonological pitch downtrends to be implemented (in the form of catathesis, declination and final lowering). In addition, the pre-foot morpheme boundary would need to be included in the condition for the failure of HD-Min.

Suffice to say that a right-aligned obligatorily lowered/low bisyllabic pitch domain would struggle to cope with at least two of the morphological patterns in the data: words of the form `si-yaa-[phá]` (ultima sponsor) and `si-ya-[bóníí]sa` (antepenult sponsor). An account could be provided that handled these words, but the local conjunction account seems far more compelling.

4.3.5. **Constraint Summary**

I summarise the new rankings (116), and the entire constraint set up to this point (117), with the dominance relations visually sketched in (118).

(116) **Constraint set summary, version 3: new rankings**

- a. WSA-Rt >> CrispStem (from 113g)
- b. (AvoidProm & CrispStem) >> HD-Min (from 113e)
  - the conjoint constraint is not ranked with respect to MAX-H and BA-Lf

(117) **Total constraint ranking (partial): version 3 (full set from all sections this far)**

- H-extension rankings
  - Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt

---

I revisit these ideas in Chapter 5 §5.5 in the consideration of phonologised downstep and possibly phonologised phrasal declination.

285
• *Expression rankings*
  Express_\text{H} \gg \text{Dep-H} \gg \text{almost everything}

• *Morphology / H-extension rankings*
  (AvoidProm \& \text{CrispStem}) \gg \text{HD-Min} \gg \text{WSA-Rt} \gg \text{CrispStem}

(118) *Constraint rankings, version 3: dominance orderings*

```
Max-H    Ba-Lf    Express_H
        |                
NonFin  AvoidProm
        |    \& CrispStem
          HD-Min
          |     AvoidProm
          |          WSA-Rt
          |                  \text{CrispStem}
          |                       \text{BA-Rt}
```
4. 4. Reduplicates and Output-Output problems

As in most Bantu languages, there are some additional special facts which characterise the phenomenon of reduplicative stems (‘reduplicates’) in Phuthi, which details do not characterise non-reduplicate paradigms. Any tense and any mood can have reduplicate forms; I consider only the present indicative reduplicates (briefly introduced in §4.1), since all significant tonal differences in reduplicates of lexical stems are found in these forms and essentially replicated in all others based on lexical paradigms.

The relevant data to consider below is, in particular, the reduplicate forms of 1-σ and 3-σ input stems (119-120) which become 3-σ and 5-σ stems under reduplication (cf. Appendix A, paradigm B).

**Present indicative (long form): reduplicated**

**Toneless prefixes + H stem**

The following H stems have been morphologically amplified in the process of reduplication (119, left column), based on non-reduplicate stems introduced earlier (repeated below right).

(119) **3-σ stems**

<table>
<thead>
<tr>
<th>(1-σ base)</th>
<th>(1-σ base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[phá]-yii-pha</td>
<td>we give now and then</td>
</tr>
<tr>
<td>b. si-ya-[khá]-yii-kha</td>
<td>we draw (water) now and then</td>
</tr>
</tbody>
</table>

(120) **4-σ stems**

<table>
<thead>
<tr>
<th>(2-σ base)</th>
<th>(2-σ base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[bó]-boona</td>
<td>we see now and then</td>
</tr>
<tr>
<td>b. si-ya-[bú]-buuta</td>
<td>we ask now and then</td>
</tr>
</tbody>
</table>

(121) **5-σ stems**

<table>
<thead>
<tr>
<th>(3-σ base)</th>
<th>(3-σ base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[bónbó]-sa</td>
<td>we show now and then</td>
</tr>
<tr>
<td>b. si-ya-[sébésé]-ta</td>
<td>we work now and then</td>
</tr>
</tbody>
</table>

---

69 This form reduplicate also occurs as *si-ya-[bónbó]-sa*. Morphologically complex stems (excluding the trivial complexity of the Root-Final Vowel combination) such as (121a)—but not (121b)—allow the reduplicate to contain a templatic -a vowel in σ2, thus *[bóndá-bón-ísa]*, but *[sébá-sébééta]*.
I do not fully examine the morphological and phonological parameters of reduplicates in Phuthi\textsuperscript{70}. But to clarify the preceding forms, their morphological structure is given in (123).

\begin{align*}
(123) & \text{Structure of reduplicate words} \\
& < \{\text{prefix}^*\} + \\{\{\sigma_1, \sigma_2\}_{\text{RED}}(\sigma_1, \sigma_2, \sigma_3, \ldots)_{\text{BASE}}\} >_{\text{PROSODIC WORD}} 
\end{align*}

In (119-122), the first two syllables of the composite reduplicate stem consist of the reduplicate itself (RED), which is a segmental copy of the first two syllables (= first two moras) of the base stem. If the base stem only has one syllable as in (119), then a default syllable [ji] is inserted\textsuperscript{71} to fill the reduplicate 2-σ template.

While the HD in 3-σ, 4-σ and 6-σ stems (119,120,122) appears to pursue the normal antepenult widescope target, the 5-σ stems in (121) show that the penult is being attained, just as it is with the same stems in their non-reduplicated forms, repeated for convenience in (124).

**Present indicative (long form)—unreduplicated**

\begin{align*}
(124) & \text{3-σ stems} \\
& a. \text{si-ya-[bónfí]sa we show} \\
& b. \text{si-ya-[sébéé]ta we work}
\end{align*}

There are two questions (125) that arise from the data in (119-122) above.

\begin{align*}
(125) & \text{Questions arising from reduplicate shapes} \\
& a. \text{Why do we not see HD-Mn} effects in (119a,b)? \\
& b. \text{Why do we see HD-Mn} effects extending into the bases of (121a,b)?
\end{align*}

\textsuperscript{70} Cf. Downing (1994, 1995) for a very detailed examination of closely related Swati under an OT approach.

\textsuperscript{71} Downing (1998a,b, 1999a,b) have convincingly argued that -yi- [ji] consists precisely of a universally unmarked default epenthetic coronal consonant, [j], and a default epenthetic coronal vowel [i]. Where this 1-σ stem takes an OP, the 1-σ OP functions as part of the base, and the 2-σ reduplicate is \{OP+stem\}; cf. Appendix A, paradigm B. This is unsurprising if the OP is considered part of the macrostem (cf. Chapter 2 §2.2.4.2 footnote 224), as generally in Bantu.
I offer an answer to each question, in turn (§4.4.1 and §4.4.2).

4. 4. 1. Base/STEM MISALIGNMENT

The Phuthi tone constraints presented up to this point predict that (119a,b) above should have a H penult to satisfy HD-MIN. The only reason for this not to happen would be if HD-MIN required the crossing of a stem boundary into the penult, in which case the minimality would be hedged by the conjoint constraint AVOIDPROM & HD-MIN. Assuming this to be the case, since HD-MIN is not satisfied in this data set, either the first -pha- must project a stem right-boundary, or -yi- must project a stem left-boundary. This leads to an interesting situation where the edge of a stem may be marked up to four times in the same word (ignoring boundary ‘direction’).

(126) Projecting stem boundaries in a 1-σ reduplicate
   a. ANCHOR_H_(LEX) ‘sees’ only the leftmost edge of the macrostem when it locates a lexical H, that is: +pháyipha
   b. the RED constituent is built from the left edge of the BASE, by marking off two syllables from the base stem’s left edge (in this case, there is only one to count: the ultima, plus the epenthetic -yi-), that is: -phayi+pha
   c. HD-MIN has to be respecting the locally conjoined stem edge/prominence condition, that is: -pha+yipha
   d. Redundantly, the rightmost -pha must mark the right edge of the word-stem, at which point all prosody halts, that is: -phayipha+

The combination of these four produces (127), where each ‘+’ indicates a stem edge.

(127) Stem edges in a 1-σ reduplicate
   +pha+yii+pha+

The second stem edge in (127) is of greatest interest. It may be of relatively trivial concern for us how it gets to be there, but that it is there at all is worth brief reflection: it seems such a stem edge is required in order to prevent HD-MIN from successfully accessing the penult. According to the way in which reduplication works generally, the stem of a trisyllabic reduplicate word should be parsed as in both (128a) and (128b).
Prosodic parsing in a reduplicate
a. morphological \( +\{\text{pha-yii}\}_x \text{-}\{\text{pha}\}_y \)
b. prosodic \( +\{\text{pha}\}_p \text{+(yii-pha)}_q \)

In (128a), the two syllables in domain \( x \) form the RED constituent; domain \( y \) is the verb stem base; in (b), domain \( p \) is the HD; domain \( q \) is the area into which a HD cannot pass, specifically the Lf edge of \((yi...\) Since \(-yi-\) is epenthetic, it should be morphologically unaffiliated, and therefore have no edge to project. Clearly, either the RED constituent’s \(-\text{pha-}\) ‘remembers’\(^{72}\) that it is a stem and continues to assert its right edge\(^{73}\), or \(-yi-\) has somehow been incorporated into the stem domain of the defectively short base, \(-\text{pha}(\text{the ultima})\), as in (128b). This would appear to be another reflex of Phuthi minimality: as HDs are optimally minimally bisyllabic phonological domains, so verb stems are optimally minimally bisyllabic morphological domains.

We have, therefore, an explanation of sorts for why HD-M\(\text{in} \) fails to be satisfied in the reduplicate form of the 1-\(\sigma\) verb stem, and have answered the first question (125a). We turn now to (125b), concerning the anomalous tone domain on the 3-\(\sigma\) reduplicate H stems.

4. 4. 2. Paradigm Uniformity

The reason for the penult being attained by the H in the non-reduplicated 3-\(\sigma\) stems (119a,b) has been argued earlier: HD-M\(\text{in} \) must be satisfied. However, the explanation for the penults being H in the reduplicate forms (121a,b) is much less transparent. In (121a,b), the HD would already be three syllables long if it ended on the antepenult, in which case HD-M\(\text{in} \) would adequately satisfied, and there should be no reason to further extend the HD onto the penult. And yet it is extended. I propose an output-output solution to this pattern, and point briefly to three other routes to be explored.

\(^{72}\) This ‘memory’ would be encoded in ODT as some form of output-output relationship.

\(^{73}\) This would not be the only instance in the language of a verb stem using a morphological right edge to prevent proper application of HD-M\(\text{in} \) (cf. 103b,d, 104b,d), but it would necessitate two notions of ‘right stem edge’ in Phuthi, since all post-root verb extension morphemes are typically regarded as part of the verb stem, and the present instance of right-edgeness if distinct from what was invoked in (103-4).
4. 4. 2. 1. Base stem / reduplicate stem correspondence?

The reduplicate patterns for 3-σ stems—(121a,b), repeated in (129)—appear to ‘over-satisfy’ HD-MIN.

(129) **Reduplicates: 3σ High stems** (repeated from 121)

a. si-ya-[bónábóníí]sa we show now and then  
b. si-ya-[sébésébéé]ta we work now and then

There is no obvious reason why stems in (125) should extend the HD to the penult. HD-MIN—as formulated in §4.2 (74)—simply requires that a HD be bigger than a single syllable; since this is already satisfied in (124), it is not obvious that HD-MIN can have a role in causing the expansion of HD to the penult.

I propose, simply, that the reduplicated 3-σ stems—that is, the 5-σ reduplicate stems—display HDs extending to the penult because of a desire to maintain conformity of the reduplicate base with the non-reduplicate base, as expressed in (130). This would be a Paradigm Uniformity (PU) output-output constraint, a theoretical relationship which an OT phonology refreshingly gives theoretical status to.

(130) **PU_RED/BASE**  
PU (RED, HD, Base, HD)  
There must be paradigm uniformity between the HD structure on the reduplicate base and the HD structure on the corresponding non-reduplicate stem.

(130) is interpreted as requiring the 3σ stems to mimic the HD-MIN effect already seen on the non-reduplicate stem. In (131a) the reduplicate base HD output (bold and in angle braces) is identical to that of the non-reduplicate in (131c), with the inevitable ranking in (132).

(131) **3-σ stems**  

<table>
<thead>
<tr>
<th>Base/Red identity</th>
<th>PU Base/Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
<td>reduplicate word</td>
</tr>
<tr>
<td>*!</td>
<td>reduplicate word</td>
</tr>
<tr>
<td>—</td>
<td>corresponding non-reduplicate word</td>
</tr>
</tbody>
</table>

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While 3-σ stems are adequately accounted for in this manner, it is clear that the 1-σ and 2-σ reduplicate stems violate the PU pattern. All other things being equal, we should expect the 1-σ (133) and 2-σ (134) reduplicates that follow (in the right column).

(133) 1-σ stem

<table>
<thead>
<tr>
<th>Actual reduplicate</th>
<th>Expected (ill-formed) reduplicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[phá]-yii-pha</td>
<td><em>si-ya-[phá]-yii-[phá]</em>)</td>
</tr>
<tr>
<td>b. si-ya-[khá]-yii-kha</td>
<td>*si-ya-[khá]-yii-[khá]</td>
</tr>
</tbody>
</table>

(134) 2-σ stem

<table>
<thead>
<tr>
<th>Actual reduplicate</th>
<th>Expected (ill-formed) reduplicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[bó-ná]boona</td>
<td>*si-ya-[bó-nábó]na</td>
</tr>
<tr>
<td>b. si-ya-[bú-tá]buuta</td>
<td>*si-ya-[bú-tábú]ta</td>
</tr>
</tbody>
</table>

In all four words we expect the base sponsor to be parsed as H. For both stem lengths, however, we are disappointed. The simplest observation we can make is that a base sponsor H tone is not parsed if it would surface on either of the rightmost two syllables in a prosodic word (penult or ultima). This is interesting, if not suspect, given the variety of prosodic phenomena that are being articulated around the privileged final two syllables in a prosodic word. Earlier in §4.1 I argued for a weight-accent projection (WAP), on which to build the standard instantiations of the two anti-alignment constraints, AVOIDProm and NONFIN.

Much as there is a standard variety of AVOIDProm and of NONFIN that articulate the dispreference for wide-aligning a H into either of the rightmost syllables, so I suggest now that there is a second version of AVOIDProm and of NONFIN which optimally keeps a H sponsor off the penult and the ultima. Since we have no data which would help us treat this dispreference separately, I conflate this new instantiation of the two anti-edge constraints as a single anti-parsing constraint (134). Note that we cannot achieve this effect with the earlier AVOIDProm

74 We have no good intuitions yet in (133a,b) as to what tone to expect on the epenthetic penult -yii-. After the OCP is presented in Chapter 5 §5.1, we would expect the penult in (133) here to be toneless if the ultima surfaces as H (as a result of an OCP anti-align effect).
and NonFin constraints, because both such constraints are outranked by the parse constraint, Max-H. And we are explicitly going to underparse a H in these two reduplicate paradigms.

The privileged penult-ultima domain has already articulated with the weight-accent projection (WAP) in (50) above. While we needed to refer to the Head of WAP in the final formulation of AvoidProm (50), it is satisfying to observe that at this point the entire WAP unit—penult and ultima—is now necessary as a domain to be proscribed for H sponsors.

(135)  **H-in-WAP**
*<...[...]>H ...>WAP
Do not parse a H sponsor inside the WAP domain, when evaluating a reduplicate stem.

This constraint is an anti-Max (that is, an anti-parse) constraint; and yet it is not clear that Max-H in such an environment is truly underparsed, because the UR lexical sponsor H is realised on the RED constituent, even if it is underparsed in the Base stem. Rather, *H-in-WAP is a form of Clash constraint that objects to the ungrounded potential cooccurrence of a H tone feature in the intonationally declining and lowering final two syllables of a prosodic word75.

The hedging phrase ‘when evaluating a reduplicate stem’ is crucial, because *H-in-WAP would otherwise override all H-specifications on penult and ultima syllables. This would mean we should never expect to see a H sponsor parsed in the penult or ultima (which is manifestly inaccurate for non-reduplicate 2-σ and 1-σ verb stems).

The range of interactions necessary to account for the overparsing and underparsing effects in the reduplicated products of 1-σ, 2-σ, 3-σ (and longer) stems is now as follows (136).

(136)  Reduplicate rankings
a. PU_RED/Base >> AvoidProm si-ya-bónábó(níísa) >> *si-ya-bónábó(níísa)
b. *H-in-WAP >> PU_RED/Base si-ya-bóná(bóóna) >> si-ya-bóná(bóóna)
c. *H-in-WAP >> PU_RED/Base si-ya-phá(yiiphá) >> si-ya-phá(yiiphá)
• ‘(...)’ enclose the WAP constituent (penult & ultima)
• underlined sponsors indicate the syllables of comparison for PU_RED/Base
• syllables being evaluated for the rankings on the right are in bold.

75 The Clash instantiation *H-in-WAP will find a far more robust analogue in the Clash constraint in Chapter 7 (§7.4.2, §7.4.3) which repels a Low (usually: breathiness-triggered) tone domain from within a H domain (*L-in-H) to effect depressor block.
The final set of interactions is as in (137), demonstrated in Tableau 9 (138), for all three reduplicate stem lengths, and their non-reduplicate counterparts.

(137) Reduplicate rankings (complete set)
*H-in-WAP >> PU_RED/Base >> AvoidProm >> NonFin

(138) Tableau 9: Reduplicate tone patterns (final analysis)

<table>
<thead>
<tr>
<th>/si- + -ya- + -pha-yi-pha /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) si-ya-[phá]-yii-pha</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) si-ya-[phá]-yíí-pha</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) si-ya-[phá]-yii-[phá]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/si- + -ya- + -pha /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) si-(yaa-[phá])</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) si-(yaa-pha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/si- + -ya- + -bonabona /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f) si-ya-[bóná]-boona</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) si-ya-[bóná]-bóóna</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/si- + -ya- + -bona /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h) si-ya-[bóóna]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>(i) si-ya-[bóona]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/si- + -ya- + -bonabonisa /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(j) si-ya-[bóná-bóó(ni)sa]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(k) si-ya-<a href="ni">bóná-bóó</a>sa</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/si- + -ya- + -bonisa /</th>
<th>*H-in-WAP</th>
<th>PU_RED/Base</th>
<th>Max-H</th>
<th>NonFin</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(l) si-ya-[bó(ni)sa]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(m) si-ya-<a href="ni">bó</a>sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

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4.4.2.2. Other possibilities for reduplicate analysis

I believe that the solution provided in §4.4.2.1 is sufficient, although questions do remain about the nature of some of the most recently invoked constraints (PU_RED/Base and *H-in-WAP). It may appear that I have invoked an excessively complex set of constraints. To address this concern, I need to observe that several apparently less complex solutions that might be suggested—all involving correspondence—cannot achieve the correct outputs; I mention two: (a) sponsor correspondence; (b) penult correspondence.

It might be suggested that (a) there is an output-output correspondence relationship between either base stem and reduplicate stem, or input stem and reduplicate stem. It might also be suggested that there is an output-output requirement between the penults of either base stem and reduplicate stem, or input stem and reduplicate stem. Even without copiously comparing each of the forms implicated by these suggestions, it should be immediately clear that neither solution will entirely work. While the correspondence relationships suggested always hold across a subset of the relevant forms, they never characterise the entire set.

It seems, then, that the approach outlined in §4.4.2.1 is sufficiently insightful to characterise the full set of reduplicate surface forms in Phuthi lexical verb paradigms.

4.4.3. Constraint Summary

I summarise the new rankings (139), and the entire constraint set up to this point (140), with the dominance relations visually sketched in (141)

(139) **Constraint Set, version 4: new rankings**

a. PU_RED/Base >> AvoidProm (from 132, 136a)
b. *H-in-WAP >> PU_RED/Base (from 136b,c)

(140) **Total constraint ranking (partial): version 4**

- *H-extension rankings*
  Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt
- *Expression rankings*
  Express_H >> Dep-H
- *Morphology / H-extension rankings*
  (AvoidProm_&_CrispStem) >> HD-Min >> WSA-Rt >> CrispStem
Reduplication rankings

*\( H \)-in-AP >> PU_RED/Base >> Max-H >> HD-Min >> AvoidProm

(141) Constraint rankings, version 4: dominance orderings

*\( H \)-in-AP

| PU_RED/Base

| Max-H   Ba-Lf   Express_H

| NonFin  AvoidProm

| & CrispStem

| HD-Min

| AvoidProm

| WSA-Rt

| CrispStem

| BA-Rt
4. 5. Prominence Undone, and Phrase-Medial Tone

We turn in this final section of the chapter to the shape of phrase-medial HDs in Phuthi, which behave in a tonally distinct fashion from phrase-final HDs. The key observation will be that syllable prominence, that is, penult weight, is implemented only in the phrasal domain, not at the level of every word.

We have seen throughout this chapter that the phrasal widescope target of a H feature is the antepenult. Following Kisseberth (1993, *et passim*), I suggested in §4.1 that the only reason a H cannot reach the penult syllable is that this penult is prominent. I invoked a weight-accent projection (*WAP*) constraint to achieve this, and anchored the constraint *AVOIDPROM* to this *WAP* constituent.

If this is truly the reason for the inability of HD to penetrate the penult, and if *WAP* is built only at the phrase right edge (as opposed to the right edge of every PWord), then in phrase-medial words, (a) there should be no penult syllable length because there is no *WAP*, (b) *AVOIDPROM* should become a vacuous constraint, and (c) a HD should now extend to the penult. And in the Mpapa dialect of Phuthi, this is exactly what we find (§4.5.1). We will, however, also see two exceptional configurations where the phrase-medial target is surprisingly the antepenult (§4.5.2); each exception is readily accounted for as either dialect-related (§4.5.2.1) or a discourse-related topicalisation of the verb phrase (§4.5.2.2).

4. 5. 1. Mpapa Phrase-Medial H Target: Penult

The phrase-medial verb forms are accompanied by a complement such as ...*kakgúulú* ‘a lot’ (adverb), which commences critically with a toneless syllable, and which will allow the verb to occur medially. Only stems which are 4-σ and longer demonstrate this medial pattern unambiguously (145-146).

---

76 An initial syllable on the following word is best toneless so that no plateau or anticipation effects of any sort would be triggered across the word boundary. In closely related Swati (Bradshaw 1999: Chapter 4), and in other Nguni relatives such as Xhosa (Cassimjee 1995, 1998), plateauing effects occur across word boundaries, where one or two toneless syllables between two HD edges (not necessarily sponsors) are interpolated with H, under certain morphological and syntactic conditions.
Medial (short) present indicative: toneless SP + H stem

(142) 1-σ stem
  a. si-[phá]... we give...
  b. si-[khá]... we draw (water)...

(143) 2-σ stem
  a. si-[bó]na... we see...
  b. si-[bú]ta... we ask...

(144) 3-σ stem
  a. si-[sébeta]... we work...
  b. si-[mámé]la... we listen...

(145) 4-σ stem
  a. si-[sébé]la... we use...
  b. si-[búlsí]sa... we ask intensively...

(146) 5-σ stem
  a. si-[sébéte]lāna... we work for each another...
  b. si-[mámé]lāna... we listen on behalf of each another...

This pattern is mimicked by phrase-medial toneless stems where a single H prefix reaches the penult (147-151).

Medial (short) present indicative: H SP + toneless stem

(147) 1-σ stem
  a. [bá]-ta... they come...
  b. [bá]-wa... they fall...

(148) 2-σ stem
  a. [bá-lí]ma... they cultivate...
  b. [bá-yé]ta... they make...

(149) 3-σ stem
  a. [bá-límí]sa... they help cultivate...
b. [bá-lébý]ka... they thank...

(150) 4-σ stem
a. [bá-libá]físa... they delay...
b. [bá-yámúké]la... they receive...

(151) 5-σ stem
a. [bá-límíslá]na... they help cultivate for each another...
b. [bá-libáfíslá]na... they help delay each another...

These penult patterns are confirmed by data from the present reduplicative (152-153) and infinitive (154) forms.

Medial (short) present indicative reduplicative: toneless prefix + H stem

(152) 7-σ stem
a. si-[sébésébétélá]na... we work for each other now and then...
b. si-[mámámámélá]na... we listen on behalf of each other now and then...

Medial (short) present indicative reduplicative: H prefix + toneless stem

(153) 7-σ stem
a. [bá-límíslímíslá]na... they help cultivate for each other now and then...
b. [bá-libálibáfíslá]na... they help cultivate for each other now and then...

Medial (short) infinitive: H prefix + toneless stem

(154) 5-σ stem
a. [kú-libáfíslá]na... to delay one another...
b. [kú-tépé[lí]sa... to cause to slow down...

It is clear that AVOIDPROM fails to apply in all of the above words (145-146,148-151, 152-154): penult syllabic constituents (here: vowels) are all H from rightwards domain expansion, except for (143,147) where the penult is the sponsor, and for (144) where the penult is H due to the HD-MIN minimality effect (at no risk of interference from AVOIDPROM, because

But not by the medial perfective, since this ‘short perfective’ is a member of a separate tone paradigm, taking a grammatical tone pattern; cf. Chapter 6 §6.2.
HD-MIN >> AVOIDPROM). It is equally clear that NONFIN does apply in the prosodic word domain, since in every case a H sponsor fails to reach the phrase-medial ultima, unless the ultima itself is the sponsor, as in (142). We do not (yet) need to rephrase any of these anti-align edge constraints in terms of which morphological domains they apply in (even though this will become necessary when grammatical tone patterns are discussed in Chapter 6 §6.3).

The prominence that AVOIDPROM refers to typically appears only once in a phrase, on the phrase penult, and will be vacuous at the right edges of all other (non-phrase-final) prosodic words. NONFINALITY, however, continues to refer to the final syllable of every prosodic word. Tableau 10 (155) demonstrates the correct selection of phrase-medial and phrase-final H-extension targets.

(155) **Tableau 10:** AVOIDPROM evaluations
Phrase-medial: *si-sébétísa...* ‘we work...’

<table>
<thead>
<tr>
<th>/ si- + -sébet-is-a /...</th>
<th>NonFin</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) si-[sébé]tísa...</td>
<td>n/a</td>
<td><em>!</em></td>
<td></td>
</tr>
<tr>
<td>(b) si-[sébétí]sa...</td>
<td>n/a</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) si-[sébétísá]...</td>
<td>*!</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Phrase-final: *si-ya-sébétíisa*, ‘we work’

<table>
<thead>
<tr>
<th>/ si- + -ya- + sèbet-is-a /</th>
<th>NonFin</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) si-ya-[sèbé]tiisa</td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>(e) si-ya-[sèbétí]sa</td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(f) si-ya-[sèbétísá]...</td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

4.5.2. **EXCEPTIONAL MEDIAL TARGET: ANTEPENULT**

Finally, I wish to account at this point for two sources of exceptional data, where the lexical stem H *fails* to extend to the penult medially, contrary to our expectation: (a) the Sigxodo phrase-medial lexical paradigms; (b) the present indicative *long* form (medial usage).
4. 5. 2. 1. Sigxodo lexical paradigms

While this dissertation does not attempt a full account of tone/voice variation across Phuthi dialects, there are certain salient phenomena that I examine comparatively, where relevant. In the Sigxodo dialect, although the tonal data is very similar (often identical) to Mpapa Phuthi, the very lexical paradigms exemplified in the previous section—present indicative (medial) short form; present indicative (medial) reduplicate short form; infinitive medial form—make no distinction between phrase-medial and phrase-final target of H-extension. HDs invariably extend to the antepenult, paying no attention to whether they are phrase-medial or phrase-final.

This robustly attested pattern is significant, since the prominence facts of the two dialects appear otherwise to be the same, and the same range of constraints motivated here should interact in Sigxodo to select the antepenult (and to mark off the penult as heavy phrase-finally, but light phrase-medially).

A single slice of data (156-158) from the present indicative makes the point.

Present indicative long form (Mpapa and Sigxodo)
(156) target: antepenult
  a. toneless stem: [bá-yá-límí]sisa they are cultivating intensively
  b. H stem: si-ya-[sébé]tiisa we are using

Present indicative short form (Mpapa)
(157) target: penult
  a. toneless stem: [bá-límísí]sa... they are cultivating intensively...
  b. H stem: si-[sébét]fisa... we are using...

Present indicative short form (Sigxodo)
(158) target: antepenult
  a. toneless stem: [bá-límísí]sisa... they are cultivating intensively...
  b. H stem: si-[sébét]tiisa... we are using...

4. 5. 2. 2. WAP failure and still prominent: discourse emphasis

Finally, in both Phuthi dialects, as in other Nguni varieties (Xhosa, in particular), a phrase-final verb—that is, long form, with -ya——may be used phrase-medially (with a discourse
effect of emphasis). This occurs with one of only a small set of adverbial complements, making the ‘final’ form medial, and therefore devoid of prominence (prominence remains strictly a phrase-edge phenomenon). Yet, the medial verb behaves tonally as if final. (159) contains the expected phrase-final form in utterance final position; (160) is the unexpected phrase-final pattern (targeting the antepenult) in utterance-medial position.

**Present indicative phrase-final form (Mpapa, Singxodo): utterance-finally**

(159)

a. toneless stem: [bá-yá-límí]isiisa they are cultivating intensively
b. H stem: si-ya-[sébé]tiisa we are using

**Present indicative phrase-final form (Mpapa, Sigxodo): utterance-medially**

(160)

a. toneless stem: [bá-yá-límí]isi ka[kgúulú] they are cultivating intensively a lot
b. H stem: si-ya-[sébé]ti ka[kgúulú] we are using a lot

Thus, in at least some Sigxodo paradigms, the correlation between weight prominence (length) and antepenult/penult targets breaks down. For these data sets, I propose that some form of paradigm uniformity relation exists between phrase-final and phrase-medial forms. In other words, if phrase-final forms like to target the antepenult, and do so to avoid the prominent penult, then if phrase-medial (or utterance-medial) forms also target the antepenult (even though medial penults are not prominent), the only reason they do so is by analogy with phrase-final forms. In effect, Sigxodo Phuthi has analogically levelled its word-edge align patterns across lexical and postlexical environments.

An output-output paradigm uniformity constraint such as (161) deals with this analogical extension of the phrase-final pattern.

(161) **PU-Lex H**

PU lexical stems (phrase-final, H, phrase-medial, H)

H tone phrase-medial lexical stems have the same output pattern as phrase-final stems.

---

78 The behaviour of nouns and other non-verbs in final vs. medial positions has not been adequately investigated yet. So, for the present, PU-Lex H refers only to verb stems.
With respect to the two data sets above: (a) PU-LEX H must be specified for all morphologically ‘long’ form verbs (normally phrase-final, but tolerable phrase-medially with a limited set of post-verbal adverbs); and (b) PU-LEX H must be specified for all medial forms in Sigxodo. Clearly, PU-LEX H dominates any constraint that would allow or urge a H to extend onto the penult target in the given cases, e.g. PU-LEX H >> WSA-Rt, since WSA-Rt could otherwise stretch a phrase-medial HD to the penult, and certainly PU-LEX H >> HD-MIN. Thus, this constraint is paradigm-specific in the Sigxodo dialect (indexed below as SGX), and is inviolable in that morphological context. It cannot be assigned any relative position in a constraint hierarchy with reference to non-paradigm-specific constraints such as MAX-H, BA-LF.

4.5.3. Constraint Summary

I summarise the new rankings (162), and the entire constraint set up to this point (163), with the dominance relations visually sketched in (164).

(162) Constraint Set, version 5: new rankings
revised: PU-Lex H >> everything (from 161, and discussion)

(163) Total constraint ranking (partial): version 5

- H-extension rankings
  Max-H, BA-LF >> NonFin >> HD-MIN >> Avoid Prom >> WSA-Rt >> BA-Rt

- Expression rankings
  Express_H >> Dep-H >> almost everything

- Morphology / H-extension rankings
  (AvoidProm&CrispStem) >> HD-MIN >> WSA-Rt >> CrispStem

- Reduplication rankings
  *H-in-WAP >> PU_RED/Base >> Max-H >> HD-MIN >> AvoidProm

- Phrase final // medial rankings
  PU-Lex H (Sgx) >> everything

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Constraint rankings, version 5: dominance orderings

*H-in-WAP

| PU_RED/Base |
| Max-H | Ba-Lf | Express_H |
| NonFin | AvoidProm | PU-Lex H (Sgx) & CrispStem |
| HD-Min | |
| AvoidProm | |
| WSA-Rt | CrispStem |
| BA-Rt |
4. 6. Conclusion

This chapter has laid out a variety of Phuthi morphological paradigms characterised by the presence of lexical tone. These have included both verbal (present indicative long and short, perfective long, present indicative reduplicative) and nominal patterns. The emphasis, however, has been on the tonal system as manifest in Phuthi verbs, since this is by far the most productive area of the tonal (and segmental) morphology.

The data has included only words which contain a single lexical H tone: the H sponsor has been either the lexical stem, or a H prefix attached to a toneless stem. We have seen sufficient data to establish that a H in Phuthi targets—all other things being equal—the antepenult position in a phrase-final word. This antepenult position has been argued to be a position of prosodic prominence, derived as the tone target through the interaction of anti-align constraints that cordon off the final two syllables as a privileged no-tone zone. But the phrase-penult syllable has also been shown to be a prominence position, argued to be the head of a syllabic trochee, realised with bimoraic length through the weight-to-stress principle.

Phuthi has been shown to display other preferences for optimal tone domain shapes, including a minimality effect (implemented through HD-MIN), whereby H domains must consist of at least two syllables.

Above all, the Phuthi lexical tone system has begun to allow us to glimpse the innards of a specific optimality grammar: a small set of interacting principles, with a number of variations in their application.

In the following chapter, I continue to lay out the tonal patterns of lexical paradigms in Phuthi. I proceed to examine words with more than one active H tone active, where significantly more complex tonal interactions emerge.
Chapter 5

Lexical Tone II

Having laid out in Chapter 4 the basic properties of H tones in words which bear a single active H tone, I continue in the present chapter to develop the analysis of tonal properties in lexical paradigms\(^1\), but where more than one H tone feature is active. We shall see significantly increased complexity in accounting for the surface deployment of H tone, based on interactions of multiple Hs within a single prosodic word. Importantly, we shall see fresh instances of phonological phenomena which mark the antepenult/penult boundary.

In Section §5.1 of this chapter, I will reflect briefly on the nature of the Obligatory Contour Principle (OCP) as an instantiation of the general principle in grammars that maintains a particular set of sequential contrasts established in their phonologies. I will show that H sponsors in Phuthi fail to extend to any toneless syllable that immediately precedes another H sponsor. This obligatory contour principle (OCP) instantiation will be accounted for by a dispreference for adjacent H-domain edges. In Section §5.2, I will show that adjacent H sponsor syllables do not delete, despite the apparent OCP configuration. Rather, the failure to separate two HDs with downstep (except at the antepenult/penult edge) is used as evidence for universal fusion, a second instantiation of the preference for HD anti-alignment. Section §5.3 will show that long penults display two versions of a H syllable: level H; and falling H preceding an ultima H; falling H penults are a phonologised manifestation of misaligned (but obligatory) phrase-final declination from high to low pitch (final lowering). In Section §5.4 I analyse the object prefix (OP), a morpheme which invariably introduces a H feature, but which—in a strangely eloquent deployment of domain structure separate from feature expression—will almost universally fail to express that feature on the surface (at least in the principal lexical tone paradigms). It will become clear that a new class of morphophonemic (even morphophonetic) constraints must be

\(^1\) Lexical paradigms include all those where surface tone is calculated based on some combination of the H or toneless specifications for prefixes, together with the H or toneless specifications of the stems themselves. No grammatical (that is, grammatically specified) tones are invoked in this chapter. For the distinction between lexical and grammatical paradigms, cf. Chapter 2 §2.2.4.7; Chapter 6 §6.1.
invoked: an anti-express constraint, required by the OP construction. OP surface H-ness will be ‘rescued’ in short stems only by the requirement to express at least some minimal form of every HD, guaranteeing at best weak faithfulness to an underlying H sponsor. In Section §5.5, I present the three types of downstep found in Phuthi: general (downdrift), positional (at the antepenult/penult boundary), and ultima (between H phrasal penult and H ultima), corresponding to the downtrend domains argued for in Japanese (Pierrehumbert & Beckman 1988:58): declination, catathesis and final lowering. It will be argued that three joint conditions trigger downstep in Phuthi: (a) the left edge of every HD; (b) the same conjoint constraint motivated earlier in Chapter 4 §4.3; and (c) pre-ultima marking. These disjunct constraints will be unified in the parsing of meta-domain structure (Register Domains). Section §5.6 will offer confirmation that nouns display the same range of tonal patterns that verbs do, though deverbative nouns interestingly display domain-specific constraint rankings. Section §5.7 will provide a conclusion to the examination of Phuthi lexical tonology.
5. 1. OCP: Blocked Domain Expansion

The Obligatory Contour Principle (OCP) is a controversial (Odden 1988), if often invoked, ‘soft universal’ (Kenstowicz 1994) in phonological theory. Arising initially from insights about H tone adjacency constraints in Bantu (Meussen 1954, Goldsmith 1984), but first formulated theoretically by Leben (1978), the OCP remains a useful explanatory tool in tonology, and in phonology in general.

Odden (1995:464) has observed that the strongest version of the OCP is simply that ‘[there may be a] dispreference for adjacent identical tones; languages are free to express this dispreference by constraining lexical representations, by adding rules of tone fusion or tone deletion, or by putting conditions on tone spreading rules.’ Given the widespread (though not universal\(^2\)) distribution of OCP effects on tone in a variety of Bantu languages—often identified in the non-theoretical literature simply as some form of Meeussen’s Rule—and given the wide variety of possible responses in these languages to OCP-violating configurations (e.g. lexical or ‘derived’ HH configurations), we have a strong empirical expectation that Phuthi will display OCP effects, and indeed we will not be disappointed.

Cassimjee (1995) and C&K (1998:60ff.) have presented a comprehensive typology of tonal OCP effects which fall out from the various possible rankings and interplay of the basic ODT faithfulness constraints: INCORPORATION, UNIQUENESS and NO_ADJACENT_EDGES (previously: NO_SHARED_EDGES). Although there is insufficient evidence to invoke all three faithfulness constraints at this early stage in the analysis, the role of NO_ADJACENT_EDGES will be immediately relevant. The two authors cited above document responses to the OCP in a variety of Bantu languages, considering all possible locations and settings of the two theoretical parameters made available by an ODT grammar: the position of the UR H-sponsor itself, and the surface HD projected by that H-sponsor. I begin the description and analysis of OCP effects in Phuthi here, since both sponsor location and H domain (HD) edges are ‘creatively’ aligned and misaligned by the Phuthi tonology.

---

\(^2\) There are well-documented cases of languages where the OCP seems to have little or no role in the tone grammar: Makua (Cheng & Kisseberth 1979, 1980, 1981); Ngazidja (Cassimjee & Kisseberth [C&K] 1992b; C&K 1998).
HH is indeed a dispreferred sequence\(^3\), be this configuration a result of adjacent HDs resulting from HD extension (1a), or underlingly adjacent H sponsors (1b,1c,1d). We will see in sections §5.1 and §5.2 that Phuthi displays four responses to these non-optimal tone sequences in (1).

(1) Phuthi instantiation of the OCP
   a. **Blocking**: rightwards extension of a H tone is prevented, if this would result in two adjacent HDs;
      In a sequence of two adjacent H sponsors:
   b. **Fusion**: the distinct HDs are made non-distinct, resulting in a single fused HD that contains both H tokens (the adjacent inter-HD edges are not parsed *in situ*);
   c. **Downstep**: the HDs are kept distinct: the second HD is downstepped relative to the first;
   d. **Deletion**: the second H sponsor is deleted.

5. 1. 1. **BLOCKED SPREAD (NO ADJACENT HD EDGES)**

Returning to the lexical paradigms presented in Chapter 4, I present evidence here for the first type of OCP effect in (1) above.

5. 1. 1. 1. H prefix + ya + H stem; nouns

**Present tense indicative (long form)**

(2) 1-\(\sigma\) stem
    a. bá-yaa-phá they give
    b. bá-yaa-khá they draw water

(3) 2-\(\sigma\) stem
    a. bá-ya-bóóna they see
    b. bá-ya-bůúta they ask

---

\(^3\) I observe that two adjacent H syllables is not *per se* ill-formed; crucially, they should not be two adjacent H syllables from distinct H sponsors (UR features). It has already been seen in Chapter 4, and will be confirmed in many forms that follow in Chapters 5 to 7, that multiple adjacent syllables can be *expressed* as H, without incurring any well-formedness violation. Phuthi seeks, optimally, to wide-align H tones, optimally to the antepenult or penult (in lexical paradigms; cf. Chapter 4), or to the antepenult/penult/ultima (Chapter 6 §6.3).
(4) **3-σ stem**
   a. bá-ya-bónífsa  they show
   b. bá-ya-sébéeta  they work

(5) **4-σ stem**
   a. bá-ya-bútélaana  they ask for one another
   b. bá-ya-sébétiisa  they use

(6) **5-σ stem**
   a. bá-ya-sébétísíisa  they work intensively
   b. bá-ya-khúlúmélːla  they speak on behalf of

(7) **6-σ stem**
   a. bá-ya-sébétísélaana  they use for each other
   b. bá-ya-khúlúmélːlaana  they speak on behalf of each other

(8) **7-σ stem**
   a. bá-ya-sébétísísélaana  they work intensively for each other
   b. bá-ya-khúlúmísélːlaana  they help speak on behalf of each other

There are two generalisations about non-adjacent H domains from these data sets: (a) the SP which is H fails to expand rightwards (‘spread’ in autosegmental theory) when stem 4 σ1 is H (thus the expected HD-MIN constraint is blocked by some other constraint yet to be articulated); (b) the second HD is downstepped, that is, the onset of F₀ is substantially (and always) lower than the F₀ onset for the first HD (more in §5.5).

This pattern is robustly confirmed in all other lexical paradigms with long-form -ya-, for example, in the present indicative reduplicates (Appendix A, paradigm B), and in the perfective indicative long form (Chapter 2 §2.2.4.7; Appendix A, paradigm E). Noun prefixes (immediately below; §2.2.1.2) also manifest this pattern.

---

4 The SP here is ba-, independently determined in Chapter 4 §4.1 to be underlyingly H.
5 The stems in this data set are lexically H, that is, they contribute a H to the representation.
Noun prefixes

This OCP pattern is found also among noun prefixes (basic tonal and morphological patterns are provided in Chapter 2 §2.2.1.4 footnote 118). Although all noun prefixes bear a H-sponsor (except in restricted syntactic environments), most noun prefixes are monosyllabic; the prefix H can thus only surface on the (one-syllable) sponsor (satisfying $\text{Max-H}$). If, however, the noun prefix is bisyllabic (Class 2 or 6), and the noun stem is toneless, then the same HD-M$_{IN}$ effect presented in Chapter 4 §4.2, as seen in (2-7) above, becomes visible in the noun system below: (9-10;13-14). The failure of HD-M$_{IN}$ in (11-12;15-16) confirms the OCP effect just introduced in (2-7) above.

Class 2 Nouns

(9) Successful HD-M$_{IN}$: 1-$\sigma$ stem (Class 2)
   a. ébáá-tfu people

(10) Successful HD-M$_{IN}$: 2-$\sigma$ stem (Class 2)
    a. ébá-tfwaana children
    b. ébá-phụthị Phuthi people

(11) HD-M$_{IN}$ failure: 1-$\sigma$ stem (Class 2)
    a. ébaa-fó men
    b. ébaa-rā sons
    c. ébaa-fū dead people

(12) HD-M$_{IN}$ failure: 2-$\sigma$ stem (Class 2)
    a. éba-fáatí women, wives
    b. éba-táälị parents

Class 6 Nouns

(13) Successful HD-M$_{IN}$: 1-$\sigma$ stem (Class 6)
    a. émáá-jwe stones
    b. émáá-fu clouds

---

6 Most noun tone patterns here have also been instantiated, albeit without specific focus on tone allomorphy, in Chapter 2 §2.2.1. And cf. discussion of noun tonology in §5.6.
(14) **Successful HD-MIN**: 2-σ stem (Class 6)
   a. émá-nyaawu \(\text{feet}\)
   b. émá-tiipho \(\text{nails}\)

(15) **HD-MIN failure**: 1-σ stem (Class 6)
   a. éma-hló \(\text{eyes}\)
   b. éma-tshé \(\text{saliva}\)
   c. éma-lí

(16) **HD-MIN failure**: 2-σ stem (Class 6)
   a. éma-bééle \(\text{breasts}\)
   b. éma-límí \(\text{tongues}\)

The natural expression in ODT of the pattern in these data sets is (17), No Adjacent Edges (C&K 1998)—first proposed as No Shared Edges (Kisseberth 1993)—rephrased here to *Adjacent_Edges.

(17) **Adjacent_Edges** (*AE*)
   \(\text{[*]_{F_x[F_y]}\} \{\text{where F is a feature, F}_x \text{ and F}_y \text{ are distinct parses of the feature F}\}}\)
   The right edge of a feature domain may not directly precede the left edge of a distinct parse of the same feature type.

The discussion in this chapter focuses exclusively on *AE with respect to the tone feature \(\text{H}\) (specifically, lexical\(^8\) \(\text{H}\)), dealt with again in respect of fusion in §5.2.

Although the point of departure for the theoretical machinery in this work is that of the production grammar, I do not (and need not) take a firm position on the necessity or role of a perception grammar (such as proposed in Boersma 2001); constraint (17) is certainly functionally (perceptually) motivated: if two separate instances of the same feature, e.g. \(\{F_i\}[F_j]\), are linearly adjacent and expressed with the same acoustic phonetic correlates—and assuming that F cannot contain contour values of any sort, and assuming that the F-domain has a constant acoustic

---

\(^7\) The tone feature \(\text{L}\) to be introduced in Chapter 7 will also display *AE effects: for \(\text{L}_{\text{LEX}}\) in §7.5, §7.8.1.8 (288); for \(\text{L}_{\text{GRAM}}\) in §7.7.2.4 (214) and §7.8.1.6 (275).

\(^8\) We will examine a possibly paradigm-specific instantiation of *AE for lexical / grammatical \(\text{H}\) in the subjunctive paradigm, to be rejected in favour of an elevated \(\text{ENDLOW-S}\) constraint (which achieves the same kind of anti-align output that *AE does (Chapter 6 §6.3.3.2)).
expression throughout its duration—then there can be no acoustic or auditory cues for the listener that there is more than one F-domain present in the speech string of two such sequential HDs. This means that the two instances of F will be categorially indistinguishable from a single instance of feature F (Boersma 2001). If the grammar values highly enough that the two F-tokens should remain distinct, in other words, that each F-token is individually identified in the surface (phonetic) form, then it will establish cues to ensure that such a contrast can be perceived in order that the contrast be recoverable and, therefore, learnable. The necessity for such recoverability of the underlying form, and for its reflection in functional constraints (at that time: rules and morpheme structure constraints), is articulated in insightful early work by Kaye (1974).

In a related observation, the fundamental desire of a language to keep two feature tokens distinct \(\{F_x \neq F_y\}\) manifests a principal tension of phonological grammar: maintaining contrast. If \(F_x\) and \(F_y\) are not individually identifiable, then the sequence \(F_x F_y\) is not contrastive with \(F_x \emptyset\) or \(\emptyset F_y\). This is a case where the contrast between \(\emptyset\) and \(F_x\) or \(\emptyset\) and \(F_y\) is lost.

The contrast between the presence vs. absence of a feature—or gesture, cf. Gafos (1999), building on Browman & Goldstein (1989)—is the most fundamental contrast that a grammar establishes. Extending this, the presence of one feature (or gesture) whose content or deployment is antagonistic to the presence of another feature in the same privative system, or the presence of both values in a particular language system of any equipollent feature, cues subsequent dimensions of contrast. This observation concerning feature contrast lies at the core of phonological distinctive feature theory (Jakobson 1938, Jakobson, Fant & Halle 1952).

The constraint in (18) articulates these basic contrastive requirements on any phoneme in any lexical (vs. postlexical) grammar⁹.

(18) \textbf{CONTRAST}_F

\textbf{Contrast (F, -F) or Contrast (F, \emptyset)}

Keep F and -F (or F and \(\emptyset F\)) distinct throughout the grammar.

The disinclination on the part of H toward edge-adjacency in the tone data presented above instantiates a necessary corollary of \textbf{CONTRAST} (18): each contrast-bearing unit in the

---

⁹ \textbf{CONTRAST}_HD will be an instantiation of \textbf{CONTRAST}_F that recurs in the tone parsing discussions in §5.4 (OP), Chapter 6 §6.2.2 (present subjunctive short stems), Chapter 7 §7.4 (shift), §7.7.1 (unincorporation, achieved by \textbf{FAITHLEXTONE}), §7.8.1.8 (LD fusion).
grammar will either display an instance of feature F or not; in the absence of any other requirements, that unit will retain the phonological contrast assigned to it in the underlying representation: $\sigma_1$ is H, $\sigma_2$ is toneless in (19a); contrast is maintained. In (19b), the same underlying configuration is modified by a rule such as HD-MIN, and $\sigma_2$ is neutralised with respect to H: contrast is lost on $\sigma_2$ due to some higher requirement on that position; $\sigma_2$ in (19b) is indistinguishable from a configuration such as (19c), where both $\sigma_1$ and $\sigma_2$ contain underlying H tones (at both underlying and surface levels), and maintain that feature setting into the PR.

(19) **Contrast maintained or neutralised**

<table>
<thead>
<tr>
<th>UR</th>
<th>PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>$\uparrow$</td>
</tr>
<tr>
<td>$\sigma_1$</td>
<td>$\sigma_2$</td>
</tr>
<tr>
<td>b.</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>$\uparrow$</td>
</tr>
<tr>
<td>$\sigma_1$</td>
<td>$\sigma_2$</td>
</tr>
<tr>
<td>c.</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>$\uparrow$</td>
</tr>
<tr>
<td>$\sigma_1$</td>
<td>$\sigma_2$</td>
</tr>
</tbody>
</table>

Recent interpretations of the OCP have sought to point out that languages engaging in this non-adjacency requirement wish to avoid ambiguity in the perceptual grammar (or perception process) (Boersma 2001). Perfectly adjacent HDs would introduce ambiguity in the perceptual grammar unless there were some overt cue to the H feature that would render its edge (e.g. right edge) immediately retrievable. One might imagine that one edge (processually, the right edge is more likely) of a single H feature would decay in some way, e.g., would decline in

---

10 Association lines are included here only for clarification in associating the H-bearing units temporally. Association lines have no formal status in ODT (cf. discussion in Chapter 3 §3.2.2.4; §3.3.2).
pitch. Such a pattern would still be phonologically unrecoverable, with respect to the left edge of its domain, if that left edge abutted an immediately prior instantiation of H.

The claim is that without salient edge cues distinct HDs would not be separately recoverable. Since salient onset cues are crucial for auditory identification of a property (Steriade 2000, Silverman 1997a) and since—here—recoverability of tone features (and therefore tone domains) is highly valued, the assumption is that F—in the sequence F,F,—will attempt to be distinct from Fy in some way.

One way is for the execution of one of the tone features to be phonetically or phonologically modified, such that the tone feature contain cues for edgeness of its own HD. Since the OCP does operates as a constraint in the Phuthi tone grammar, we expect that tone domain edge cues will need to be identifiable phonologically. Where H domains are not instantiated as adjacent in situ (cf. §5.2 below), this will prove to be the case in all but the rarest instances (but cf. §5.4): CONTRAST_F will prevent two HDs from being adjacent, in order that contrast is successfully maintained on the second of two Hs in sequence. This is achieved in the present analysis through *ADJACENT_EDGES (*AE).

*AE is, thus, a functionally motivated constraint that attempts to ensure the productive (and perceptual) contrastiveness of an F-specification (here: H). Since an F can only be expressed on the surface by virtue of its membership in some F-domain, CONTRAST_F means keeping F-domains for the same F-type distinct from one another (we will, however, see under ‘fusion’ below that Phuthi also resolves the adjacency problem by abstractly parsing HD edges non-locally).

The systemwide CONTRAST constraint is thus achieved here by a ban on adjacent H domain edges. (20) indicates the minimally acceptable distance for two would-be adjacent HDs: at minimum, just a single TBU for the particular feature concerned (in this case, the syllable).

(20) Optimal non-adjacency of HDs

\[
\sigma | \sigma [ \sigma \gg * \sigma | [ \sigma
\]

We will see such a pattern, albeit marginal, in §5.4.2.6.
Yet the configuration of adjacent HDs (20) could be resolved in other ways, too: by removing a token of H completely; or by restricting HD expansion (or retraction) by adjusting one of the HD edges, or by removing the edge altogether. Bantu languages generally utilise all of these resolutions, which are framed in ODT terms as (21).

(21) **OCP effects in Bantu**

A potential sequence of \([xH]_y\), can be resolved in Bantu by:
a. underparsing a H sponsor or part of a HD (at either the right edge of HD\(_x\), or the left edge of HD\(_y\));
b. limiting the expansion of a H, in order to prevent HD adjacency (that is, blocking H spread);
c. removing the inter-H domain edges, resulting in a collapse of the distinction between the two H tokens, i.e. fusion of two adjacent domains (which removes the need for adjusting the domain edges);
d. allowing the two Hs to remain adjacent in situ, but signalling their separateness by adjusting the expression of one of the H-features, e.g. F\(_0\) of the second HD left edge is relatively lower (downstepped) or relatively higher (upstepped, or raised) than the first HD right edge;

(21a-b) reflects the OCP effect (already widely discussed in the literature) known conventionally within Bantu tonology as ‘Meeusen’s Rule’ (Goldsmith 1984).

The remaining option (not given in 21) would be to tolerate the two non-fused, adjacent (and therefore indistinct) Hs in situ, but this would not be a ‘resolution’ of the configuration given the requirements sketched for this system. This worst case OCP scenario seems rare from the Bantu tone literature that emerged in the 1980s and 1990s. Nevertheless, the degree of tolerance that a language displays towards OCP violation varies considerably (Odden 1988).

Phuthi, however, utilises all four of the solutions in (21): (a) underparsing of a sort (underexpression), in the Object Prefix (OP) data to follow in §5.4; (b) restricting the expansion of HD, as already seen in the present section (examples 2-6, 9-11, 14-16) above; (c) fusion, to follow in §5.2; and (d) downstep, to follow in §5.5.

Restricting our attention to the ‘blocking’ data already presented, I offer the rankings in (22), including the HD-M\(_{IN}\) constraint (which is clearly overridable); for now, highly ranked BA-L\(_F\) and M\(_{AX}\)-H are sufficiently powerful to ensure that CONTRAST\(_F\) is satisfied, that is, that all underlying F-tokens avoid neutralisation. Tableau 1 (23) examines the entire interaction.
(22) **OCP rankings**

<table>
<thead>
<tr>
<th></th>
<th>Max-H</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>*AE</td>
<td>&gt;&gt;</td>
<td>HD-Min</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Max-H</td>
<td>&gt;&gt;</td>
<td>everything</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>*AE</td>
<td>&gt;&gt;</td>
<td>BA-Lf</td>
<td></td>
</tr>
</tbody>
</table>

(23) **Tableau 1: Preventing adjacent H domains**

*bá-ya-bóóna*, ‘they see’

<table>
<thead>
<tr>
<th>/ bá- + -ya- bon-a /</th>
<th>Max-H</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá]-ya-[bóó]na</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [bá-yá-bóó]na</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [bá-yá]-boo[ná]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [bá-yá]-[bóó]na</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [bá-yá]-booná</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- optimal (23a) sacrifices optimal HD-Min satisfaction to the minimal phonological distance requirement of *AE; and all left edges remain intact;
- (23d) fails on the *AE (OCP ) violation: such a configuration appears never to be tolerated in Phuthi (as opposed to Venda or Northern Sotho, where the OCP can be violated in this fashion, in limited paradigms);
- (b) effectively merges two H domains into a single plateaued HD clause. There is no good evidence for plateauing in Phuthi, unlike close Nguni relatives Swati or Xhosa.
- (c) respects *AE, but unlike (b) where a domain left edge is missing because two HDs are merged, (c) fails on the fundamental misalignment of sponsor with PR H-domain; the key to this failure is presently the highly ranked INCORPORATE domain-construction faithfulness constraint, still subsumed at this point by BA-Lf.
- (e) fails by its complete underparsing of a UR H-sponsor (even though that would ensure that *AE would be respected).

**5. 1. 2. Constraint Summary**

I summarise the new rankings (24), and the entire constraint set up to this point (25), with the dominance relations visually sketched in (26).

---

12 This ranking is really only made clear after the fusion facts are considered in §5.2, and evaluated in Tableau 4 (47); *AE will force BA-Lf to fail in the second of two adjacent HDs.

13 While there is no solid evidence for general plateauing, the equivalent effect is achieved in some paradigms where either (a) the OP is ambiguously H or toneless (or Low) and there is plateauing; or (b) a L (depressed) prefix precipitates a L OP (through LD-MIN domain binarity), whereas a non-depressed prefix causes a H OP, e.g. in the present relative (cf. footnote 18 below), also present negative (Chapter 7 §7.8.1.6, §7.8.1.8).

14 The role of INCORPORATE (vs. BA-Lf) is examined further in §5.2.2, Chapter 7 §7.2.2, and the principle is violated in §7.7.1.
(24) **Constraint Set, version 6: new rankings**\(^\text{15}\)
   a. *AE >> HD-Min
   b. Max-H >> everything
   c. Max-H, BA-Lf >> *AE >> HD-Min
      • note: *AE and BA-Lf are not yet ranked with respect to each other.

(25) **Total constraint ranking (partial): version 6**
   • *H-extension rankings*
     Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt
   • *Expression rankings*
     Express_H >> Dep-H >> almost everything
   • *Morphology / *H-extension rankings*
     (AvoidProm& CrispStem) >> HD-Min >> WSA-Rt >> CrispStem
   • *Reduplication rankings*
     *H-in-WAP >> PU_RED/Base >> Max-H >> HD-Min >> AvoidProm
   • *Phrase final // medial rankings*
     PU-Lex(H) >> everything

(26) **Constraint rankings, version 6: dominance orderings**

\[ *H\text{-in-WAP} \]
\[ \text{PU}_\text{RED}/\text{Base} \]
\[ \text{Max-H} \quad \text{Ba-Lf} \quad \text{Express_H} \]
\[ \text{Non-Fin} \quad \text{AvoidProm} \quad *\text{AE} \quad \text{& CrispStem} \]
\[ \text{HD-Min} \]
\[ \text{AvoidProm} \]
\[ \text{WSA-Rt} \]
\[ \text{CrispStem} \]
\[ \text{BA-Rt} \]

---

\(^{15}\) The constraint sets in this chapter continue from the five sets proposed in Chapter 4; hence, the first set of constraints in this chapter is the sixth in that sequence.
5. 2. OCP: Fusion

The OCP effect seen in §5.1 involves prohibiting the adjacency of HDs, without regard to the location of sponsors. Since a single toneless syllable separates the two HDs in each example, the H sponsors are never adjacent to begin with, in those examples. However, Phuthi has a large number of configurations where two separate H sponsors are unavoidably adjacent in the UR, after morphological concatenation (e.g. H prefix + H stem, where the lexical stem tone is anchored to the initial syllable). In §5.2.1, I examine the fusion principles at work in allowing (and requiring) Hs to parse adjacently. I digress, briefly, in §5.2.2 to consider the basic domain parsing constraints in ODT. In §5.2.3 I turn to examine whether a constraint proposed elsewhere to ban the parsing of adjacent sponsors is justified. I will reject this additional constraint, in favour of the principles proposed in the first part (§5.2.1).

5. 2. 1. Fusion

I present data in §5.2.1.1 from paradigms with adjacent Hs (in this case, at a the left edge of the phrase): the present indicative short (phrase-medial) form (27), as already introduced in Chapter 4 §4.5; the present indicative reduplicates short (phrase-medial) form (28); the long perfective (29); the (phrase-final) infinitive (30). (None of these are short H stems (1-σ or 2-σ), which follow in (44) below; further discussion is found in §5.5). HD structure has not been added yet. In what follows, I consider the parsing of the first H tone, in all instances perfectly aligned to the left edge of the second H.

5. 2. 1. 1. H prefix + H stem

Present indicative short (phrase-medial) form (Mpapa)

(27) 6-σ stem
    a. bá- khúlmélána... they speak on behalf of one another...
    b. bá- sëbëtísíélá... they work intensively for...
Present indicative reduplicates short (phrase-medial) form (Mpapa)

(28) 6-σ stem
a. bá-bútétélána... they ask for one another now and then...
b. bá-sèbèsèbétísa... they use now and then...

Perfective long (phrase-final) form

(29) 6-σ stem
a. bá-khúlúmísísiiye they have spoken intensively
b. bá-sèbèsèbísísiiye they have worked intensively

Infinitive (phrase-final16)

(30) 6-σ stem
a. kú-khúlúmélšaana to speak on behalf of one another
b. kú-sèbèsèbísíšeela to work intensively for

In the items in (27) to (30), there is no salient acoustic cue for there being more than one H sponsor present in the surface output. Hence, the sequence of syllables with relatively high F0 is almost perfectly flat from word-initial syllable until the penult/ultima downturn begins with, for example, the onset of the -sa syllable in (28b). The pitch trace in Figure 1 is of (28b), followed by the complement word kakgulu [kaxúulú] ‘a lot’. (See Chapter 4 §4.1.1.1, footnote 12 for details of recordings).

[turn to the next page for Figure 1]

---

16 These phrase-final infinitives are not called ‘long’, because they are not morphologically distinct, unlike the present indicative long form -ya- vs. short form -Ø-.
I propose that—as in a number of other Bantu languages (e.g. Xhosa—Cassimjee 1995, C&K 1998; Tswana—Cole & Mmusi 1992), Phuthi resolves the OCP-violating configuration where two HDs are adjacent by fusing them together in each of the cases above. I argue that this is the case, because these two HDs are definitely not downstepped with respect to one another: a downstepped HD has a discretely lower F0 onset, and downstepped HDs are distinctive in Phuthi, as will be demonstrated in §5.5 where two sponsor Hs will project separate HDs which remain unfused. Such unfused HDs will be seen to be expressed with a downstep separating them (31).

(31) Downstepped HDs
    [ o ]' [ o ]
I propose, after Kisseberth (1994:146), that the presence of the left edge of a HD is a direct cue for downstep\textsuperscript{17}; thus I suggest that the data in (27-30) above displays the result of resolving adjacent H sponsors by fusing HDs, that is, by the controlled absenting of one domain left edge and one right edge.

(32) Fusion is preferable to an OCP violation
\[
[\sigma \sigma \ldots] \rightarrow *[\sigma \sigma \ldots]
\]

Thus, where possible, adjacent feature tokens are conflated—in autosegmental terms—into a single multiply linked feature (cf. Kisseberth & Mmusi 1990); in the present treatment, HDs are conflated (as in C&K 1998).

For Phuthi, then, the set of optimal ranked principles to cope with potential or actual OCP configurations is given in (33): (33a) characterises the data in §5.1, where a H will not extend rightwards in case it violates *AE; (33b) characterises the data in the present section (§5.2)

(33) Resolving the OCP in Phuthi
\begin{enumerate}
\item a. keep H tokens separate \rightarrow collapse H tokens HDs
\item b. collapse H tokens (i.e. conflate adjacent HDs) \rightarrow allow adjacent HDs
\item c. by transitivity: keep H tokens separate \rightarrow collapse H tokens \rightarrow allow adjacent HDs
\end{enumerate}

(33c) is true because we do not routinely see fusion of HDs across empty syllables, contra Nguni languages like Xhosa (Cassimjee 1998) or Swati (Bradshaw 1999), where two non-adjacent H sponsors may result in ‘plateauing’ of HDs (the term is from Kisseberth, p.c.). That is, the optimal candidate for a plateauing language in Tableau 1 would have been candidate (b) [b lå-yå-bóó]na or (c): [ba-ya-bóó]na (if the latter language expressed as H only the head syllable in a HD).\textsuperscript{18}

\textsuperscript{17} The distribution of downstep is systematically examined later in this chapter (§5.5).
\textsuperscript{18} It may be argued (but only weakly) that Phuthi does display limited plateauing effects, e.g. in the present relative with OP: lâ-bå-tì-bóoa-kå ‘(they) [Class 2] who see them [Class 10]’, where the OP -tì- should surface as toneless (according to facts that emerge from the anti-express behaviour of the OP in §5.4, but fails to (and plateaus, instead); ct. lê-gì-tì-bóoa-kå ‘(I) who see them [Class 10]’, where plateauing is interrupted by the depressor-bearing 1ps SP. Cf. Chapter 7

322
On the face of it, (32) appears to reflect an ODT constraint suggested in Cassimjee (1995:32) as an additional member of the OCP constraint family: NO _ADJACENT ANCHORS_, or in C&K (1998:63-64) as NO _ADJACENT SPONSORS_\(^{19}\) (rephrased here to: _*ADJACENT SPONSORS_), that is, a more heavily specified version of _*ADJACENT EDGES_, which will force the repairing or underparsing of HD edges. _*ADJACENT SPONSORS_ is suggested by those authors as the more common anti-edge constraint, independent of _*ADJACENT EDGES_.

I will show, however, that although this approach is tenable, the more heavily specified anti-edge constraint, _*ADJACENT SPONSORS_, can be dispensed with, and that the Phuthi fusion data can be accounted for with just the general _*ADJACENT EDGES_ already motivated.

But, assuming for the present that (32) does reflect a violation of _*ADJACENT SPONSORS_, the constraint would be as follows (34).

\[(34) \quad _{\text{*ADJACENT SPONSORS}} (\text{\*AS}) \quad \]  
\[\quad \sigma_{\text{HDi}} \left[ \text{HDj} \sigma \right] \]  
Adjacent syllables each sponsoring a distinct H tone constitute an illicit configuration.

The resolution of the bad configuration in (34), as given in (32), would be distinct from all other acceptable HD configurations examined so far: a many-to-one relation between UR and PR feature specifications. The second HD that _should_ be created by the second H sponsor has its basically aligned left-edge overridden by _\text{\*AS}_, but the second H is nevertheless still reflected by part of the HD on the surface (satisfying _MAX-H_). Thus the _MAX-H_ and _BA-LF_ rankings are for the first time split apart, by _\text{\*AS}_ in (35).

\[(35) \quad _{\text{MAX-H}} >> \text{\*AS} >> \text{BA-LF} \]

\(^{19}\) I will suggest below that this name is somewhat misleading, since each sponsor continues to parse _an_ edge, though not both. Cf. §5.2.3 below (45).
I now digress, briefly, to examine the way in which a configuration such as (34) would be analysed and accounted for in C&K (1998), since that work outlines the parameters for so much of what I draw on in the present analysis (based on the same ODT framework).

5.2.2. Principles of ODT

The two constraints—ÚNÎQUE H; (b) and *ÅDJACENT_ÅSPONSORS—presented elsewhere (C&K 1998) as necessary for effecting fusion are not, in fact, crucial for achieving fusion in Phuthi. Rather, the effects of these constraints are subsumed by already extant constraints and rankings, as I will argue.

C&K (1998:43-45) have proposed in ODT to replace the IDENT-IÖ (McCarthy and Prince 1995) family of segmental constraints with a set of basic domain construction constraints

\[(36) \text{ Principles of ODT} \]
\[\text{a. Domain Correspondence (including basic alignment constraints: BA-Lf, BA-Rt);} \]
\[\text{b. Incorporation (F-sponsor);} \]
\[\text{c. Uniqueness;} \]
\[\text{d. Expression (F).} \]

\text{Basic Alignment has been employed in the present work since §4.1 to account for local domain construction around a H-sponsor; and Express has been instantiated as Express\_\text{(HD, H)} in §4.1 to ensure that all syllables within a HD surface as high. But neither Incorporation nor Uniqueness have yet been invoked.}

The tonal instantiation of Incorporation has not yet been required as a distinct, active constraint in Phuthi, but is as in (37), in the constraint to be labelled Incorporate.

\[(37) \text{ INCORPORATE (H, HD);} \]
\[\text{Every H sponsor must be parsed inside its own H domain.} \]

\[\text{These ODT principles have been introduced in Chapter 3 §3.3.3.} \]
Thus far, I have achieved HDs faithfully constructed around their sponsors on the basis of undominated BA-LF. Incorporation of an F-element has been guaranteed by high ranking of BA-LF. Nevertheless, (37) is an insightful and general principle of proper domain construction\(^\text{21}\).

Uniqueness—in the form of the $\text{UNIQUE}$ constraint (38)—is the key constraint being violated by the fusion data in (27-30), in the face of which a one-to-one H-to-HD relation can no longer be assumed. $\text{UNIQUE}$ is instantiated here with the feature H; (39) is the new ranking.

(38)  $\text{UNIQUE H}$
Unique (H, HD)
For every H specification in the UR, there is a distinct H domain in the PR.

(39)  Uniqueness ranking
*AS $\gg$ $\text{UNIQUE H}$

However, as I have done earlier, I argue here that BA-LF is ranked very highly in Phuthi; since each H feature projects a left edge which cannot typically be overridden; the projection of a separate Lf edge for every H will ensure that each H is distinct. Since Hs are ‘associated’ linearly with syllables, there will generally be no ambiguity with this procedure\(^\text{22}\). Therefore I dispense with $\text{UNIQUE}$ for now, since its principled content—that each feature projects a unique domain—can simply be encoded by the importance of faithfully parsing each HD left edge. The ranking in (39) is thus subsumed by the ranking in (40a) below. In addition, (40b) indicates that deleting (underparsing) one of the H-sponsors it not an option for solving the adjacent sponsor configuration in Phuthi; $\text{MAX-H}$ ensures this.

(40)  No underparsing ranking
a.  *AS $\gg$ BA-Lf subsumes *AS $\gg$ Unique H
b.  Max-H $\gg$ *AS guarantees no underparsing of sponsors

\(^{21}\) **INCORPORATE** will be seen to be violated in the marginal (but robust) case of unincorporated H sponsors (Chapter 7 §7.7.1).

\(^{22}\) The straightforward linear sequencing of HDs becomes more fraught where ‘floating’ grammatical H tones must be anchored to a segmental sequence (so that a particular HD can be constructed ‘around’ them, cf. Chapter 6 §6.3.1.3), and compete for leftness with lexical Hs. Apparent domain overlap is reconsidered in Chapter 7 §7.7; apparent uniqueness violation there is argued to reflect limited unincorporation of a H sponsor, rather than violation of discrete feature sequencing (linear uniqueness).
Tableau 2 (41) presents a way of evaluating the fusion seen in (27-30) above, using the small set of constraints already motivated in Chapter 4 (MAX-H, BA-Lf), and above (*AS).

### Tableau 2: Fusion of two adjacent HDs

$kú$-sébétísisa, ‘to help use’

<table>
<thead>
<tr>
<th></th>
<th>Max-H</th>
<th>*AS</th>
<th>BA-Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [kú-]-sébétísisa</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [kú]-[sébétísisa</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) ku-[sébétísisa</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(d) [kú]-sétísisa</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

- (41b) is inferior to (a) by its adjacent edges (here: sponsors); (c) and (d) are solutions to sponsor adjacency in other Bantu languages—such as Makua, cf. C&K (1998)—but not in Phuthi.

There is a significant question, however, whether the edges $[\ldots]_y$ of the fused domain in the optimal (41a) candidate are interpretable: they violate the basic assumptions of edgemates in domain construction of any sort. We must consider a further candidate (42a), where BA-Lf and BA-Rt are satisfied (in the ‘pre-WSA-Rt’ form), although non-locally (that is, minimally misaligned); BA-Rt is, of course, overridden in (42b), where WSA-Rt is at work. (42a) is a hypothetical ‘intermediate’ form (used here purely for expository convenience), not a true surface form.

### Misaligned basic alignment

<table>
<thead>
<tr>
<th></th>
<th>BA-Lf</th>
<th>BA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [k ú , s é y ] , b é t í s í sa</td>
<td>BA-Lf is okay for $kú$-, but misaligned for -sé-;</td>
<td>BA-Rt is misaligned for $kú$-, okay for -sé-;</td>
</tr>
<tr>
<td>b. [k ú , s é b é tí ] ,siisa</td>
<td>BA-Lf is okay for $kú$-, but misaligned for -sé-;</td>
<td>BA-Rt is misaligned for $kú$-, and realigned for both HDs to the penult left edge.</td>
</tr>
</tbody>
</table>

---

23 I intentionally select a stem longer than two syllables for evaluation here because the 2-σ stem would have fusion blocked at the antepenult-penult boundary (as I will argue in §5.5 below), signalled by a downstep cue: $[kú]-[bóó]na ‘to see’. That does not generally happen with the datum here: *[kú]-[sébétísisa ‘to work intensively’ as implied in (41b). (On a few occasions I have recorded such stem-initial downstep; this may be a locus of language change).

24 I regard it as a basic limitation on GEN that it cannot produce forms that contain uninterpretable domain structure (e.g. through unpaired domain edges, cf. further discussion on the incoherence of overlapping HD structures in Chapter 7 §7.5.1, §7.7.1-§7.7.2).
Sponsors *ku-* and *se-* each project basic domains as \[[x, \sigma]_x\] and \[[\sigma, se]_y\], that is, each ‘visible’ Lf and Rt edge is projected twice: once by each sponsor (one of the two projections in each case being misaligned by a syllable). In the case of the second HD, the H sponsor would then be extended rightwards ‘later’ (that is, by a higher ranked constraint), to satisfy the WSA requirements; but this is not immediately relevant here. What is relevant is that the minimally misaligned HD edge in each case coincides with the properly aligned other edge of the other HD. This allows parsing to be rescued for both sponsors, through ‘perfect fusion’ or ‘perfect overlap’.

The non-local alignment of the HD edges in (42) seems at first uninterpretable: it violates a basic tenet of ODT that domains parsed by the same feature cannot overlap one another (cf. discussion on *OVERLAP in Chapter 7 §7.5.1, also §7.7.1-§7.7.2). But if the output structure that leasts offends principles of parsing and alignment requires the (perfect) coextensiveness of two HD structures, then the grammar can tolerate thus this structural ‘masking’—we might call it structural coextension (without inflicting unincorporation, cf. §7.7.1)—while continuing to disallow any partial overlap of structures generated by adjacent feature tokens.

5.2.3. *ADJACENT_EDGES vs. *ADJACENT_Sponsors

We turn then to the second issue: considering whether *AS is really needed as an independent constraint in Phuthi. There are two problems. First, *AS and *AE address distinct output configurations (43), but seek to articulate the same surface desideratum: H domains do not like to be adjacent.

(43) Resolving\(^{25}\) illicit OCP configurations

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Bad Configuration</th>
<th>Good Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *Adjacent_Edges</td>
<td>[[\sigma, \sigma]] vs.</td>
<td>[[\sigma, \sigma]]</td>
</tr>
<tr>
<td>b. *Adjacent_Sponsors</td>
<td>[[\sigma, \sigma]] vs.</td>
<td>[[\sigma, \sigma]]</td>
</tr>
</tbody>
</table>

The well-formed configuration response in (43a) amounts to keeping the two HDs in situ, and violating HD-Min, whereas the response in (43b) involves collapsing the inter-sponsor edges to achieve a single HD.

\(^{25}\) It is not clear that the optimal output configuration in (43b) really resolves sponsor adjacency, contrary to the *ADJACENT_Sponsors constraint name. See additional comment on this misnomer below item (45).
The constraints are thus asymmetrical in the nature of material they address: *AE addresses potential edge-adjacency, and prefers to override a scope constraint (HD-MIN) that would result in two HD edges being adjacent; *AS, however, addresses an existing edge violation that is inherent in the adjacency of the H sponsors in the UR. I will suggest that we can overcome both of these violations with the same constraint, *ADJACENT_EDGES.

Reexamining the output candidates in (43) above, that is, the full set of possible resolutions of adjacent H sponsors, we have the set of possible outputs in Tableau 3 (44), with a morphological configuration (H infinitive prefix) + (H stem). This is the first time that we are examining such 2-σ H stems; the unique surface configuration is where there is a downstep between prefix (antepenult) and stem-initial syllable (heavy penult). This configuration is further examined later in this chapter §5.5.

(44) **Tableau 3:** Possible responses to σ σ adjacency

<table>
<thead>
<tr>
<th>/ ku- + -bon-a /</th>
<th>Adjacent sponsors?</th>
<th>Number of HDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [kú-bóó]na</td>
<td>yes</td>
<td>1</td>
</tr>
<tr>
<td>(b) [kú]-[bóó]na</td>
<td>yes</td>
<td>2</td>
</tr>
<tr>
<td>(c) ku-[bóó]na</td>
<td>no</td>
<td>1</td>
</tr>
<tr>
<td>(d) [kú]-boona</td>
<td>no</td>
<td>1</td>
</tr>
</tbody>
</table>

The sponsors in (c) and (d) which fail to parse a basic HD can no longer have any encoding as sponsors; sponsor deletion in this case is actual (45); *ADJACENT_SPONSORS is properly satisfied.

(45) **Sponsor adjacency resolved through H-deletion**

(c) ku-[bóó]na (= 44c)
(d) [kú]-boona (= 44d)

We can see from (44-45) that it is not clear what satisfaction of *ADJACENT_SPONSORS means, given that in both suboptimal (44a), and in optimal (43b), the two sponsors are still both contributing to the construction of the (single?) HD; that is, the sponsors remain adjacent, even though they each parse a HD with one misaligned edge. *ADJACENT_EDGES is, thus, a misnomer in the case of (44a,b); only if (44c,d) is the output would the constraint so-named be satisfied.
The two responses in (45) represent what occurs in Makua (Cheng and Kisseberth 1979-1981; Cassimjee 1998:21-23) and in Shona (Myers 1994:1-2ff., 1997, 1998:242), for example, where one of two adjacent sponsors must have all trace of sponsorhood (and H-hood) obliterated, under certain conditions (Cassimjee 1995, 1998; C&K 1998). But since this is not the situation in Phuthi, as demonstrated in §5.1 and the present section (§5.2), then (44a) or (44b) must hold.

Thus I propose—contra Cassimjee (1995, 1998) and C&K (1998)—to achieve both OCP responses with *ADJACENT_EDGES alone. If *AE can resolve the fusion data and the preceding anti-minimality (no edge sharing) data, this would represent a reduction in the number of OCP constraints previously argued as necessary in ODT.

Substituting *AS with *AE in the evaluations in (46), the solution which involves the smallest number of constraint evaluations overrides BA-Lf (and Incorporate), but preserves Max-H. Tableau 2 can thus be reconstituted as Tableau 4, accounting for both sets of OCP data: fusion (47a-d), vs. non-fusion due to the conjoint ranking at the antepenult-penult stem boundary (47e-h), vs. blocking of minimality (47i-l,m-p). The established rankings are in (46).

(46) Rankings for OCP
a. Max-H >> *AE replacing (40b)
b. *AE >> HD-Min from §5.1
c. *AE >> BA-Lf replacing (40a)
d. BA-Lf >> NonFin Chapter 4, constraint set 2 (88)
e. NonFin >> HD-Min Chapter 4 §4.2.1.2 (80)
f. BA-Lf >> HD-Min by transitivity
g. (AvoidProm_&_CrispStem) >> HD-Min Chapter 4 §4.3.3, constraint set 3 (116)
h. (AvoidProm_&_CrispStem) >> *AE to be demonstrated in (47f)

(47) Tableau 4: *ADJACENT_EDGES: fusion; blocking of minimality
ku-sébétsiisa, ‘to help use’

<table>
<thead>
<tr>
<th>/ ku- + -sébet-is-is-a /</th>
<th>Max-H</th>
<th>AvoidProm/ CrispStem</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [s]kú-sébétsísiisa</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [.kú].-[-sébétsísiisa</td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) ku-[-sébétsísiisa</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [.kú]-sébetisiisa</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**kú-'bóóna, ‘to see’**

<table>
<thead>
<tr>
<th>/ ku- + -bon-a /</th>
<th>Max-H</th>
<th>AvoidProm/ CrispStem</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e) [kú]-[bóó]na</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(f) [ʃ.kú-bóó]ɔʃna</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(g) [kú]-boona</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) ku-[bóó]na</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**bá-ya-sébétisiisa, ‘they help use’**

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -sebet-is-is-a /</th>
<th>Max-H</th>
<th>AvoidProm/ CrispStem</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) [bá]-ya-[sébét]ɔsiisa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,</td>
</tr>
<tr>
<td>(j) [ʃ.bá-ʃá-sébét]ɔʃsiisa</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) [bá-ʃá]-[sébét]ɔsiisa</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) [bá-ʃá]-sebetisiisa</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**bá-ya-bóóna, ‘they see’**

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -bon-a /</th>
<th>Max-H</th>
<th>AvoidProm/ CrispStem</th>
<th>*AE</th>
<th>BA-Lf</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(m) [bá]-ya-[bóó]na</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(n) [bá-ʃá]-[bóó]na</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td>0,</td>
</tr>
<tr>
<td>(o) [bá-ʃá-bóó]na</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(p) [bá-ʃá]-boona</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- In (a-d) where adjacent HDs are fused, Max-H and *AE are critical;
- (e-h) should behave the same, except that here the conjoint constraint (AvoidProm_ & CrispStem) is critical;
- in (i-l), Max-H, *AE and BA-Lf are all crucial.

The conclusion of this section is that: (a) *ADJACENT_SPONSORS is a misnomer, since the surface pattern must tolerate adjacent sponsors; (b) *ADJACENT_EDGES can account for both (i) non-extending HDs (the OCP blocking effect on ‘spread’), and (ii) fused HDs (OCP effect on adjacent H sponsors).

This is not to say that genuine instances of *AS may not be motivated elsewhere (such as in Makua, as mentioned). But the evidence from Phuthi supports *AE alone; all the data in (27-30) can be adequately accounted for with just *AE.

26 In addition, *AE has a functional basis in contrast maintenance (recoverability), whereas...
5. 2. 4. Constraint Summary

I summarise the new rankings (48), and the entire constraint set up to this point (49), with the dominance relations visually sketched in (50).

(48) Constraint Set, version 7: new rankings
a. *AE >> BA-Lf from (46c)
b. Max-H >> *AE from (46a)
c. therefore: Max-H >> *AE >> BA-Lf >> NonFin >> HD-Min
d. (AvoidProm&CrispStem) >> HD-Min Chapter 4 §4.3.3, constraint set 3 (116)
e. (AvoidProm&CrispStem) >> *AE from (47f)

(49) Total constraint ranking (partial): version 7
- H-extension rankings
  Max-H, BA-Lf >> NonFin >> HD-Min >> AvoidProm >> WSA-Rt >> BA-Rt
- Expression rankings
  Express_H >> Dep-H >> almost everything
- Morphology / H-extension rankings
  (AvoidProm&CrispStem) >> HD-Min >> WSA-Rt >> CrispStem
- Reduplication rankings
  *H-in-Wap >> PU_RED/Base >> Max-H >> HD-Min >> AvoidProm
- Phrase final // medial rankings
  PU-Lex(H)>> everything
- OCP rankings
  Max-H >> (AvoidProm_&_CrispStem) >> *AE >> BA-Lf >> NonFin >> HD-Min

*AS, which we have now dispatched with, is not so obviously motivated.
Constraint rankings, version 7: dominance orderings

*H*-in-Wap

| PU_RED/Base
| Max-H
| AvoidProm&CrispStem
| *AE
| Ba-Lf
| Non-Fin
| HD-Min
| AvoidProm

WSA-Rt    CrispStem
| BA-Rt

*EXPRESS_H* does not really fit into this constraint set, since it is simply undominated thus far in its automatic implementation of all material inside a feature domain (here: inside a HD); it is only in Chapter 7 that it takes on a crucial role (split into two *EXPRESS* constraints, and then also dominated by various other *EXPRESS* conditions).

*MAX-H* and *BA-Lf* are now ranked with respect to one another, in the light of the newly demonstrated relationship with *AE*. Remarkably, the entire set of constraints thus far remains in an unambiguous dominance hierarchy.
5.3. Penult Shapes: Fall vs. Level High

We have seen in preceding sections of Chapter 4 that penult syllables are phonologically salient in a number of ways (51a-d); further characteristics (51e-g) will be demonstrated in the discussion of downstep (§5.5) and in successive sections (§5.6 and Chapter 7 §7.2).

(51) Phrase-penult characteristics
a. the penult is heavy (µµ): the head of a right-aligned binary trochaic WAP foot (§4.1.4.6);
b. the penult resists incorporation into the default right-extending WSA-R of H (§4.1);
c. the penult resists being the target of HD-M\N, in local conjunction with the stem boundary (§4.3);
d. the penult\(^{27}\) will not accept a copied reduplicate sponsor (§4.4.2);
e. the penult (in conjunction with stem boundary) is the location of positional downstep (§5.5.3)
f. the penult can be level high (µú) or falling (µµ)—the only syllable position to manifest contrasting PR forms of the same tone (§5.3: below).
g. the penult will allow incorporation of just its first mora into a HD to satisfy depressor and HD head requirements (depressor shift: §7.3.1.1);
h. the penult\(^{28}\) is the only prosodic position that will successfully parse both a HD and a LD, that is, both H tone and depression (§7.2), by phasing the two feature domains as a rising LH tone.

I deal first with the penult tone shape in (51f). As noted in Chapter 4 §4.1, I have assumed for Chapters 4 and 5 that the syllable is the TBU. However, there are cases where there is a high vs. fall distinction manifested across the long phrasal penult\(^{29}\). The general pattern (for the non-depression grammar) is given in (52).

\(^{27}\) Neither will the ultima accept such a copied reduplicate sponsor.

\(^{28}\) Any other prosodic position in a word that is forced by a depression block configuration (§7.4.2, §7.4.3) to parse both H and L in the same syllable can also accommodate both domains, but they overlap fully as \[\{\sigma\}\], that is, the phasing of LH is rendered phonetically, not phonologically.

\(^{29}\) I do not regard the falling tone of (51f) as a separate tone type, contra earlier scholars working in the South African tradition, including Lanham (1960) and Westphal, Notshweleka and Tindleni (1967), who regard the penult falling tone in the closely related Nguni language, Xhosa, as a distinct tone type (‘toneme’ in earlier structuralist conception): ‘fall’, or ‘F’. These and other authors working on Nguni have considered Xhosa to be a three-tone language, given that it has a three-way tone division on long penults. Since this tone contour occurs only on the penult, it would have a very suspicious distribution, were it truly to reflect a third tone type. The three-tone analysis would be true only in a narrow, surface sense. Rather, we will see in the following sections that the falling penult is always contextually predictable (obligatorily followed by a H ultima). The falling penult in Xhosa can occur before a toneless ultima, but this occurs in
Penult H distribution

- a phrasal penult specified as phonologically H (that is, inside a HD) where the ultima is toneless (not in a HD) is realised as level high (µ@µ@);
- a phrasal penult specified as H, immediately followed by a H ultima, is realised as falling (or: high-low) (µ@µ$).

This pattern—uniform across all word classes in Phuthi—is strictly a property of the phrase edge. In other words, if the verb is not at the phrase right-edge, the pattern fails, even if the verb form is long (phrasal). (52a) is exemplified by (53); (52b) is exemplified by (54).

Phrase-final word-penults are level H, preceding a toneless ultima

- [bá-ya]-ta they come *bá-ya-ta, etc.
- [bá-ya]-nya they excrete
- [ku]-ta to come
- [ku]-nya to excrete
- [ébá]-tfu people
- [éma]-jwe stones

Phrase-final word-penults are falling H, preceding a H ultima

- [ku]-phá to give *ku-phá, etc.
- [ku]-khá to draw (water)
- [bá]-phá they gave
- [bá]-tá they came

This contrasts with the same data in phrase-medial position in (56a-d), where the ultima anti-expression is lifted, and thus the fused ultima is in no danger of being underexpressed.
Examples (54a-h) demonstrate that the number of H sponsors (that is, one or two) in the final -σ sequence is irrelevant: it can be independently demonstrated from lexical verb roots that (54e-f) contain a single H sponsor (HD-MIN for deverbative nouns overrides even NONFINALITY, cf. §5.6.2); in addition, we will see in Chapter 6 §6.3 that the grammatical pattern of the imperatives in (54g-h) consists of a single H specification that stretches from σ2 position to the ultima.

When the penult in words such as (53a-f) and (54a-h) is no longer the phrase-penult, and therefore no longer takes the extra mora assigned to phrase-penult prominence (Chapter 4 §4.1.4.6), the penult H is implemented in all cases as level, non-falling H, with no evidence of the level H / falling H distinction. (53) and (54) are repeated in medial syntactic environment as (55) and (56), respectively.

(55) Medial word-penults are short, level H preceding a toneless ultima
a. [bá-yá]-ta... they come...36
b. [bá-yá]-nya... they excrete...
c. [kú]-ta... to come...
d. [kú]-nya... to excrete...
e. [ébá]-tfu... people...
f. [émál]-jwe... to draw (water)

(56) Medial word-penults are short, and level H preceding a H ultima
a. [kú-phá]... to give...37
b. [kú-khá]... to draw (water)

---

34 The tone patterns in deverbative noun stems such as these (54e-f) will be treated only later in §5.6, where it will be shown that the constraint so far only applied to verbs, HD-MIN, will extend a σ1 H tone in a deverbative High stem onto the ultima (σ2).

35 For the sake of analytic consistency, I continue to assume that all adjacent HDs not in the antepenult-penult position fuse into a single HD.

36 Surprising as it may be to see the present indicative long form with -ya- being used in a phrase-medial fashion, I recall from Chapter 4 §4.4 that this may indeed occur (under emphatic focus), followed by adverbial complements such as kakgúulu ‘a lot’, in the Mpapa dialect.

37 The penult and ultima are fused in (56a-d), in light of the fusion discussion above in §5.2.
c. [bá-phá]... they gave
d. [bá-tá]... they came
e. ...m-[músó]... government\textsuperscript{38} cf. -búúsá, ‘rule’
f. ...ti-[bónó]... views cf. -bóóna, ‘see’
g. li[mísá]... help cultivate...!
h. li[bátísáná]... delay one another...!

The two figures below indicate the contrast between the way the penult the -ó- is realised:
as -ú- phrase-finally (Fig. 2) [example 54g], and as -ú- phrase-medially (Fig 3) [example 56g].

Figure 2
Falling-High pitch trace on short penult, preceding H ultima
(toneless stem form, imperative paradigm): \textit{limísá} ‘help cultivate!’

\textsuperscript{38} The H tone pattern in nouns (56e-f) is different than expected; cf. footnote 34 for (54e-f).
Before analysing this penult contrast phenomenon as revealed in (53-56) above, it may be worth asking whether this falls under the aegis of phonology proper, or is merely a phonetic phenomenon. Along with most phonologists, I observe that the phonetics / phonology boundary is not clear at all. Crassly, the phonetics is considered to handle all ‘automatic’ phenomena, all matters of fine articulatory (and perceptual) detail, whereas phonology is reserved for the encoding of contrast and for the treating of contextually predictable phenomena.

In the pitch literature, phonology concerns itself with the set of contrasting pitch shapes—tones—and their distribution in lexically and morphologically interesting ways. This includes non-underlying contrasts which emerge in the postlexical (structure-filling) phonology,
as the present high/fall distinction is argued to do below, based on the fact that penult lengthening (that is, the assignment of prominence) is phrasal (postlexical).

Since Pierrehumbert (1980), it has been clear that there is an authentic field of intonational phonology, that is, the study of the linguistic use of pitch at the utterance level, as opposed to the remaining part of the study of pitch, which deals with its paralinguistic properties (Ladd 1996). While the present work is not a study of intonation, it will become clear in the present section (and also in Chapter 6 to follow) that some intonation principles emerging from the last two decades of work are relevant to understanding the postlexical properties of phonological tone in Phuthi, such as final lowering (§5.3.1) and declination (§5.5). Phuthi displays a range of intonation patterns, properly part of the intonational phonology and phonetics, as they are phrasal in their manifest, that is, utterance-linked, rather than lexically determined. I consider, therefore, that the high/fall tone contrast on the penult remains a phonological issue, in this case, part of the intonation phonology.

An initial observation concerning penult/ultima contrast is offered (§5.3.1). A single explanatory approach is then offered to account for these contrasting penult shapes, where declination of intonation across the penult-ultima is properly aligned or minimally misaligned to the right word-edge (§5.3.2).

5.3.1. Minimal Penult / Ultima Contrast

An initial observation is that the penult is distinct from the ultima along two parameters, both of which must be maintained in upholding this contrast (57).

(57) Penult / ultima parameters of distinctness
   a. duration: penult is long (µµ); ultima is short (µ).
   b. pitch: a high penult is pitchwise phonetically always distinct from a high ultima.

39 The phrasal phonology is never independent of the lexical phonology, as the present section will show: the right-edge downtrend requirement (or ‘boundary L tone’) is constrained in its surface manifestation by the location of lexical H tones. Cf. discussion of boundary L in footnote 42, and in §5.3.2.1 below (59).

40 The degree to which a domain-based theory of phonology such as ODT can handle penult and ultima tone (vs. pitch qua phonetic pitch) will be tested with the consideration of mandatory anti-expression (underexpression) of an ultima H in §5.4.1 (99, 104), §5.4.2.6, and the downstepping of a H ultima, in §5.5.6.
Phrase—finally the duration of these two syllables is always distinct. And when the penult and ultima have distinct tonal specifications (either H or $\emptyset$), the second parameter (pitch) is unambiguously upheld. But when both penult and ultima are specified as H, some cue for their tonal distinctness needs encoding to satisfy (57b); the penult, since it has greater duration over which to express its tonal shape (while remaining faithful to its H specification) can allow the second mora to fall to low, and so still maintain its syllable pitch shape distinct from the short, H ultima. The full range of penult-ultima shape possibilities is given in (58).

(58)  

<table>
<thead>
<tr>
<th>Tonal distinctness of penult and ultima</th>
<th>penult</th>
<th>ultima</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. distinct specifications</td>
<td>H</td>
<td>$\emptyset$</td>
</tr>
<tr>
<td>b. distinct specifications</td>
<td>$\emptyset$</td>
<td>H</td>
</tr>
<tr>
<td>c. same specifications kept distinct by</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>d. same specifications</td>
<td>$\emptyset$</td>
<td>$\emptyset$</td>
</tr>
</tbody>
</table>

But the structuralist observation of these contrasts is insufficient to explain why the penult should choose to fall when the ultima is H. The explanation is taken up in §5.3.2.

5. 3. 2. MISALIGNED FINAL LOWERING

This approach to categorising the high/fall tone distribution across long penults in Phuthi has its departure in three observations (after a suggestion by Kisseberth, p.c.): (a) the right edge of every Phuthi phrase declines from H to tonelessness (low); (b) this final lowering (widespread in Bantu) targets the right word-edge: at least the ultima must be low (e.g. in words where HD-MIN has extended to the penult), but optimally the penult should be low too (as in most lexical phrases where a widescope HD stretches only as far as the ante penult); (c) since a phrase that ends in a -$\sigma \sigma$ sequence has no room at its right edge for the usual phrase-ultimate downtrend to tonelessness—neither across the penult-ultima sequence, nor on the ultima alone—the obligatory lowering is minimally misaligned leftwards into the penult, where there is room for it to manifest itself.
Such an approach raises to a formal requirement the observation that phrase ends lower; this will be seen to offer an explanation as to why a H penult preceding a H ultima should specifically take on a falling contour. This requirement for a tone language such as Phuthi mimics the downtrend intonation pattern in languages such as English, which also have phrase-end downtrends.

5.3.2.1. Downtrends

There are three distinct types of downtrend phenomena in Phuthi, much as in related Bantu languages, and also as in certain unrelated languages such as Japanese. Detailed work on Japanese by Pierrehumbert & Beckman (1988) has demonstrated that there are three distinct phenomena with distinct sets of pitch properties (59).

(59) Japanese downtrend pitch phenomena
a. declination (downdrift): ‘a gradual backdrop reduction in the pitch reference for tone realization that is blind to the phonological sequence of accents or tones’; also what Higurashi (1983) means by ‘(phonetic) tonal fade’ (Pierrehumbert & Beckman 1988:11);
b. catathesis (downstep): ‘a phonological process that reduces the pitch values of tones after accents’, that is, catathesis is ‘phonologically triggered by the H L sequence rather than being a backdrop phonetic process that unfolds gradually in time without regard to the phonological sequence of tones’ (Pierrehumbert & Beckman 1988:11);
c. final lowering: the significant downplacement of pitch across an utterance-final syllable (even a sequence of final syllables), irrespective of phonological tone value.

Even without detailed phonetic investigation, it is quite clear from my own initial instrumental work that Phuthi displays evidence for each of these three intonational downtrend phenomena. The question always remains to what extent the downtrend witnessed is a phonetic or phonological feature. Downstep (catathesis) has long been accorded status in the phonology (Pulleyblank 1988), given its unpredictable and categorial nature. Downdrift and final lowering have typically been regarded as phonetic phenomena.

What I argue for in Phuthi is that final lowering has been phonologised: the phonetic preference for declination at the phrase right-edge has been elevated to the status of a phonological requirement in the language, and—crucially—is minimally misalignable into the penult.
The phenomenon of final boundary tones occurs in the phonology of many Bantu languages; such a tone is low (or non-high), that is, an automatically lowered or downstepped tone in final position, particularly in non-interrogative phrases, e.g. Kikuyu (Clements & Ford 1981), Ganda (Hyman 1989), Pare (Herman 1996). Herman (1996), in particular, offers a detailed phonetic-phonological examination of final lowering. But in the literature it has not been argued that such a lowered tone is syntagmatically realignable away from the tonal phrase-edge; this is the line, however, I will pursue for Phuthi.

Up to this point in the discussion, the final phonological pitch-lowering at the prosodic right word-edge has not been explicitly characterised, but rather has fallen out naturally from the two anti-alignment constrainments which keep HDs off these two syllables: NONFINALITY and AVOIDPROM. Thus the ultima or penult-ultima is an important region derived for the absence of H.

While I will not have cause to discuss the nature of H targets in any detail, I uncontroversially assume that the active H specifications invoke H targets within a window of possible pitch realisation (Keating 1990), whereas unspecified toneless (low) syllables lack any such target: the pitch lowers in what appears to be a non-discrete contour across the non-H penult and ultima. This is consistent with the expected pitch contour invoked by interpolation across underspecified potential tone targets. I argue here, however, that final pitch lowering with a low pitch target is phonologically required. Phuthi phonology has ‘decided’ that this contour must be implemented, even if not at the phrase-edge.

At this stage in the analysis, the right edge of the prosodic pitch envelope can be explicitly encoded with the constraint ENDLOW\(^{41}\) (60).

\[\text{(60) } \text{ENDLOW}\]
\[
\text{EndLow (PWord, Rt)}
\]

The phonological tone at the right edge of a phonological phrase must be low.

ENDLOW achieves similar effects to NONFINALITY, although it tolerates marginal misalignment of that trough at the Rt edge. NONFIN, on the other hand, absolutely requires absence of any (extended or widescope-realigned) HD on the ultima; and if that is not possible

---

\(^{41}\) ‘Lower’ might be a more obvious name, but there is already more than one entity called Low (lexical tone class) or L (phonological tone, to follow in Chapter 7 §7.2ff.); and, in the general spirit of an OT framework, constraints are regarded as states, not processes.
(because the sponsor is on the ultima), then NonFin has nothing further to say. EndLow, however, enforces significant pitch lowering somewhere within the final WAP area (penult-ultima)\(^{42}\).

EndLow is at once a pitch-specific implementation of NonFin, rather than an area of phonological non-tone (an interpolation window), but is also only one of a set of possible pitch-related NonFin constraints, since a plausible set of pitch instructions includes the set of \{BeLower, BeRaised, BeLevel, EndLow, EndHigh\}.

An instruction such as EndLow appears to demand pitch change toward a particular Low intonation target (towards lower F\(_0\)). This area awaits detailed phonetic investigation for Phuthi (but see Herman (1996) on the phonetics of final lowering for the Bantu language, Pare).

Although we can recast the ranking established in Chapter 4 §4.1 with EndLow inserted next to NonFin (61), EndLow does not subsume (nor is it subsumed by) NonFin, since NonFin does not address pitch implementation directly, but rather the presence or absence of a HD on that ultima syllable. The distinction is clearest in the data above (54a-h) where a falling penult will satisfy a misaligned instantiation of EndLow, but not NonFin.

(61)  NonFin, EndLow >> HD-Min >> AvoidProm >> WSA-Rt

The following PWords (62a-e) satisfy EndLow.

(62)  Satisfactory EndLow

1-σ [ultima]
   a. si-ya bóóna we see
   b. si-ya-bóóna we show
   c. bá-yáá-ta they come

2-σ [penult+ultima]
   d. bá-yá-liima they cultivate
   e. si-ya-sébétiisa we use

\(^{42}\) EndLow could well be articulated as an Align constraint, e.g. Align\((PPhrase, Rt, LD, Rt)\), where LD is a Low domain. This is potentially confusing in the light of the lengthy discussion of L (depressed) domains triggered by breathy voicing and other grammatical requirements in Chapter 7. H alignment would need to be recast if the penult and ultima were considered to be, in fact, two LD syllables (or a LD foot) at the right phrase-edge. See above speculative discussion of a boundary L tone in §5.3.2.1 below (59).
If (62a-b) were realised instead as (63a-b), then \( \text{ENDLOW} \) would not be satisfied, either because the necessary final lowering is not within the two-syllable (penult-ultima) window of the WAP stress foot (there is no lowering at all in (63)), or because \( \text{ENDLOW} \) needs to apply to material \textit{after} the rightmost HD, or, more importantly, because \( \text{ENDLOW} \) is defined only over \textit{high} material proceeding to \textit{low(er)} material (and not vice versa). The hypothetical forms in (63) do not satisfy declination (\( \text{ENDLOW} \)) which is only \textit{minimally} misalignable.

\[
(63) \quad \text{Pre-penult (pre-HD) low syllables do not satisfy ENDLOW}
\]

\[
a. \quad *\text{si-ya-bóóná}
b. \quad *\text{si-ya-bóóníísá}
\]

In short 1-\( \sigma \) H stems (64), however, maybe \( \text{ENDLOW} \) is satisfied to some degree, because the penult does satisfy the pitch requirement of \( \text{ENDLOW} \), and is only minimally misaligned from the right phrase-edge, akin to the satisfaction of \( \text{EndLow} \) in \([\text{kúú}]-[\text{phá}]\) ‘to give’.

\[
(64) \quad \text{Short stems: ENDLOW is satisfied}
\]

\[
a. \quad \text{si-yaa-phá} \quad \text{we give...}
b. \quad ...\text{tii-tfó} \quad \text{things (post-negative)}
\]

Returning to the \(-\delta\delta\) final sequence under discussion in this section, we see that \( \text{ENDLOW} \) can be satisfied, but not on the ultima. I suggest that a constraint \( \text{EXPRESS}_H(\sigma) \) assures that at least \textit{some} part of every syllable inside a HD is expressed; but the fact that penults are long (bimoraic) lends them to be selected as the only syllable which can both partially express H-ness \textit{and} allow \( \text{ENDLOW} \) to hold, albeit in imperfectly edge-aligned lowering (65).

\[
(65) \quad \text{ENDLOW in ultima-reaching HDs}
\]

\[
a. \quad ...\text{ti-[bóónó]} \quad \text{views} \quad *...\text{ti-[bóóno]}
b. \quad [\text{kúú}]-[\text{phá}] \quad \text{to give} \quad *...[\text{kúú}-\text{pha}]
\]

Such words were seen to reaffirm the high ranking of BA-LF and MAX-H in Chapter 4 §4.1, over NONFIN (now over \( \text{ENDLOW} \)). Now \( \text{ENDLOW} \) cannot be satisfied at the expense of allowing a tone to be rising, neither on the penult nor the ultima. Hence a constraint such as
NoRise (*Rise) (67 below) is needed. In addition, a lowly ranked constraint such as *Fall (66 below) will apply to ban falling contours, to ensure that penults are level H in the absence of a H ultima (in which case EndLow is satisfied anyway).

5. 3. 2. 2. *Contour: *Fall, *Rise

I turn to examine the existence of constraints that ban contour tones in Phuthi. In the default case (but not where there is an EndLow requirement unsatisfied by a low ultima, and hence impacting the penult), the grammar does not tolerate a falling tone within a syllable (assuming that a falling tone is a phonologically [H∅] sequence), neither on the penult nor on the ultima. In other words, one which could only arise on a (bimoraic) penult syllable. We might call this NoFall (after Odden 1998:269-270), or *Fall (66).

(66) *

*Fall
*(H∅)σ
A sequence of H and toneless—i.e. high and low—cannot occur within a single syllable.

The counterpart of (66), but with much stronger empirical force universally, is (67).

(67) *

*Rise
*(∅H)σ
A sequence of toneless and H—i.e. low and high—cannot occur within a single syllable.

(67) is typologically more common than (66), and indicates a configuration thoroughly banned in the phonology of many Bantu languages, e.g. Tanzanian Yao (Odden 1998:274); Samia (Poletto 1998:347), Shambaa (C&K 1998:72).

Both constraints above are merely particular instantiations of a more general ban on any kind of tonal movement (tonal contour) within a syllable (68). Such a constraint, which accords with the tonal parameters of many Bantu languages, e.g. Sotho (field notes, 1997), where contour tones are never tolerated, has been proposed for Chinese by Duanmu (1990:14).
(68) The No Contour Principle
\[ \text{*X} \]
\[ \text{/\} [\alpha F] [-\alpha F] \]

(68) is rewritten in ODT terms as (69).

(69) \text{*Contour}
\[ \text{*([\alpha H], [-\alpha H])} \]
There can be no tonal contour within a syllable.

While the constraint is defended at length in Duanmu (1990, 1994), it is vigorously argued against by Bao (1999), on technical and empirical grounds. Nevertheless, it certainly reflects a generally attested tone constraint in Bantu—what C&K (1998:46) refer to as ‘decontouring effects’.

Separately, it has long been observed that LH is a far less frequently tolerated sequence on a single syllable in the tone inventories of the world (either as an underlying sequence, or as a postlexical effect) than is HL, suggesting an independent ranking \text{*RISE} >> \text{*FALL}. Phuthi disfavours both falling and rising tones. \text{*FALL} here can be seen to require a sequence of H moras on the long penult just as HD-MIN requires for a sequence of H syllables, that is, making at least two sequential units high (or keeping the sequence toneless), in other words, with the same tone specification on both units in the sequence.

Thus, a HD which extends to the penult—so far, only HD-MIN can achieve this—displays a level H penult, even though AVOIDPROM would appear to be better satisfied by a falling penult, where only the first mora of a long penult is H (if indeed AVOIDPROM measures mora violations). But since AVOIDPROM is violated by a level H tone when it is dominated by a higher constraint.

\text{In actual fact, both these *Contour constraints will be seen to be violable in PR outputs from the depression grammar in Chapter 7 §7.1-§ 7.2. *RISE is crucially overridden by MAX and EXPRESS constraints in Chapter 7 §7.2.5.1 so that both L and H can be expressed (phased) on a single penult syllable. But the observation made here is entirely correct for the non-depression grammar.}

\text{We will see otherwise in the depression grammar (Chapter 7): AVOIDPROM will be seen to be violated by its first mora alone being H, as a response to the clash of depression (that is, L tone) and H tone (§7.4.1), and by its second mora alone being H, as a response to the same L/H clash in §7.2.5, §7.4.2.2).}
(e.g. HD-MIN), *Fall must outrank AvoidProm (70a). HD-MIN, in turn, must outrank *Fall (70b), since the opposite solution to avoiding a falling penult—preventing the HD from even reach the first mora of the penult—cannot be employed. Finally, Express_H also outranks AvoidProm (70c), in that if a penult syllable is included in a HD, the entire syllable must express as H, not just the first mora. This interaction is illustrated in Tableau 5 (71), where the penult remains level high.

(70) Penult rankings
    a. *Fall >> AvoidProm
    b. HD-Min >> *Fall, AvoidProm
    c. Express_H >> AvoidProm

(71) Tableau 5: Level H penult
    bá-yáá-ta, ‘they come’

<table>
<thead>
<tr>
<th>/ ba- + -ya- + -t-a /</th>
<th>Express_H</th>
<th>HD-Min</th>
<th>*Fall</th>
<th>AvoidProm (µ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ (a) [bá-yáá]-ta</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(b) [bá-yá]a-ta</td>
<td></td>
<td>!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(c) [bá]-yaa-ta</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [bá-yáa]-ta</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Given that EndLow is satisfied with just a single lowered mora on the penult, and given that no tonal contour is usually tolerated at that site, Express needs to be unpacked into two distinct constraints (72-73): Express_H(σ), which ensures that every syllable inside a HD be H in at least some respect (that is, on at least one mora); and Express_H(µ), which addresses every individual mora in a HD, and is violable in the case of falling penults (which are seeking to satisfy EndLow).

(72) Express_H(σ)
    Express every syllable inside a HD as H (at least on some mora of that syllable).

(73) Express_H(µ)
    Express every mora inside a HD as H.
It will be clear for the penult high/fall data under consideration in this section (to be
exemplified in 76) that the \textit{EndLow} rankings in (74) hold, and therefore that the larger set of
expression and tone shape constraint rankings in (75) also hold.

\begin{enumerate}
\item \textbf{Penult realisation rankings}
  \begin{enumerate}
  \item \textit{EndLow} >> \textit{Express}_H (\mu) \quad \text{a mora inside a HD will fail to express, in order to satisfy \textit{EndLow}, e.g. on a long penult, preceding a H ultima}
  \item \textit{EndLow} >> \textit{*Fall} \quad \text{a falling tone can be created, in order to satisfy \textit{EndLow}}
  \item \textit{*Rise} >> \textit{EndLow} \quad \text{a rising penult tone *(\mu\mu)(\mu) cannot satisfy \textit{EndLow}}
  \item \textit{Express}_H (\sigma) >> \textit{EndLow} \quad \text{if the ultima is H, only one mora on the long penult need be low to satisfy \textit{EndLow} (not both).}
  \item \textit{Express}_H (\sigma) >> \textit{*Rise} \quad \text{better to have at least the second mora on a long penult H than no mora H at all (to be seen with rising moras on depressors parsed in situ on the penult, cf. Chapter 7 §7.2.}
  \end{enumerate}
\end{enumerate}

\begin{enumerate}
\item \textbf{\textit{EndLow} rankings}
  \begin{enumerate}
  \item \textit{Express}_H(\sigma) >> \textit{*Rise} >> \textit{EndLow} >> \textit{Express}_H(\mu), \textit{*Fall}
  \end{enumerate}
\end{enumerate}

There remains, however, a problem of violation measurement: how to distinguish
between a word which satisfies \textit{EndLow}, but in the penult—that is, fails to optimally lower
word-finally, but nevertheless does satisfy the constraint—versus a word where there is no final
lowering and the constraint is not satisfied at all. Both of these should take a single violation
asterisk, even though this clearly leads to the wrong results. Odden (1996)\footnote{Odden was writing on the Optimality List: optimal@ucsd.edu, November 21-22, 1996.} has raised the issue
of how to distinguish between \textit{Align} violations (where grammatical H tones misalign) and where
these tones fail to be parsed altogether. I resume this discussion in Chapter 6, with respect to the
parsing of a grammatical H. I do not resolve the issue here.

Thus, (76a) below satisfies \textit{EndLow} better than (76c), but from the single proposed
\textit{EndLow} constraint, it is not clear how to achieve this result; (76b) is included for completeness,
even though easily dismissed because of its prematurely falling penult; (76d) is the most
interesting of all, since it could be analysed in one of two ways: either \textit{EndLow} fails altogether,
since ‘proper’ lowering should always be to the right of the last HD in a word, i.e. from some
high position (if such a high position exists) to some lower one; or, the toneless penult could in
some sense satisfy \textit{EndLow} purely by virtue of its pre-final lowness (as suggested above). I will
assume this second interpretation. The already motivated $\text{EXPRESS}_H(\sigma)$ will enforce the realisation of the ultima\textsuperscript{46}.

(76) **Measuring misalignment of $\text{ENDLOW}$ satisfaction vs. failure to instantiate $\text{ENDLOW}$**

a. $\ldots $-ti-$[b\ddot{\text{o}}\text{n}\ddot{\text{o}}]$ acceptable misalignment of $\text{ENDLOW}$: $\text{EXPRESS}_H(\sigma) \gg \text{ENDLOW} \gg *\text{Fall}$

b. $*\text{si}-\text{ya}-[b\ddot{\text{O}}\text{n}\ddot{\text{i}}] \text{sa}$ unacceptable misalignment of $\text{ENDLOW}$: $*\text{Fall}$ is violated

c. $*\ldots \text{ti-}[b\ddot{\text{o}}\ddot{\text{n}}\ddot{\text{o}}]$ unacceptable failure of $\text{ENDLOW}$

d. $\text{si-ya}-[\text{ph} \ddot{\text{a}}]$ acceptable $\text{ENDLOW}$ misalignment

Without unpacking the entire issue of how constraint violations are or should be assessed in OT, a temporary solution to the partial / total violation assessment (in (a) and (c))—following an analogous suggestion of Odden with reference to $\text{ALIGN}$ (optimal@ucsd.edu, 21 November 1996)—is to unpack $\text{ENDLOW}$ into two constraints: an inviolable constraint (77) which is categorial, and a violable constraint gradiently aligning $\text{ENDLOW}$ to the right edge of a PWord (78).

(77) **$\text{ENDLOW}$**

Be phonologically low in a Prosodic Word.

(78) **$\text{ALIGN}_{\text{ENDLOW}} \text{Rt}$**

$\text{Align} \ (\text{PWord}, \text{Rt}, \text{ENDLOW}, \text{Rt})$

Align the $\text{ENDLOW}$ low target at the Rt edge of a PWord.

The misaligned $\text{ENDLOW}$ for 2-$\sigma$ and 1-$\sigma$ H-bearing stems is charted in (79a-f,g-i). An instantiation constraint such as $\text{ENDLOW}$ necessarily always dominates the alignment of the satisfaction locus for the same constraint, hence $\text{ENDLOW} \gg \text{ALIGN}_{\text{ENDLOW}} \text{Rt}$.

\textsuperscript{46} There is an additional wrinkle here: the ultima in $\ldots $-ti-$[b\ddot{\text{o}}\text{n}\ddot{\text{o}}]$ is downstepped compared to the penult, as the left edges of all HDs are (this will be examined in some detail in §5.5). The issues of how to deal with domain constituency and downstep will lead us in §5.5.6 to conclude that the output candidate respects a further overlay of postlexical Register Domain structure, which forces a pitch trough on the second mora of the phrasal penult.

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Tableau 6: EndLow evaluation
...ti-bóóno, ‘views’

<table>
<thead>
<tr>
<th>/...ti- + -bóóno/</th>
<th>BA-Lf</th>
<th>Express H (σ)</th>
<th>*Rise</th>
<th>EndLow</th>
<th>Align EndLow, Rt</th>
<th>Express H (μ)</th>
<th>*Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) ...ti-[bóóno]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) ...ti-[bóóno]</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) ...ti-[bóóno]</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) ...[tí]-bóóno</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) ...ti-[bóóno]</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) ...ti-[boóno]</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

si-yaa-phá, ‘we give’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -phá/</th>
<th>BA-Lf</th>
<th>Express H (σ)</th>
<th>*Rise</th>
<th>EndLow</th>
<th>Align EndLow, Rt</th>
<th>Express H (μ)</th>
<th>*Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) si-yaa-[phá]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) si-yaa-[phá]</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) si-[yáá]-phá</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- (79a) satisfies EndLow, while minimally violating the right-align requirement on this constraint;
- (79b) has an illicit rising tone on the penult;
- (79c) fundamentally does not parse either penult mora H, and it misaligns too far (to the prefix), and violates a requirement that no output shapes contain a rising tone (LH sequence in many two-tone analyses, where toneless is articulated as L);
- (79c-d) are nearly identical, except that EndLow remains completely unparsed in (d), whereas (c) satisfies it, but the misalignment is too great to be optimal;
- (79e-f) fail to express at least one mora on every syllable inside a HD: the ultima (e) or the penult (f);
- (79g) satisfies EndLow, albeit misaligned;
- (79h) fails to express its HD at all;
- (79i) satisfies EndLow perfectly, but at the expense of failing to parse its sponsor in situ.

A possible direction of extension for this EndLow account would be to include the toneless stems, which even in the absence of any H-specification do entail a pitch declination over the penult and ultima (and by definition have a low syllable at the phrase right-edge). This accords with Herman’s (1996) data from Pare: the last syllable(s) in the phrase-final word all lower significantly, irrespective of the phonological tone category on these lowering syllables.
The fact that the EndLow contour begins at the penult might indicate that EndLow optimally targets the last two syllables in a word, that is, the same domain as the WAP foot. AvoidProm could be brought into this account, as a parameterised EndLow constraint that targets the prominence head, that is, the heavy penult syllable. I leave such an all-encompassing account until a more detailed phonetic examination of the lowered final pitch contour is available.

5.3.3. Penult Contrast: Concluding

The account offered above elevates domain-edge pitch lowering to a phonological requirement (utilising the EndLow constraint), building on well-attested intonational requirements in Bantu languages. It adequately explains the full range of falling-H right-edge data in (54) above, recapitulated in (76).

5.3.4. Constraint Summary

I summarise the new rankings (80), and the entire constraint set up to this point (81), with the dominance relations visually sketched in (82).

(80) Constraint Set, version 8: new rankings
  a. *Fall >> AvoidProm from (70a)
  b. HD-Min >> *Fall from (70b)
  c. EndLow >> Express_H(µ) from (74a)
  d. EndLow >> *Fall from (74b)
  e. Express_H(σ) >> Express_H(µ) by transitivity, from (75)
  f. *Rise >> Express_H(µ) by transitivity
  g. *Rise >> Express_H(µ), *Fall from (75)
  h. Express_H(σ) >> *Rise >> EndLow, Align_EndLow >> Express_H(µ) >> HD-Min >> *Fall >> AvoidProm

(81) Total constraint summary

- H-extension rankings
  Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt

- Expression rankings
  Express_H >> Dep-H >> almost everything

- Morphology / H-extension rankings
  (AvoidProm&CrispStem) >> HD-Min >> WSA-Rt >> CrispStem
• *Reduplication rankings*
  
  
  **Phrase final // medial rankings**
  
  PU-Lex(H)>> everything

• *OCP rankings*
  
  Max-H >> (AvoidProm&CrispStem) >> *AE >> BA-Lf >> NonFin >> HD-Min

• *Penult shapes rankings*

  Express_H(σ) >> *Rise >> EndLow, Align_EndLow >> Express_H(μ) >> HD-Min >> *Fall >> AvoidProm

(82) **Constraint rankings, version 8: dominance orderings**

\[
\begin{array}{c}
\text{*H-in-Wap} \\
| \text{Express_H(σ)} \\
\text{PU_RED/Base} \\
| \text{*Rise} \\
\text{Max-H} \\
| \text{EndLow, Align_EndLow} \\
\text{AvoidProm_&_CrispStem} \\
| \text{Express_H(μ)} \\
\text{*AE} \\
| \text{Ba-Lf} \\
| \text{Non-Fin} \\
| \text{HD-Min} \\
| \text{*Fall} \\
\text{AvoidProm} \\
| \text{CrispStem} \\
\text{WSA-Rt} \\
| \text{BA-Rt}
\end{array}
\]

For the first time, EXPRESS is now explicitly linked to the whole body of constraints, via HD-MIN. The domain parsing and domain expression constraints are now interwoven.
5. 4. Object Prefixes: Anti-Expression

Object Prefix (OP) morphology was introduced in Chapter 2 §2.2.4.2. The central observations are recapitulated in (83).

(83) Object Prefix characteristics
a. every noun class has a corresponding one-syllable OP which replaces the relevant noun pronominally or appositionally;
b. only one OP can be inserted between SP and verb stem.

In this section, we will observe the patterns in (84).

(84) Object Prefix tonal patterns
a. every OP is tonally H in the UR.
b. a H sponsored by the OP morpheme behaves as other lexical Hs do, extending its scope to the antepenult;
c. an OP H fuses with a stem H;
d. OP sponsors, before both H and toneless stems, try themselves to appear low (toneless) on the surface, succeeding in all but 1-σ and 2-σ stems (H and toneless surface forms of 2-σ stems contrast);
e. in certain other paradigms, OPs all appear surface-H (overriding all OCP objections): there is considerable paradigm-dependent variability.

The first set of OP data (§5.4.1) is from the present indicative (long form), as introduced in Chapter 4 §4.1. This is followed by an analysis of OP EXPRESSION-failure in §5.4.2, and the constraint summary in §5.4.3.

5. 4. 1. Present Indicative (Long Form) with OPs

Toneless prefix + H OP + toneless stems

I present first the 1-σ and 2-σ stems alone, which lack an EXPRESS-complexity that all longer stems do. Possible nouns corresponding to the OPs used in the examples are given in the righthand columns the first time a particular OP is used.
The most salient observation is that the OP introduces a H tone to the phrase. In (85), as for 1-σ stems in Chapter 4 §4.1, a penult H sponsor instantiates in situ, over the protest of AVOIDPROM, without being able to extend onto the ultima. In (86), the OP also fails to be parsed inside a binary H domain—violating HD-MIN, but respecting the right-aligned, bisyllabic WAP, as expected from the conditions on the local conjunction of CRISPSTEM & AVOIDPROM (§4.3). The set of constraints projecting the WAP, making it binary, aligning it crisply with the HD right edge, and keeping the WAP inside the morphological stem, apply in precisely the same fashion here as demonstrated before for other sequences of H prefix and toneless stem (§4.3). Making a comparative observation, we see that this non-extending antepenult sponsor in Phuthi contrasts with other Nguni languages, e.g. Swati (87), where HD-MIN overrides the Phuthi WAP constraints (identical to those proposed for Phuthi in §4.2) and extends the HD onto the penult.

(87)  
Swati obligatory HD-Min for toneless verbs

<table>
<thead>
<tr>
<th>Swati</th>
<th>Phuthi</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [ku-líí]ma</td>
<td>[ku]-liima</td>
</tr>
<tr>
<td>b. si-ya-[yi-líí]ma</td>
<td>si-ya-[yí]-liima</td>
</tr>
</tbody>
</table>

Xhosa has the same patterns as Swati for the present indicative (88a), but treats certain morphologically extended monosyllables with the Phuthi pattern (88b), clearly paying heed to the morphological stem boundary, along the lines of what Phuthi encodes obligatorily for all 3-σ macrostems (1 OP σ + 2 stem σ), as above in (87).

47 We return to this stem, because in all of my collected data there is only one toneless stem which can take an object prefix, despite its slightly taboo semantics.

48 The sponsor syllable in Swati (and Xhosa) is not H on the surface here for a demonstrably different reason than in Phuthi: in Swati (and Xhosa) all non-head (i.e. non-right-edge) syllables in a HD are low (Cassimjee 1995, 1998; Cluhafton 1990; own field notes). Headedness is addressed in Chapter 7 §7.4.3, and again (with comparative data) in Chapter 8 §8.2.3.
(88) Xhosa variable OP encoding (present indicative)

<table>
<thead>
<tr>
<th>Xhosa</th>
<th>Phuthi</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-[yi]-lííma</td>
<td>si-ya-[yí]-liima</td>
<td>we cultivate it (2-σ stem)</td>
</tr>
<tr>
<td>b. si-ya-[yí]-w-iisa</td>
<td>si-ya-[yí]-w-iisa</td>
<td>we make it fall (extended 1-σ stem)</td>
</tr>
</tbody>
</table>

Returning to the Phuthi data, no further constraints or rankings are required to account for the 1-σ and 2-σ patterns in (85-86) above. Longer stems are given in (89), without HD structure added, but with OPs indicated as H sponsors, proceeding from the observations in (85-86).

(89) 3-σ stems

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-ba-límiisa</td>
<td>we help them cultivate (ébáá-tfu people)</td>
</tr>
<tr>
<td>b. si-ya-tí-liðbaala</td>
<td>we forget them</td>
</tr>
</tbody>
</table>

(90) 4-σ stems

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-ba-líbátiisa</td>
<td>we delay them</td>
</tr>
<tr>
<td>b. si-ya-tí-límísíisa</td>
<td>we cultivate them intensively</td>
</tr>
</tbody>
</table>

(91) 5-σ stems

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. si-ya-ba-líbátísíisa</td>
<td>we delay them intensively</td>
</tr>
<tr>
<td>b. si-ya-ba-yámúkéliisa</td>
<td>we help them receive</td>
</tr>
</tbody>
</table>

In each of these examples, the sponsor syllable itself—the OP—appears excluded from the HD (which domain otherwise extends in a regular fashion to the antepenult). One might suggest that the OP sponsor is outside of the very HD it projects. But the following data (92-94)—ranging across all stem lengths—with H SPs this time, shows two things: (a) the same {OP-stem} pattern obtains in stems 3-σ or longer, that is, non-expression of H on the sponsor itself; (b) the OP must be at the left edge of its own HD, by virtue of the OCP effect preventing the preceding SP H from spreading to the syllable immediately preceding the OP: -ya-. Domain structure has now been added to the paradigms (with no additional or altered assumptions necessary).
H prefix + H OP + toneless stem

(92) 3-σ stems
a. [bá]-ya-[ba-lfé]miisa they help them cultivate
b. [bá]-ya-[tél-fá]baala they forget them

(93) 4-σ stems
a. [bá]-ya-[ba-lfi]tiisa they delay them
b. [bá]-ya-[tí-lími]siisa they cultivate them intensively

(94) 5-σ stems
a. [bá]-ya-[ba-lfbtí]siisa they delay them intensively
b. [bá]-ya-[ba-yamüké]liisa they help receive for them

The fact that OPs surface as toneless is entirely unexpected, given that we see no additional morphological or phonological factors that correlate with such underexpression, other than the very presence of the OP itself. In other words, no deletion or underparsing or underexpression of any sort is expected. There is no other (non-depressed\(^{49}\)) H morpheme in the language which optimally surfaces toneless even though it introduces a H into the representation. Because only one (monosyllabic) OP can occur in this position—and it is the only morpheme which can occur in this particular syntactic slot—we cannot test whether this behaviour reflects something prosodic or morphological.

One could envision that an OP desires never to surface as H—a morphological constraint (95)—or that certain morphological configurations desire a single toneless syllable at their left edge, where edge is defined prosodically—a (prosodic) morphological constraint (96).

(95) Constraint reflecting desire of OP not to be expressed H
*Express HD\(_{\text{op}}\), H
Do not express a HD occurring in the OP morphological domain as H.

\(^{49}\) There are morphemes that are both depressed (sometimes breathy), that is, L, and also H (Chapter 7 §7.8.2); thus, they contain inbuilt antagonism—ideally to be linearised (phased) as LH. The OP—or, rather, the OPs in some paradigms—may be depressed (cf. §7.6.2, §7.6.3); OP depression properties are inconsistent (‘masked’ or ‘quasi-depressed’).
(96) Constraint reflecting desire of [OP+stem] to be misaligned with HD by one \( \sigma \)
*Express (HD\(_{OP} \) (\( \sigma \), Lf), H)
Do not express the leftmost syllable of a HD in the OP morphological domain as H.

(95) is a kind of CLASH constraint, but not apparently a motivated one: there is no obvious reason\(^{50} \) why an affix which is underlyingly H should desire never to actually surface as H. (96) is a kind of left-edge anti-alignment constraint, also without apparent motivation. I will offer an analysis after introducing the H stem data in (99-103) and (109-113), where I suggest that the OP is the first example seen in Phuthi of a morpheme/prosody anti-express constraint, a kind of opacity that is unexpressable apart from a model where domain parse and domain expression are kept separate.

First, I complete the OP toneless (low) stem paradigm with a H SP in (97-98), which paradigm requires no further observations, other than that these are the rare patterns where the OP itself remains H, because there is prosodic space to expand rightwards, even to fulfill HD-Min. This same pattern was seen with short stems in (85-86) above. Further, the H SP cannot extend onto -ya- because of the OCP effect *AE (cf. §5.1).

(97) 1-\( \sigma \) stem
a. [bâ]-ya-[bûû]-nya they excrete it

(98) 2-\( \sigma \) stem
a. [bâ]-ya-[tî]-liima they cultivate them
b. [bâ]-ya-[yî]-yeeta they make it

**Toneless prefix + H OP + H stem**

We see below that an OP before a H stem surfaces invariably as toneless (100-103), again except in the case of short 1-\( \sigma \) stems (99) where the OP surfaces H in situ. I mark the OPs with HD edges, however, since we already know from all the toneless/low stem examples above that every OP sponsors its own H in the UR. Conservatively, I encode separate (not fused) HDs on the OP and stem; further discussion follows below; 1-\( \sigma \) stems (99) are not provided with HD structure, as they surface toneless (discussion to follow).

---

\(^{50} \) I have added ‘for no obvious reason’ because there are just such affixes that have underlyingly conflicting tone specifications: they are both H and L (cf. previous footnote).
(99) 1-σ stem
   a. si-ya-[báá]-pha we give them
   b. si-ya-[wáá]-kha we draw it\(^{51}\) (émaa-tí water)

(100) 2-σ stem
   a. si-ya-[bá]-[bóó]-na we see them
   b. si-ya-[tí]-[búú]-ta we ask them

(101) 3-σ stem
   a. si-ya-[tí]-[bó]-[níí]-sa we show them
   b. si-ya-[bá]-[má]-mée]-la we listen to them

(102) 4-σ stem
   a. si-ya-[tí]-[bé]-tiisa we use them
   b. si-ya-[bá]-[tí]-siisa we ask them intensively

(103) 5-σ stem
   a. si-ya-[bá]-[hlóniphú]-la we are disrespectful to them
   b. si-ya-[tí]-[sébétí]-siisa we use them intensively

Again, the apparent disinclination of OP HDs to express H is surprising, given that Phuthi does tolerate adjacent sponsor Hs, either by fusing their HDs (cf. §5.2 above), or by parsing them separately with a downstep at the inter-HD edges.

**H prefix + H OP + H stem**

We also see that with these high stems an OP must continue to encode its left edge as the left edge of the HD, to prevent the H SP bá- from extending rightwards and thereby violating *AE (104-107). As above, OPs are given in a separate HD from the stem, for now.

(104) 1-σ stem
   a. [bá]-ya-[báá]-pha they give them
   b. [bá]-ya-[wáá]-kha they draw it

\(^{51}\) Although this is correctly translated as ‘we draw it (water)’, ‘it’ (instead of ‘them’) could be slightly misleading since Class 6 contains mostly plural nouns of Class 5 singulars.
This data importantly indicates that a H OP continues to project a basically aligned HD left edge to its left. We return, now, to the question of why a H sponsor surfaces as non-H.

5. 4. 2. Anti-Expressing the OP Morpheme

5. 4. 2. 1. Left-edgeness is real

In H stems, the most apparent reason for the OP surfacing low would be the bad adjacent edges configuration, in which the OP H abuts the stem H. However, we would expect two adjacent sponsor Hs to resolve the clashing edges by fusion (109), and leave it at that (as in the present tense and perfective surface forms in §5.2 above).

(109)  Expected OP adjacent edges resolution for H stems: fusion, perfect expression

\[ si\text{-}ya+b\text{á}-\text{boona} \Rightarrow *si\text{-}ya+[b\text{á}-b\text{óó}]na \]

After all, the output of (109) faithfully obeys *AE, since the abutting edges have been done away with. Apparently, this would be insufficient for Phuthi. Another solution which Phuthi might have pursued with this OP data is: keep the two HDs separate, but downstep the second HD (110a); or even: delete one of the sponsors (110b-c), as is in Makua or Shona.
(110) Other hypothetical OCP resolutions
   a. downstep *si-ya-[bá]-[bóó]na
   b. deletion *si-ya-ba-[bóó]na
   c. deletion *si-ya-[bá]-boona

However, none of these are the way in which the OP-stem H-H sequence is resolved in the default case\textsuperscript{52}. Unique among H sponsors, the OP becomes surface low, even though continuing to opaqueely project a HD left edge, as (105-108) show. This is a nice case of surface opacity, where the underlying edges of the sponsor locus remain relevant into the surface output candidates (here: the left edge of the sponsor). If HD structure is motivated, and yet there is no surface record of its contents being faithfully expressed, and there is no other grounded CLASH reason for surface expression to fail, then the only solution remaining to ODT is to posit that this is a morphologically triggered EXPRESS violation.

5. 4. 2. 2. Fusion or an empty HD?

There appear to be two EXPRESS-violation possibilities (111-112).

(111) Possible EXPRESS-violation solutions
   a. the [OP-stem] sequence is fused, and the leftmost syllable fails to express H (112a-b);
   b. the [OP-stem] sequence remains unfused, but the OP H fails to express at all (112c-d).

(112) EXPRESS failure & fusion possibilities
   fusion; left edge express failure
   a. si-ya-[ba-bóó]na we see them
   b. [bá]-ya-[ba-bóó]na they see them
   no fusion; OP HD completely empty
   c. si-ya-[ba]-[bóó]na we see them
   d. [bá]-ya-[ba]-[bóó]na they see them

\textsuperscript{52} In certain grammatical paradigms, Phuthi retains an OP as H and either downsteps the stem domain (as in hypothetical 110a)—and cf. Chapter 7 §7.6.2, §7.6.3—or fuses the H OP to the H stem, e.g., in the present negative (Chapter 7 §7.8.1.7).
The second encoding possibility (112c-d) would be very problematic, since no other H tone in Phuthi typically fails to display any surface expression at all (in a lexical tone paradigm); this would violate \textsc{contrast}\_hd (and \textsc{express\_h}($\sigma$), cf. §5.3.2.2). It could, however, be argued that the OP H still expresses itself through its implicit left edge which prevents successful \textsc{hd-min} in (112b,d), and therefore that an empty OP HD still has some surface effect. But this is insufficient evidence to choose between the two possibilities above: the OP could successfully project its domain Lf edge in either case. There is a second reason to reject the second, non-fusion strategy (112c-d): such outputs would have to tolerate adjacent HD edges, \textit{contra} *AE, even in non-antepenult positions. The first approach, on the other hand, respects *AE. We would not expect that fusion at the antepenult/penult juncture for the 2-\(\sigma\) stems above would fail, and therefore that downstep be tolerated (indicating non-fusion), because the OP and the stem typically form a commonly fused morphological entity in Bantu languages: a macrostem. Based on the lack of downstep in these forms above, we can say that OPs in Phuthi do fuse with their stem hosts (for lexical paradigms, anyway\textsuperscript{53}).

I maintain, then, the analysis implied in (112a-b): the OP response to H stems involves fusion, as well as the by now expected \textsc{express} failure on the OP sponsor morpheme.

5. 4. 2. 3. \textit{*Adjacent\_Edges} extended by analogy?

One may suggest that the surface lowness (or failure to express) of an OP among the toneless/low stems is analogised from a genuine *AE violation in the High stems, as a kind of paradigm uniformity condition: the evidence would come from the only surface-contrasting H / toneless stem data: 2-\(\sigma\) stems.

\begin{equation}
\text{(113) Contrasting OP+stem tone outputs}
\begin{array}{ll}
stem class & output \\
a. & \text{toneless} & \text{si-ya-[tï]-liima} & \text{we cultivate them} \\
b. & \text{H} & \text{si-ya-[ba-bóô]na} & \text{we see them} \\
\end{array}
\end{equation}

\textsuperscript{53} The OP-stem juncture for certain grammatical paradigms will be seen to display a downstep for the toneless/low stems only (e.g. present negative, cf. Chapter 7 §7.8.1.7-10). This is not because of a general failure of the conjoint \textsc{avoidprom} & \textsc{crisstem} constraints, but rather because of the special encoding of the toneless/low stem category with a grammatical L domain.
Of course, there is no edge violation of any sort in (113a), as there is only one H tone present (from the OP). One could weakly maintain that toneless/low stems are parallel in their tone pattern to OPs with H stems $4\sigma$ and longer$^{54}$ (119a-b) also because of a paradigm uniformity effect.

(114) Stem tone contrasts lost in stems longer than $4\sigma$

<table>
<thead>
<tr>
<th>stem class</th>
<th>output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>toneless</td>
<td>si-ya-[tǐ-lǐmǐ]siisa</td>
<td>we cultivate them intensively</td>
</tr>
<tr>
<td>H</td>
<td>si-ya-[tǐ-bǒnǐ]siisa</td>
<td>we see them very clearly</td>
</tr>
</tbody>
</table>

The analysis would suggest that the generalisation in Phuthi has been reinterpreted away from solving a problem of clashing edges to requiring a particular surface profile for a piece of morphology across the two tone paradigms in the language. In other words, given that OPs are (almost) never H before High stems, this surface pattern has now been been extended to OPs before toneless stems as well, which otherwise have no obvious reason at all to lower. Thus OP non-expression before a toneless stem would be based on an output-output requirement, by analogy with the behaviour of H stems. Such an analysis is highly speculative.

More simply, I point to the already salient observation that ‘an OP is not surface-H’, even though the OP is H in the UR. Thus an OP-specific constraint straightforwardly prevents surface H on an OP, as suggested in (115).

---

$^{54}$ Based purely on OP surface effects, all stems longer than $3\sigma$ should be indistinguishable from each other (low from high), but because of the separate HD-MIN effect in $3-\sigma$ H stems, this stem length alone remains distinct from toneless stems (e.g. si-ya-tǐ-lǐmǐsa ≠ si-ya-tǐ-bǒnǐsa). In fact, the stem contrast situation is different in interesting ways in the current OP paradigm than it is in the toneless/low vs. High stems in the present negative paradigm (Chapter 7 §7.8.1), where only the $2-\sigma$ stem contrast threatens to be neutralised between the two stem tone classes. In response, the present negative will be seen to preserve the contrast between stem tone classes by separating the $2-\sigma$ stems in the two tone classes by means of an inserted grammatical Low Domain. In the present indicative OP paradigm here, however, all stem lengths except these $2-\sigma$ stems are neutralised in their surface outputs. *EXPRESS_OP (115) will effectively neutralise the toneless/low vs. H contrast for all $3+\sigma$ stems with OPs.
One might object that this approach suffers because the proposed anti-express constraint offers no functional reason why a H-sponsoring piece of morphology (the OP) should routinely fail to express as H on the surface. That is, (115) expresses a surface generalisation, but fails to explain the (probable) nature of the pattern generalisation that has led to this state of affairs. As already observed in Chapter 3, using phonetic information to provide ‘evidence’ for phonological constraints may ultimately be wrong-headed, because of the not necessarily predictive value of the proposed phonetic constraints (Kaye and several contributors to Ploch (2003) call the would-be straightforward phonology-in-terms-of-phonetics approach the ‘phonetic hypothesis’).

As such the constraint in (115) is not necessarily troubling, except in its presumed language-specificity (that, Phuthi-only, for now). But *EXPRESS_OP is a typologically surprising constraint in that it has no obvious CLASH motivation at all: the faithfulness that EXPRESS elsewhere guarantees should only fail in ODT if an ungrounded configuration prevents its successful execution, yet we see no ungroundedness. Instead, *EXPRESS_OP links phonetic non-expression with a piece of morphology, bypassing the phonology entirely. If this analysis is on the right track, then there is a new class of constraints which allows specific phonetic characteristics to be built into the nature of a morpheme. The extent to which such a constraint might be part of a universal constraint set must remain a matter for further work.

5. 4. 2. 4. OP does not contain a Low Domain

Glancing ahead to Chapter 6 and Chapter 7, it will be seen that OPs consistently have a H specification in the UR (and in a few paradigms, e.g. present negative (§7.8.1.7 (282, 284)), they will even require in situ surface expression as H). But the relationship between the OP morpheme and observed lowness, or anti-expression, as characterised in (115), will be seen to be even more messy in paradigms such as the past subjunctive (§7.6.3), where OPs are argued to display properties of quasi-depression, that is, they behave partially as if they were truly depressed (that is, L-toned), not just unexpressed. The suggestion made in §7.6.3.2 is that OPs are presently an unstable phenomenon, possibly a locus of language change: they exist along a continuum from

(115) *EXPRESS_OP
*Express ([OP], H)
Do not express an Object Prefix as H.
mere surface-tonelessness (as in the data sets above), to partial L-ness. Although the OP will continue to pose significant analytic opacity, there is no evidence that is properly lexically L, because we see no depression effects (shift, block) in the 2-σ stems above (85-86, 113).

5. 4. 2. 5. Rescuing H contrast on an OP

Some further condition must prevent the proposed anti-expression of an OP from succeeding on verbs where all trace of the OP H would otherwise be lost, i.e. in 1-σ and 2-σ toneless stems (the 1-σ H stems are a separate problem; cf. §5.4.2.6 (120ff.), below).

Most plausibly, that would be another instantiation of the family of CONTRAST constraints which exist to ensure that—all things being equal—underlying feature contrasts (phonological, morphological, and others) are not neutralised at the surface. This was introduced in the motivation for the OCP effects of anti-adjacency as CONTRAST_F, in §5.1 (18) above. Here we seem to have a second flavour of contrast: the desire on the part of the grammar to ensure that at least some part of any F-domain be actually expressed with the feature parsed by the domain, an at-least condition to ensure that the sponsor-feature for any domain reaches the surface on at least one TBU (in the case of tone). The general condition (116) is instantiated here by (117); these contrast constraints also articulate a general prohibition on empty feature domains: no feature-domain can be entirely unexpressed\textsuperscript{55}.

\begin{enumerate}
\item \textbf{EXPRESS\_F\_CONTRAST} (Contrast\_FD)
\begin{align*}
\textbf{Express} \ (F, [....]_{FD}) \\
\text{A FD must contain at least one element that expresses F.}
\end{align*}
\item \textbf{EXPRESS\_H\_CONTRAST} (Contrast\_HD)
\begin{align*}
\textbf{Express} \ (H, [....]_{HD}) \\
\text{A HD must contain at least one element that expresses H.}
\end{align*}
\end{enumerate}

Clearly, such constraints are anticipating the interference of anti-express constraints of various sorts (typically: CLASH constraints), such that a feature is actually threatened with not

\textsuperscript{55} This contradicts what is claimed in the ODT analysis for Yawelmani by Cole & Kisseberth (1997), where the presence of an empty F domain is crucially required to block harmony (Expression fails for all F bearers in the domain). Cole (p.c., 2002) has withdrawn the earlier claim that an analysis can require empty F-domains.
being expressed in any part of its parsing domain. CONTRAST_HD is crucial for short (1-σ and 2-σ) toneless stems (119a,d), since this forces at least one syllable to express the HD (here: the OP itself, since the HD is precisely one syllable long).

Importantly, in an ODT grammar, CONTRAST_HD does not do the same work as MAX_H, since the latter merely enforces the parsing of a feature domain, but not necessarily the expression of the feature parsed by that domain. The only counter-claim or counter-data to a CONTRAST_FD constraint would be in instances where a feature domain faithfully parses, but no element of the domain is surface expressed. One such potential case is discussed below in §5.4.2.6. The constraint ranking in (118) is demonstrated in Tableau 7 (119).

(118) CONTRAST ranking
Contrast_HD >> *Express_OP >> Express_H

(119) Tableau 7: Anti-Expressing an OP
Toneless/low 1-σ stem: bá-ya-búú-nya, ‘they excrete it’

<table>
<thead>
<tr>
<th>/bá- + -ya- + -bu- + -ny-a /</th>
<th>Max-H</th>
<th>Contrast_HD</th>
<th>*Express_OP</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá]-ya-[búú]-nya</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [bá]-ya-[buu]-nya</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) [bá-yá]-buu-nya</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Toneless/low 2-σ stem: bá-ya-tí-liima, ‘they cultivate them’

<table>
<thead>
<tr>
<th>/bá- + -ya- + -tí- + -lim-a /</th>
<th>Max-H</th>
<th>Contrast_HD</th>
<th>*Express_OP</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) [bá]-ya-[tí]-liima</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(e) [bá]-ya-[tí]-liima</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(f) [bá-yá-tí]-liima</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Toneless/low 4-σ stem: bá-ya-tí-límísiisa, ‘they cultivate them intensively’

<table>
<thead>
<tr>
<th>/bá-+ya++-tí++ -lim-isis-a /</th>
<th>Max H</th>
<th>Contrast_HD</th>
<th>*Express_OP</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) [bá]-ya-[tí-límí]siisa</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(h) [bá]-ya-[tí-lími]siisa</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(i) [bá]-ya-[tí-lími]siisa</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(j) [bá]-ya-[tí-lími]siisa</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(k) [bá-yá-tí-límí]siisa</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
High 2-σ stem: *bá-yá-ti-búúta, ‘they ask them’

<table>
<thead>
<tr>
<th>/ bá-+ -ya-+ -tí-+ -but-a /</th>
<th>Max-H</th>
<th>Contrast_HD</th>
<th>Express_OP</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(l) [bá]-ya-[tí-búú]ta</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(m) [bá]-ya-[tí-buú]ta</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(n) [bá]-ya-[tí]-[búú]ta</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(o) [bá-yá]-ti-[búú]ta</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

High 4-σ stem: *bá-yá-ti-bóniisíisa, ‘they help show them’

<table>
<thead>
<tr>
<th>/ bá-+ -ya-+ -tí-+ -bon-isis-a /</th>
<th>Max-H</th>
<th>Contrast_HD</th>
<th>Express_OP</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(p) [bá]-ya-[tí-bóni]siísa</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(q) [bá]-ya-[tí-bóni]siísa</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(r) [bá]-ya-[tí]-[bóni]siísa</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(s) [bá-yá]-ti-[bóni]siísa</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

- (a,d): *EXPRESS_OP is violated to satisfy CONTRAST_HD;
- (g): longer stems have regular antepenult-targeting OP HDs, and obey *EXPRESS_OP.

Comments on H stems:
- *EXPRESS_OP crucially picks (l) over (m); they are otherwise identical;
- CONTRAST_HD is not at issue.
- throughout these examples, Max-H is conveniently provided at the left of the tableau; but it is not critically ranked with respect to the other constraints here; it is simply undominated for all OP data.

5. 4. 2. 6. Failing to express a High stem ultima

There remains one set of OP-stem alternations to account for: 1-σ H-stems. As given in (99) and (104) above—repeated as (120)—a sequence of H OP and High stem result in complete failure to parse the stem H. Remarkably, this is almost the only configuration in the language which appears to completely fail to parse a lexical stem H tone on the surface\(^56\).

(120) Ultima stem H appears to fail to parse\(^57\)
   a. si-ya-[báá]-pha we give them
   b. si-ya-[wáá]-kha we draw it

\(^{56}\) For a larger set of stems where lexical Hs are completely underparsed, see Chapter 6 (especially the present relative §6.2.2.1, and present subjunctive §6.2.2.2) in Tableau 1 (3g-h), and following sections. Grammatical H fails to parse in monosyllabic subjunctive stems (§6.2.2.2).

\(^{57}\) I indicate what intuitively appears to be HD structure, but in what follows the ultima will be analysed as incorporated in a fused OP-stem HD.
c. [bá]-ya-[báá]-phā they give them
d. [bá]-ya-[wáá]-khā they draw it

We cannot test (120) to see whether the stem H is ‘really’ there, as we could test the left edges of OPs (by the anti-extend effect on the preceding (SP) H sponsor), since these syllables are phrase-final, and there is generally no cross-word H-realignment in Phuthi\(^{58}\). We do, however, know from (Chapter 4 §4.2.1.3) above that phrase-final Hs can parse, and that 1-σ H stems are faithful to the UR (121).

(121) Phrase-final Hs can parse
   a. si-yaa-[phá] we give
   b. si-yaa-[khá] we draw (water)

Thus, we cannot use NONFIN in its present form to achieve the pattern in (121), since NONFIN keeps a HD entirely off the ultima, and (121) provides the counterevidence to such a move, in the absence of any other potential target site for the lexical H to be manifest on. Let us assume that the set of conditions for the problematic cases in (120) is as in (122).

(122) Conditions for underparsing an ultima H
   a. penult + ultima H sequence
   b. phrase-final position
   c. H + H in separate morphological domains (or perhaps the same domain, if fused).
   d. present indicative paradigm (possibly all lexical paradigms).

As for conditions (122d), other phrase-final penult-ultima sequences do not necessarily produce this effect. Data from two grammatical paradigms (to be discussed in Chapter 6) exemplifies: the remote past tense (123) and imperative (124). This data, which we can safely ignore for the present discussion of ultima underparsing (but cf. footnote 56), leads us to believe that there is a very significant amount of paradigm-specific tone patterning in Phuthi.

\(^{58}\) There will be seen to be a cross word depressor-induced shift effect (Chapter 7 §7.4.1.3) of H from an ultima onto a following word-initial syllable, and a similar block effect (§7.4.2.3).
While the final two Hs in (124) are not in separate macrostem domains, the Hs in (123a,b) certainly are: SP + {stem} (vs. (123c,d) SP + {OP + stem}). Examples like (123a) appear very similar in structure to the {OP+stem} present indicative cases in question above. Still, in these other comparable forms, there is no ultima underparsing. I observe that the examples in (123) are not combinations of H and lexical stem H: the lexical stem H in (123b,d) and (124a-b,d) is masked by the grammatical H parsed on the stem. Grammatical H tones (Chapter 6 §6.3) will be seen to suspend or re-rank certain constraints active among lexical verb paradigms (including both NonFin and AvoidPROM), and to behave quite distinctly from the present indicative. Thus (123-4) can perhaps be dispensed with as not being directly comparable

59 In these examples, as everywhere, a (phrase-final) penult syllable surfaces as long, as expected: a H penult is level H if nothing follows it, and falling if followed by a final H (see §5.3). This has no bearing on the facts of parsing an ultima H, however.

60 Because of the structure of this ‘grammatical’ paradigm, $\sigma_1$ is reserved for lexical tone (even this ‘default syllable’ which is inserted to keep the imperative at least two syllables long); because it is a toneless stem, $\sigma_1$ is toneless, and therefore irrelevant for this comparison. The OP forms, however, both encode the OP as H, and therefore both have a H + H sequence. I should add that the imperative with object prefix is identical to the subjunctive OP paradigm.

61 Recall from Chapter 2 §2.2.4.2 footnote 224 that \{macrostem\} = \{OP + stem\}. 

---

(123) **Phrase-final H penult + H ultima: remote past tense**

- **[SP + stem]**
  - a. toneless stem: [báa]-[tá]  
    they came
  - b. H stem: [báa]-[phá]  
    they gave

- **{OP + stem}  
  - c. toneless stem: [bá]-[búu]-[nyá]  
    they excreted it
  - d. H stem: [bá]-[báa]-[phá]  
    they gave them

(124) **Phrase-final H penult + H ultima: imperative**

- **{default syllable + stem}  
  - a. H stem: [íi]-[phá]  
    give!
  - b. H stem: [íi]-[khá]  
    draw!

- **{OP + stem}  
  - c. toneless stem: [búu]-[nyé]  
    excrete it!
  - d. H stem: [báa]-[phé]  
    give them!
to the underparsing of the lexical stem H in the {OP-stem} data above. The paradigm-specificity of ultima underparsing\footnote{If *EXPRESS\_ULT (125 below) forces the ultima to be underparsed in the {OP+stem} construction, then I will need to dispense with these other final -HH\textsubscript{PWD} examples (123-124), where there should be fusion and the ultima should be underparsed, but where the ultima is still expressed, contrary to predictions, e.g. the infinitive [kū-pha] ‘to give’ (*[kū]-pha). I will resolve this in the discussion of downstep (§5.5) below, where I will argue that an ultima in such a construction is reparsed with its own un-incorporated HD, in the form of a Register Domain.} has been underlined by these data sets.

Nouns, too, will be seen to be tonally independent of and distinct from verbs (§5.6). We may, thus, have to reject all other data as being structurally not comparable with the {OP+stem} data in (120). We may also just have to admit that 1-σ stems display somewhat unstable tone behaviour here and in every paradigm in which they occur. The straightforward insight here is that they are simply too short to support distinctive tone patterns which require at minimum 2-σ or 3-σ stems in order to realise a particular paradigm pattern: by way of examples, H in the present indicative targets an antepenult (requiring a 3-σ (toneless) or 4-σ (high) stem for the target to be salient); a final -LH or -HL sequence in the subjunctive -LH (Chapter 6 §6.1) requires minimally two syllables; the present negative requires minimally two syllables for the -HL to be visible (Chapter 7 §7.8.1).

Still, some form of explanation is sought. The pattern that the examples in (120) reflect is, other things being equal, that a H tone does not wish to surface on the ultima (not surprising in light of the END\textsubscript{LOW} discussion in §5.3), and that—given the choice—a H would rather surface on the penult, as long as it does not violate BA-L\textsubscript{F} (because the penult is prominent, and non-final, whereas the ultima is metrically weak (the WAP non-head) and is the target site for END\textsubscript{LOW}).

Thus, the {OP-stem} sequence with two sponsors in a single HD (fused from two HDs) can afford to underparse one sponsor if that means the penult preference can be attained. Thus, I will assume that fusion does occur, as predicted from the patterns articulated in §5.2, and that the failure to express the ultima is another example of expression violation (125).

\begin{enumerate}
\item \textbf{(125) } *\textbf{Express\_Ultima} \quad (*\textbf{Express\_Ult})
\item \textbf{*Express (σ\textsubscript{HD, H}) / ___ \textsubscript{PWD}}
\item Don’t express a syllable as H if it occurs at the right edge of a prosodic word.
\end{enumerate}
Although manifesting anti-edge alignment on domain expression, (125) is not the same as \textsc{NonFin} which adjusts the domain-boundary itself. It would, however, be feasible to parameterise \textsc{NonFin} into several \textsc{NonFin} constraints, particularised according to the morphological paradigm they occur with, or according to whether the ultima is the only syllable parsing a H tone (a HD stretching from further left onto the ultima). Cassimjee (1998:81,98-104)\cite{63} argues that \textsc{NonFin} is a family of constraints which includes at least a second member: \textsc{NonFin} (\textsc{polysyllabic HD}). Such proliferation of \textsc{NonFin} may yet be necessary, especially in the case of the grammatical stem right-edge parse problems in Chapter 6 (although I shall argue in §6.2.2.2 that \textsc{EndLow} is the operative constraint in certain grammatical paradigms such as the subjunctive). But the anti-Express constraint in (125) eloquently reflects the disinclination of any ultima H to parse phrasally (certain morphosyntactic conditions obtaining).

This anti-expression constraint for the ultima is reminiscent of the highly valued \textsc{EndLow} requirement introduced in §5.3 above. Yet \textsc{EndLow} was seen not to force the lowering of an ultima at the expense of expression—without violating \textsc{Express\_H(σ)}. Thus *\textsc{Express\_Ult} addresses only the morphological sequence \{OP + 1-σ stem\}, thus far. It will reemerge as a would-be account for why the ultima fails to express in the \{SP + 1-σ participial stem\} in Chapter 6 §6.2.2.2; it will then be amended there to reflect the exigencies of Register Domains.

But if (125) solves the OP-short stem problem, what of stems whose only sponsor is the ultima, as in (121)? Clearly, \textsc{Max-H} (introduced in §4.1) and \textsc{Contrast\_HD} serve to ensure proper parsing and expressing of the OP H, as indicated in the rankings and tableau (126-127).

(126) OP rankings
\texttt{Contrast\_HD >> *Express\_Ult >> *Express\_OP >> Express\_H}

\cite{63} The case for subtly varied, multiple instantiations of \textsc{NonFin} is supported in Xhosa by the failure to parse a lexical stem H in medial position (even without an OP): phrase-final \{OP+stem\}: \texttt{ndi-ya-[yíí]-tya} ‘I eat it’; vs. \texttt{ndi-yaa-[tyá]} ‘I eat’; vs. medial \texttt{ndi-tya...} The Phuthi facts are inconclusive in medial position, varying according to formality of register (and other unclear variables). The predominant version is \texttt{si-phá kakgúulú}, where the stem H is retained.
Again, Max-H is not crucially ranked with respect to the other constraints in the tableau.

I have now accounted for the behaviour of object prefixes in both H and toneless stems, for 1-σ, 2-σ and 3-σ+ lengths\(^6^4\). To provide confirmation of the OP facts presented in this section, I present slices of data from the present indicative reduplicates (128-129).

---

\(^6^4\) A broader intonation-based generalisation to cover all OP-stem shapes may be suggested: there must be a contrastive pitch contour at the OP-stem junction: either HL or LH. This covers both *Express_OP cases (all the 3-σ+ stems), and the short 1-σ (and sometimes 2-σ) stems where the OP itself is H but the stem is low. But this insight is true only by a conspiracy of effects that have been satisfactorily deconstructed into the constraints suggested in this section, that is, by an interaction of (a) a combined reaction to the OCP (blocking of H extension, or fusion of HDs), (b) an analogically levelled desire to keep OPs low, and (c) escape clauses which make sure that the OP’s H is expressed on at least one syllable, even if it be the OP itself. Yet, this intonation-based insight will be shown to be true in many paradigms, even in more nuanced ways (e.g. the present negative requires a downstep, which falls out of a Low Domain left edge in toneless stems, cf. Chapter 7 §7.8.1). Even though not the change is not a whole tone category (e.g. from H to L or L to H) there is still a phonological tone adjustment required at the OP-stem boundary. However, in a few grammatical paradigms, such as the present indicative short form (cf. Appendix A, paradigm C) and the present relative (cf. Appendix A, paradigm H), the OP tone step requirement is obliterated. Thus, even this intonation-based generalisation does not hold entirely.
Present Indicative Reduplicates with OP

1 stem H: ...OP + toneless stem

(128) 3-σ stem (1+2)
     a. [bā]-ya-[bu-nyá]-buu-nya they excrete it now and then
     b. [bā]-ya-[bū-nyá]-buu-nya they excrete it now and then

Interestingly, the OP is optionally H with a reduplicated monosyllabic stem (128). The optionality applies only to these short reduplicate stems. Analysis follows below.

(129) 7-σ stem (2+5)
     a. [bā]-ya-[bā-tépétépél]iisa they cause them to act slowly now and then
     b. [bā]-ya-[bā-lfbálfbátí]siisa they thoroughly delay them now and then

The OP is obligatorily expressed as toneless in longer reduplicated toneless stems (129).

2 stem Hs: ...OP + H stem

(130) 3-σ stem (1+2)
     a. [bā]-ya-[tí-phá]-tí-phá they give them now and then
     b. [bā]-ya-[tí-phá]-tí-phá they give them now and then

As in (128), the OP with a reduplicated monosyllabic H stem (130) is optionally H.

(131) 7-σ stem (2+5)
     a. [bā]-ya-[bā-sêtésébétí]siisa they use them intensively now and then
     b. [bā]-ya-[bā-kʰulḵulúmé]la they speak up on their behalf now and then

The OP is obligatorily expressed as toneless in longer reduplicated High stems (131).

The optional surface highness of an OP incorporated into the 2-σ reduplicate prefix with 1-σ stems appears to reflect the tension in the dual identity of the OP in these short reduplicate stems: on the one hand they behave as regular 3-σ verb stems, and therefore the surface expression of an OP is toneless; on the other hand they ‘remember’ that they are 1-σ stems, and
therefore their OP should be high on the surface (as it is in non-reduplicated 1-σ stems, where the OP thus reflects HD minimality). This is schematised in (132); only toneless stems are provided here, but High stems behave in precisely the same tonal manner (notwithstanding the distinct UR H status of the stem syllable itself; cf. Appendix A, paradigm B (10)).

(132) Dual identity of 1-σ reduplicates
   a. If -{nya-bu-nya} is a regular 3-σ stem, then OP = surface low       ...-[bu-\{nyá\}-bu-nya] 
   b. If -{nya}-\{bu-nya\} is a (1+2)-σ stem, then OP = surface high:     ...-[bú-\{nyá\}]-\{bu-nya\} 

Finally, to indicate the problematic behaviour of OPs in general, and to show that the OP must be encoded in part with paradigm-specific information, I present a slice of data from the present indicative phrase-medial (short) form (cf. Appendix A, paradigm C), where OPs are always H on the surface, even in polysyllabic stems, without regard to the status of the stem as categorically toneless/low or H).

Present indicative short form: OP = surface H

Toneless stem

(133) 4-σ stem
   si-[t̥-l̥mísɪ\textsc{sa}]... we cultivate them intensively...

(134) 5-σ stem
   si-[b̥-l̥b̥t̥ísɪ\textsc{sa}]... we delay them intensively...

High stem

(135) 4-σ stem
   si-[b̥-b̥t̥ísɪ\textsc{sa}]... we ask them intensively...

(136) 5-σ stem
   si-[t̥-s̥b̥t̥ísɪ\textsc{sa}]... we help use them...

We are forced to conclude that the constraint introduced in this section to cope with the identifying characteristic of present tense indicative long form object prefixes as surface-low, *EXPRESSION\_OP, must be parameterised not to be applicable for the phrase-medial form in Phuthi. While I will not examine the OP for every paradigm, there is considerable variation over which
paradigms require the OP morpheme to be surface-high and which require it to be surface-low. The correlates for the OP surface status also vary in part according to speech register and style.

In reviewing the OP data, I suggest that OP behaviour is apparently as variable and perplexing as it is, for two reasons. First, genetically, OPs are notoriously variable in Bantu: in distinctive tone languages such as Phuthi, whether OPs are assigned a H or not (deep structure or surface structure) depends frequently on tense/aspect/mood information, and may also depend on sociolinguistic variables: register, style, and so on (most of this variability—even paradigm-related, let alone sociolinguistic—in Bantu tone languages simply goes undocumented in linguistic descriptions). Second, sociohistorically, Phuthi has—as well as deeply hybrid morphology—demonstrably hybrid phonology, reflecting its Nguni/Sotho mixed parentage: Nguni prefix tone, Nguni depressed consonants, Sotho superclose vowels, Sotho and Nguni lexis, mixed tone patterns, and so on (cf. Chapter 1 §1.1.3, §1.1.7). Thus, we should not be surprised, perhaps, that aspects of the morphology and phonology are hybrid.

The combination of these two factors of variability may have ‘conspired’ to produce OP phonology and morphology in Phuthi that even from the small range of examples just provided is in some sense unstable.

The full range of Phuthi OP variability becomes evidence when the quasi-depressed status of OPs is considered in Chapter 7 §7.6.3.

5.4.3. CONSTRAINT SUMMARY

I summarise the new rankings (137), and the entire constraint set up to this point (138), with the dominance relations visually sketched in (139).

(137) Constraint Set, version 9: new rankings
    a. Contrast_HD >> *Express_OP >> Express_H from (118)
    b. Contrast_HD >> *Express_Ult >> *Express_OP >> Express_H from (126)

(138) Total constraint summary
    • H-extension rankings
      Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt
    • Expression rankings
      Express_H >> Dep-H >> almost everything
• **Morphology / H-extension rankings**
  (AvoidProm&CrispStem) >> HD-Min >> WSA-Rt >> CrispStem

• **Reduplication rankings**
  *H*-in-Wap >> PU_RED/Base >> Max-H >> HD-Min >> AvoidProm

• **Phrase final // medial rankings**
  PU-Lex(H)>> everything

• **OCP rankings**
  Max-H >> (AvoidProm&CrispStem) >> *AE >> BA-Lf >> NonFin >> HD-Min

• **Penult shapes rankings**
  Express_H(σ) >> *Rise >> EndLow, Align_EndLow >> Express_H(µ) >> HD-Min >> *Fall >> AvoidProm

• **OP rankings**
  Contrast_HD >> *Express_Ult >> *Express_OP >> Express_H

[turn to the next page for (139) Constraint rankings, version 9: dominance orderings]
(139) **Constraint rankings, version 9: dominance orderings**

```
Constraint_HD
  | *Express_Ult
  | *
  | *Express_OP
  | *H-in-Wap
  |               Express_H_(σ)
  |   PU_RED/Base
  |   | *Rise
  |   | Max-H
  |   |               EndLow, Align_EndLow
  |   | AvoidProm_&_CrispStem
  |   |               Express_H(μ)
  |   | *AE
  |   |   Ba-Lf
  |   |       NonFin
  |   |       HD-Min
  |   |       | *Fall
  |   |       | AvoidProm
  |   |       | WSA-Rt
  |   |       |   CrispStem
  |   |       |       BA-Rt
```

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5. 5. Downstep

A typology of pitch declination processes given in Pierrehumbert & Beckman (1988) for the intonational phonology of Japanese, and widely acknowledged to be common in tone languages, was provided in §5.3.2.1, as (59): (a) declination (downdrift); (b) catathesis (downstep); (c) final lowering. I claimed there that final lowering has been phonologised into a requisite (though realignable) categorial final lowering from H to toneless (it happens in a final pitch change from low to lower, though this was not discussed).

The task remains to present evidence for the first two varieties of pitch downtrend—downdrift and downstep—and to examine their role in the phonology of Phuthi.

It has been known at least since Pike (1945) that the absolute pitch ($F_0$) in tone and non-tone languages alike tends to decline over the course of phrases and utterances (Ladd 1996:73-74). Commonly supported with tone data from Bantu and other African tone families, this declination downtrend has typically been known as downdrift. Downdrift is the automatic lowering of a H span following a sequence of H span and intervening toneless syllables, that is, where $H_2$ is lower than $H_1$ in $H_1$-L-$H_2$. Catathesis, on the other hand, known typically in the Bantu literature as ‘downstep’, is a special case of downdrift, involving the stepwise, discrete lowering of one H tone span relative to an immediately preceding one, even if there are no intervening toneless (low) syllables.

Many tone grammars, especially in African languages—far less so in large-inventory tone languages of Asia (Yip 1995:492)—contain local pitch instructions linked to particular phonological or morphological conditions that discretely lower (or downstep) a H tone register, while not reducing the pitch sufficiently to enter the pitch range of a non-H (low) tone at that point in the utterance. Besides downstep, tone languages can invoke the opposite, but far more marked (Hyman & Schuh 1978) discrete modification of pitch, upstep, but this last phenomenon has not been observed in Phuthi.

Phuthi displays the entirely unsurprising effects of downdrift (140), in that the left edge of every new HD begins at lower pitch onset than did any preceding HD left edge in that utterance; the lower onset is marked with the IPA downstep symbol [], which indicates lowering of all H material to the right of the symbol. This can be said to be somewhat superfluous once it will have been established in what follows that every non-initial HD left-edge signals a lowered pitch
domain. The language also makes limited use of downstep (141), in order to separate two adjacent Hs which might otherwise fuse. In fact, as in Venda (Cassimjee 1986) and other Bantu languages, downstep in Phuthi can be argued in most cases to be a specialised case of downdrift. The two phenomena are schematised below.

\[\text{(140) Downdrift schematised}\]

\[
[\text{HD}_1\sigma\delta][\text{HD}_2\sigma\delta][\text{HD}_3\sigma\delta]\text{[HD}_1\sigma\delta][\text{HD}_2\sigma\delta][\text{HD}_3\sigma\delta]
\]

- automatic lowering of \(\text{HD}_2\) relative to \(\text{HD}_1\), and \(\text{HD}_3\) relative to \(\text{HD}_2\), because of intervening low syllables: \(\text{HD}_1 >> \text{HD}_2 >> \text{HD}_3\), where ‘>>’ means ‘commences at higher pitch than’.

\[\text{(141) Downstep schematised}\]

\[
[\text{HD}_1\sigma\delta][\text{HD}_2\sigma\delta][\text{HD}_3\sigma\delta]
\]

- no downstep (and no downdrift) between \(\text{HD}_1\) and \(\text{HD}_2\), even if no fusion claimed;
- possible grammatically stipulated downstep (') between \(\text{HD}_2\) and \(\text{HD}_3\).

Typically, downstep is stipulated at certain prosodic junctures by particular morphemes, such as affixes signalling a morphological or syntactic category change. Although the location is predictable, it is morphology-specific. It can even be lexical. But in Phuthi downstep is (almost) entirely predictable, suggesting that it is more truly a special kind of downdrift.

Pulleyblank (1988) has observed that since downstep/downdrift is manifested in a scalar fashion, it is part of the (separate) phonetics component of a grammar. He argues that phonetic downstep provides the cues to phonological structure, in the present case, HD-structure. While I believe his insight is correct, in the current analysis I cannot make use of the (representational) strategy central to Pulleyblank’s analysis of downstep: floating low tones. Firstly, I am assuming that there are no active low tones in the non-depression grammar of Phuthi; secondly, as already observed, float has no meaning in ODT\textsuperscript{65}.

### 5. 5. 1. DOWNSTEP PATTERNS

Conflating (140-141) (since the phenomena are not clearly discrete in Phuthi), the following is the general, somewhat more fleshed out distribution of downstep in Phuthi (142).

\textsuperscript{65} But cf. Chapter 6 §6.2.2.2 footnote 17 for the effects of float achieved in grammatical paradigms.
(142) Patterns of downstep and downdrift in Phuthi
  a. downstep occurs at the onset of every (non-initial) HD, if preceded by one or more
toneless syllables (this is, in fact, downdrift);
  b. downstep occurs between immediately adjacent HDs: (i) at an affix boundary, (ii) which
immediately precedes the phrase prominence site (between antepenult and penult
syllable) for lexical paradigms, that is, downstep in Phuthi is positionally restricted;
  c. downstep must occur between distinct $F_0$ excursions, even within a single HD, e.g.
between penult and ultima in phrase-final position (a domain-internal variation of the
downdrift in (a));

Additionally, in Chapter 7 (cf. §7.8.1.7-§7.8.1.10) a more extensive set of depressor-
related downstep patterns will be examined, where it will be shown that these patterns
also hold:

d. all depressed H syllables induce downstep, irrespective of morphological boundary—in
other words: downstep can also be a segmentally triggered property (cf. §7.9);
e. all boundaries that block depressor H-shift also induce downstep (but not vice versa);
f. downstep occurs at the juncture of the $\sigma_1$ lexical tone slot and the $\sigma_2$ grammatical tone
slot in the present negative toneless/low stems, if the $\sigma_1$ H is depressor-shifted off a
depressed SP or OP, cf. §7.8.1.10;

Downstep is now presented below in §5.5.2 as general downstep (including a discussion
of the post-OP downstep wrinkle), reflecting (142a), as positional downstep in §5.5.3, and as
ultima downstep in §5.5.4. Positional downstep is analysed in §5.5.5 as requiring the constraint
conjunction motivated earlier in Chapter 4 §4.3). Register domains are introduced in §5.5.6 to
account for ultima downstep, and downstep sites generally.

5.5.2 General Downstep

The most general downstep/downdrift pattern in (142a) occurs in data already seen but
where the downstep was not explicitly marked, in the discussion of the OCP in §5.1, where a
H-toneless-H sequence occurs (the morphological structure of these words has no impact on the

---

66 Additional properties must be specified for paradigms like the inclusive -ni (cf. Appendix
A, paradigm V), where downsteps can arise in positions earlier than the antepenult-penult. This
is alluded to in Chapter 6, but cannot be fully investigated in this work

67 The discussion of downstep will only be properly completed after the patterns in (142d-f)
have been dealt with in Chapter 7 §7.9 (through Principle D of Register Domains).
presence or absence of downstep). The left edge of every non-initial HD is downstepped. Brief examples are recapitulated in (143), now marked with downstep(‘!’).

(143) General downstep: ...ϴ ] σ ![ϴ, ...: present indicative (long form)
   a. [bá]-ya-[bó]na they see
   b. [bá]-ya-[bó]na they show for one another

5. 5. 2. 1. Post-OP downstep

There is abstraction involved in the OP data, since the leftmost syllable inside what I have argued to be the fused {OP-stem} domain is expressed toneless (low), and so the downstep/downdrift effect is visible only on the first element to express the feature which the HD parses, i.e. the stem-initial H syllable (144). There is no salient lowering of the low OP syllable itself. The downstep instruction to the articulatory mechanism, continuing to address only H syllables, can be understood as: ‘discretely lower the height of F₀ excursion in the first syllable which expresses H in this domain’.

(144) General downstep: ...ϴ ] σ ![ϴ, ...: present indicative with OP
   a. [bá]-ya-[tí-bó]na they see them H stem
   b. [bá]-ya-[tí-límísé]laana they help cultivate for one another toneless/low stem
   c. [bá]-ya-[tí-bó]na they show for one another H stem

This wrinkle anticipates the proposal in Chapter 7 §7.9 that the left edge of an OP expressed H misaligns the downstep trigger one syllable to the right, since there is no H expressed at the left edge of the second HD; in §7.9, it will be seen that depression-induced downstep also causes misalignment of the downstep implementation to the right of the rightmost depressor inside a HD.

[^68]: This data makes it clear how, in some sense, the OP-stem projects two HD left edges: one to effect *AE, as discussed in §5.1, another left edge at the start of the verb stem to signal where downstep occurs. But domains cannot be coherent with two left edges; hence, I leave the ‘real’ left edge preceding the OP; the HD-internal edge must achieved by misaligning the downstep effect (subsumed under a Register Domain misalignment, cf. §7.9).
5. 5. 3. POSITIONAL DOWNSTEP

The pattern in (142b) above—the only position where Phuthi realises a downstep between adjacent HDs (thus, a ‘real’ downstep)—is exemplified by the following noun (§5.5.3.1) and infinitive (§5.5.3.2) data sets.

5. 5. 3. 1. Nouns

In addition to the required prefix H tone, these stems have an initial H in them, separated from the prefix H by a clear downstep.

Downstepped H in stem σ1

(145) Downstep at prefix-stem boundary in nouns

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>[lĩ]-[pháá]si</td>
<td>country; earth</td>
</tr>
<tr>
<td>b.</td>
<td>[mú]-[táá]li</td>
<td>parent</td>
</tr>
<tr>
<td>c.</td>
<td>[mú]-[ngóó]li</td>
<td>writer</td>
</tr>
<tr>
<td>d.</td>
<td>[sí]-[kóó]lo</td>
<td>school</td>
</tr>
</tbody>
</table>

This contrasts with a sequence of H syllables also across the antepenult-penult but where there is only one sponsor: the antepenult. No downstep is found in the verbs (a-b) or nouns (c-d) in (146), which contain just a single sponsor and a single HD.

(146) No downstep in absence of morphological boundary

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>si-ya-bóníša</td>
<td>we show</td>
</tr>
<tr>
<td>b.</td>
<td>kú-bóníša</td>
<td>to show</td>
</tr>
<tr>
<td>c.</td>
<td>ébáá-tfu</td>
<td>people</td>
</tr>
<tr>
<td>d.</td>
<td>émáá-fu</td>
<td>clouds</td>
</tr>
</tbody>
</table>

There are some speakers in Sigxodo who do not insert downsteps even at this antepenult-penult juncture for these words. The sociolinguistic properties of the stylistics facts are complicated.

There are verb examples here in (146a-b) (but not above in (145) above) because it is not easy to find a finite verb constructed with distinct sponsors in antepenult and penult position, that is: σ σ σ. Where such verbs do occur (e.g. imperative, with object prefix), the object prefix fuses with the lexical stem H, and the downstep effect cannot be demonstrated. That is, the {OP-stem} tone domain unity appears to take precedence over the non-fusion apparently required at this antepenult-penult juncture.

In fact, some informants in Sigxodo did give these ‘incorrect’ forms (146c-d), where a single HD is split by downstep, suggesting that the generalisation has begun to be reinterpreted as simply ‘Make a downstep between H syllables across the antepenult-penult’, without regard to the sponsor status of the syllables. The details of the distribution of downstepping and
Once the HHL penult/ultima pattern in (146) is lengthened by suffixation (147), the downstep disappears.

(147) **H first stem syllable: no downstep**

a. [lí-phá-sí]-nyaana little country *lí-phásí-nyaana
b. [mú-tálf]-nyaana little parent *mú-tálf-nyaana
c. [mú-ngólf]-nyaana little writer *mú-ngólf-nyaana
d. [sí-kóló]-nyaana little school *sí-kóló-nyaana

5. 5. 3. 2. Verbs

As an example of verb morphology which invokes downstep, infinitives (first presented in Chapter 4 §4.1) reveal downstep at the stem boundary in pre-penult position, in H stems (148).

(148) **Infinitives containing downstep (H stems)**

a. kú-bóóna to see
b. kú-mééma to invite

(149) **Longer infinitive forms lack downstep**

a. kú-bóníísa to show
b. *kú-bóníísa

c. *kú-bó’níísa

Positional downstep occurs only at the antepenult-penult boundary: in ill-formed (149b) it would be in pre-antepenult position; in ill-formed (149c) it would be in the right prominence position, but without a stem boundary.

5. 5. 4. **Ultima Downstep**

The only post-penult position that could potentially tolerate a positional downstep is immediately preceding the ultima. Only 1-σ stems could illustrate this, but as we have seen all phrase-final [-HH] sequences have falling penults, thus preventing examination of level high long penult and ultima tones. Short penults do not condition downstep, so a final [-HH] sequence non-downstepping speakers remain unclear.

I do not include here the double downstep phenomenon that can occur with the inclusive -ni suffix (cf. Appendix A, paradigm V).
is irrelevant. In fact, in all phrase-final [-HH] sequences (something I intentionally did not indicate in the preceding sections), the ultima is clearly downstepped relative to the penult, irrespective of domain structure (150-151).

(150) [Penult # ultima] H domains display downstep
   a. [kúu-’phá] to give
   b. [kúu-’khá] to draw (water)
   c. [báa-’phá] they gave
   d. [báa-’khá] they drew (water)

(151) HD-internal [penult # ultima] also display downstep
   a. ...m-[múu’só] government cf. -buus, ‘rule’
   b. ...ti-[bóo’nó] views cf. -boo, ‘see’
   c. li[míi’sá] help cultivate!
   d. li[báltisáa’ná] delay one another!

The ultima downstep facts are disturbing, because the downstep is not at the edge of any phonological domain-sized constituent. This will lead us to the ultimate analysis below where Register Domains are proposed. Returning to the downstep patterns outlined in (142), the positional downstep generalisation in (142d) is confirmed by the following: as soon as a monosyllabic verb stem has an OP prefixed to it (152), the expected antepenult-penult downstep surfaces, confirming that this downstep is independent of morphological stem length.

(152) Obligatory downstep in short H infinitives with an OP
   a. kú-’báá-pha to give them
   b. kú-’wáá-khá to draw it (water)

The ultima stem H (following the OP) is not expressed on the surface here, as expected from the discussion in §5.4.

These Phuthi downstep facts (general, positional and ultima) contrast with a language such as Lungu (Bickmore 1996:11), where downstep is not restricted to a phonological prominence position, but rather to a purely morphologically salient position (the stem edge). In

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73 The remote past tense is particularly complex; historically there seems to have been a long vowel at the prefix-stem juncture (cf. Chapter 7 §7.6.2, and Appendix A, paradigm L).

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Lungu, H stems are invariably downstepped after a H infinitive prefix, at the interface of the two HDs (153a-e), and there is no downstep at the juncture of infinitive prefix and toneless stem (153f-j).

(153) **Lungu infinitive H-stem downstep**

High stems

a. [kú]-[vú]-l-a to inquire
b. [kú]-[vú]-mba to swell
c. [kú]-[físá]-ma to hide
d. [kú]-[físám-í]-r-a to hide for
e. [kú]-[páápáátí]-k-a to flatten

Toneless stems

f. [kú-vú]-l-a to be enough
g. [kú-ví]-mba to thatch
h. [kú-fúlú]-my-a to boil over
i. [kú-sáákú]-l-a to comb
j. [kú-sóóbóló]-l-a to sort out

The examples in (153a-e) reflect the more common case of ‘true’ downstep, which is not positionally restricted in Lungu as it generally is in Phuthi (pre-prominence downstep occurs in the case of depressed syllables, cf. Principle D of Register Domains, in Chapter 7 §7.9).

5.5.5. **ANALYSIS OF POSITIONAL DOWNSTEP**

If a HD left-edge indicates downstep, then the ‘general downstep’ facts in (142a-c) are transparently predicted: every sponsor which initiates a new HD cues downstep. However, positionally restricted downstep in Phuthi is sensitive to morphological boundaries in a way that other Bantu languages are not. I have argued in §5.2 that all adjacent HDs in Phuthi are fused together, except under the conditions for downstep at the antepenult-penult intersection. Hence, the structural differences between the downstep-bearing items in (145) and (148), and the non-downstepping items in (146-147) are now schematised in (154a-b).

(154) **Downstep environments at the antepenult / penult**

a. downstep: \(...[\sigma]_{\text{HD}}+[\sigma]_{\text{HD}} \sigma \#\)
b. no downstep: \(...[\sigma \sigma]_{\text{HD}} \sigma \#\)
Before finalising how to select the downstep position, we need to briefly consider in more
detail two possible ways to approach the downstep/fusion problem; the first will be rejected, the
second will be accepted.

5. 5. 1. Downstep independent of HD structure

This alternative approach would entail the observations in (155a-b) and the analysis in
(155c) or (155d).

(155) Observations and analysis
a. adjacent HDs remain separate;
b. no fusion is tolerated;
c. either: there is a downstep between every two adjacent HDs, since all HD left-edges
   signal downstep, but only at the antepenult-penult boundary is an HD Lf-edge perceived / produced as downstep (see §4);
d. or: an HD left edge is not universally a cue for downstep; but in the antepenult-penult
   position it is.

Under this approach downstep would be a phonetic convention read off the
pre-prominence position (antepenult/penult) in a word, but the left edge of a HD would not be an
unambiguous cue for downstep. If there are potential downsteps between every HD but only the
antepenult-penult one is perceived/produced, then the downstep problem is abstractly shunted to
the phonetics component (assuming such a separate component exists). Thus, (156a) would be
the surface form if there was no fusion in the language, and if the downstep were to occur only
where it is actually perceived, then (156b)\(^\text{74}\).

(156) HDs remain separate; every HD Lf-edge signals downstep
\(\text{kúbá}^{\prime}\text{bóó}na\) ‘to see them’
a. *[ku]-![ba]-![boo]na no-fusion surface form
b. *[kú]-[bá]-![bóó]na no-fusion surface form; particular instances of downstep

\(^{74}\) These approaches would also fail when data from Chapter 7 §7.8.1.10 is considered later
on, because there are pre-prominence downsteps under depression conditions, though they are
not necessarily related to the left edge of the HD (but rather to the left edge of the LD).
5. 5. 5. 2. Downstep is absence of fusion

This approach entails the observation in (157a) and the analysis in (157b).

(157) Observation and analysis
a. all adjacent HDs fuse, except at the antepenult-penult boundary;
b. downstep (almost uniquely) reflects separate H-domains.

Under this approach, every HD left edge (except, trivially, at the leftmost HD edge of a PWord) unambiguously signals downstep.

(158) HDs are fused except at the antepenult/penult boundary

kúbá!bóóna ‘to see them’
a. [kúbá]-[bóó]na fusion, but not at antepenult/penult (therefore: downstep)
b. *[kúbábóó]na fusion, even at antepenult/penult (therefore: no downstep)

It is the approach under discussion in this section that I adopted in §5.2 above (OCP-induced HD-fusion); I accept this as a coherent analysis of the facts here too. But both the routes outlined in (155) and in (157) involve a certain abstraction. If we follow (155), then none of these putative downsteps is heard, except the very last one, if indeed each HD left-edge does signal downstep. This solution is reminiscent of Halle and Vergnaud’s (1987) condition on exhaustive footing across a word, even though in non-iterative stress languages only one foot at one edge of the word (in penult or peninitial stress systems) would get a line 2 asterisk, and thus be perceived as stressed. Just as under that approach there was a considerable amount of gratuitous structure generated\(^{75}\), so there is here, if we are forced to accept that surface downstep cannot be transparently read off domain structure. This opaqueness runs counter to the spirit of ODT, which desires functional unification of phonetics and phonology, so that the expression of features is maximally transparent from domain structure.

Under the second approach (157), however, there is no surface \(F_0\) consequence of fusing HDs together; but downstep is now positionally predictable from penult prominence and morphological information. I suggest, therefore, that this second fusion approach is analytically superior for the two reasons given in (159).

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\(^{75}\) Thanks to Robert Kirchner for making this connection for me.
Absence of fusion means downstep
a. cross-dialectally, fusion is well-motivated in Nguni, e.g. in Xhosa (Cassimjee 1995, C&K 1998), where only the rightmost syllable in a fused HD is actually surface-H;
b. whatever else may be the case, if we force a penult H-sponsor to start a fresh HD, then every HD left-edge can now uniquely signal downstep, unifying general and positional downstep.\(^{76}\)

This approach allows the language-parser to interpret a HD left-edge as an instruction: ‘discretely lower the F\(_0\) of the immediately following H span’, whereas the first approach in §5.5.5.1 would need to build in extra conditions of how the parser should decide which left edge is the relevant one to be interpreted as the downstep signal. In so doing, it must also locate the antepenult-penult boundary. In fact, the two approaches are very similar. It is this locating of the antepenult-penult intersection to which we now turn.

It appears again as if constraints are ‘ganging up’ in Mohanan’s (1997) sense: the separate conditions of ‘boundary’ (160) and ‘prominence’ (161) are not sufficient to induce downstep alone, but the combination (162) does achieve this.

\[(160)\] Stem boundary alone does not induce downstep
a. *[kú]+*[bóní]sa to show
b. *[kú]+*[bóní]saana to show one another

\[(161)\] Penult prominence alone does not induce downstep
a. *si-ya+[bó'ní]sa we show
b. *[é'báá]+tfu people

\[(162)\] Stem boundary and penult prominence together induce downstep
a. [mú]-[táá]jí parent
b. [kú]-[bóó]na to see

The analysis can proceed along the lines of Chapter 4 §4.3 above, where constraints are weighted, and the combined weight of two constraints can override a third; or the conditions can

\(^{76}\) This will allow us to achieve post-\(\sigma\)1 downstep in the present negative (Chapter 7 §7.8.1.10 in the same way), through absence of fusion (which absence will be conditioned by the constraints of HD/LD interaction, give in Chapter 7 §7.8.1.9 (292)).
be deconstructed into a set of interacting constraints, where the failure of HD-MIN across the very same antepenult-penult stem boundary was construed as the effect of the conjoined constraints: (AVOIDPROM & CRISPSTEM). Although the location for the application of downstep—that is, the failure of fusion—is the same as the location for HD-MIN failure, there is a problem with simply using the same constraint, AVOIDPROM, to try to achieve this. In the HD-MIN case, AVOIDPROM prevents HD-MIN from extending onto the penult; thus the penult remains toneless. In the present case, the penult bears a H-sponsor, and must simply not be allowed to fuse this HD with that of the preceding antepenult syllable. What we would ideally like to state is that ‘a penult sponsor cannot be part of a larger (fused) domain originating further left’. However, we cannot directly refer to a sponsor in a surface constraint grammar (other than as a locus to parse the left edge of a HD). A HD is a HD, wherever it comes from.

AVOIDPROM and its higher ranked conjoint counterpart, (AVOIDPROM & CRISPSTEM), can provide us with the machinery necessary to prevent an antepenult HD from fusing onto the penult. The rankings (163) are as argued for in Chapter 4 §4.4, with the OCP constraint, *AE, inserted from §5.1 and §5.2 to trigger fusion when the conjoint constraint is not applicable.

(163) Final prominence/boundary rankings
(AvoidProm&CrissPem) >> *AE >> HD-Min >> AvoidProm >> WSA-Rt >> CrissPem

In the case of fusion failure at the antepenult/penult boundary, the prominent penult syllable is being avoided in the sense that it cannot be extended onto from the left, even though it is not being properly avoided since the highly ranked MAX-H forces it to express its own sponsor. The conjoint constraint in Tableau 9 (164g-h) demonstrates the ranking above, covering all downstep and non-downstep permutations involving ‘boundary’ and ‘prominence’ conditions.
(164) **Tableau 9: Downstep at prominence / stem boundary**

- **downstep: **kū- ’bóóna ’to see’

<table>
<thead>
<tr>
<th>/ ku- + -bon-a /</th>
<th>Max-H</th>
<th>Dep-H</th>
<th>(AvoidProm_ &amp; CrispStem)</th>
<th>*AE</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
<th>Crisp Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>φ (a) [kū]+[bóó]na</td>
<td></td>
<td></td>
<td>*</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [kú+bóó]na</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [kú]+boona</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **no downstep (because no prominence at stem boundary)**: si-ya-bóníisa ‘we show’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -bonisa /</th>
<th>Max-H</th>
<th>Dep-H</th>
<th>(AvoidProm_ &amp; CrispStem)</th>
<th>*AE</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
<th>Crisp Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>φ (d) si-ya+[bóníí]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) si-ya+[bó]niisa</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) si-ya+[bó]niisa</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **no downstep (because no stem boundary at prominence)**: kū-bóníxaana ‘to show e.o.’

<table>
<thead>
<tr>
<th>/ ku- + -bon-is-an-a /</th>
<th>Max-H</th>
<th>Dep-H</th>
<th>(AvoidProm_ &amp; CrispStem)</th>
<th>*AE</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
<th>Crisp Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>φ (g) [kú+bóníí]saana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(h) [kú+bóníísáá]na</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) [kú+bóníí][sáá]na</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **HD-Min failure at boundary prominence**: kū-liima ‘to cultivate’

<table>
<thead>
<tr>
<th>/ ku- + -lim-a /</th>
<th>Max-H</th>
<th>Dep-H</th>
<th>(AvoidProm_ &amp; CrispStem)</th>
<th>*AE</th>
<th>HD-Min</th>
<th>Avoid Prom</th>
<th>Crisp Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>φ (j) [kú]+liima</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) [kú+líí]ma</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) [kú]+[líí]ma</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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In the speech of people who do insert a downstep before a **H** penult, regardless of stem boundary location, either there is some kind of domain *fission* constraint, splitting a single **H** parsing a single **H** sponsor into two pieces (e.g. [é][báå]tfu, ‘people’), thus an **H** Lf-edge is inserted before the penult if the penult is **H** anyway; or a downstep is being inserted independent of **H**-structure preceding a **H** penult, perhaps serving to more clearly distinguish the penult from surrounding syllables. I will argue in §5.5.6 below that a single **H** does fission intonationally at the penult/ultima boundary (to be achieved through a fresh instantiation of a Register Domain). Whether this could be extended to as-yet-undetermined sociostylistic conditions as well would need to be researched.
Note: the downstep diacritic is a redundant indication of downstep at every (non-initial) penult HD Lf edge. No candidates are offered which would display a downstep at that juncture (or at any other) if there is not also a HD Lf edge at that point. Such candidates where downstep and domain edgeness do not coincide are considered below (165) for short stems where there is a conflict between fusion and downstep requirements.

There are two patterns that must still be accounted for, relating to the downstep of high syllables that do not coincide with the commencing of a HD: (a) inside fused {OP-stem} domains (whatever the length of the verb stem); (b) at the penult-ultima boundary. While the first of these patterns (exemplified in §5.5.2.1 (144) above) could potentially be resolved by fudging the interpretation of the instruction to the pitch device in the speech production / perception mechanism to somehow mistime the downstep effect by one syllable, the HD-internal ultima downstep pattern in (150-151) above cannot be so easily dispensed with. The pattern will be resolved by an interaction of HDs and a further domain proposal (Register Domains) in §5.5.6.

5. 5. 6. U LTIMA D OWNSTEP A NALYSED: R EGISTER D OMAINS

The fact that a H ultima after a H penult is downstepped in every case (150-151 above) suggests one of two possible approaches. Firstly, the penult-ultima domains in (150a-d) could indeed be fused together, and downstep could occur domain-internally; the implication of this is that downstep is not uniquely triggered by a HD left edge. In (150-151) I have argued that there is indeed only one HD present across the penult-ultima. The examples cited where downstep nevertheless occurs in the pre-ultima position would thus confirm that downstep is a feature properly split apart from the unique cue of being a HD left-edge.

The second approach would insist that downstep remains the unique cue to a HD left-edge, and therefore that there can be no fusion in (150a-d), because the ultima must be the left edge of a HD.

In addition, in (151a-d), where there should only be one HD present, we are forced to say there are in actual fact two HDs in each case, and that therefore not all HDs possess a unique sponsor; these examples would have one sponsor (the stem tone) sponsoring two distinct HDs, a configuration which would roundly violate Uniqueness (one of the domain correspondence constraints assumed throughout78).

78 The basic domain correspondence constraints are discussed in Chapter 3 §3.3.3, and above in §5.2.2.
As neither approach is theoretically satisfactory. I now consider a third approach: Register Domains, whose final form will only become clear in Chapter 7 §7.9.

Cassimjee (1995, 1998) and Kisseberth (p.c., 1994) have proposed a separate layer of domain structure to represent each intonational phonological level in Xhosa, that is, each downstep domain—each stepwise lowered F₀ level. These authors propose that in Xhosa a series of adjacent HDs are grouped together into a single Register Domain (RD), unless interrupted by a depressor consonant, which itself will initiate a new RD. The empirical demands of Xhosa are such that HDs can merge nonlocally (under certain conditions), in which case the merged domain of H-ness is termed a Register Domain. Kisseberth (p.c., 1996) believes that RDs will play a significant role in all Bantu languages with phonologically active depression (whether triggered by breathy voicing or not).

An immediate question in the present work must remain whether it is necessary to invoke an entire extra layer of intonation structure such as Register Domains. I maintain that Register Domains are necessary, based on all the preceding discussion.

The proposal for Phuthi, then, is that Register Domains will be constructed off: (a) every non-initial HD left edge (established above in this section); (b) every LD left edge that coincides with being inside an HD (Chapter 7 §7.9); (c) every penult/ultima boundary where the ultima is inside an HD.

The ultima facts established in (150-151), then, would appear nothing more than a special instance of general downstep: the sequence -σ|HD|Word has been shown to be actually -(µ|µ|µ), that is, two separate high F₀ peaks. It is this fresh F₀ excursion on the ultima in (165a) below that appears to cue the further instance of downstep. In (165b), there are two sponsors, fused into a single HD; the downstepped ultima may reflect where the pre-fusion HD left edge was. But in (165c), the downstep definitely does not coincide with a HD left edge. I propose, therefore, the

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79 In addition to the facts in (150-151), it will be seen in Chapter 7 that a phonational property (breathiness), reinterpreted as a tonal property (depression), should best be represented by an independent tone feature, Low. As such the—the left edge of a Low Domain (LD)—will almost always cause some form of register lowering. Where a LD will be seen to overlap with a HD, it will almost always cause a categorial tone change from H to L, even if that results in an apparently fissioned HD (§7.2). We cannot, therefore, complete the discussion of downstep at this point. Nevertheless, I attempt here to resolve the overlap paradox of apparently downstepping at the ultima even HD-internally.
Register Domain (RD) structure in (165) (marked with ‘|’), which allows the downstep to be marked, and which does not necessarily coincide with a HD left edge.

(165) **Ultima downstep = left edge of RD**
   a. -ér|ú|ŕ[HD]$_{pWord}$
   b. [kúu-’phá]
   c. ...ti-[bóo’nó]
   d. [l kúu- | phá]
   e. ...ti- [l bóo | ’nó]

   The placing of the RD ‘right edge’ in each case is not clear, nor need it be, since Register Domains are not the same genre of theoretical entity as H domains (and L domains, to follow in Chapter 7): RDs have no unique parsed feature; rather they instruct the pitch implementation system where exactly to begin (the left edge of) an expressed HD or span of intonational highness. Thus, in this work the orthographic cue ‘|’ marks the left edge of an RD.

   The same is true for the object prefix sequence (166a), where the HD structure itself is insufficient to provide the necessary set of RD left edge cues. The commencement of the RD is misaligned one syllable to the right of the HD left edge in (166b) (the structure exemplified reflects a verb in the present indicative long form).

(166) **Downstep after an Object Prefix**
   a. {SP}-ya-{OP}-{stem}
   b. [s|]-ya-[σOP- l ’σσ...]σσ $#pWord

   I propose, therefore, a general align constraint (167a) to parse Register Domains, whose left edge will reflect the location of every surface span of register H-ness; in addition, a second constraint (167b) will force the ultima to commence a new RD, and a third constraint (167c) will force the misalignment of the HD left edge and RD left edge at the start of an OP string. These three constraints (thus far) are the Register Domain Principles.
Register Domain Principles

A. General (including positional) downstep
   Align (HD, Lf, RD, Lf) Align the Lf edge of every HD with the Lf edge of some RD. = Align RD, Lf

B. Ultima downstep
   Align (σ₁̄[HD#], Lf, RD, Lf) Align the Lf edge of every ultima syllable with the Lf edge of some RD. = Align Ultima, RD

C. Post-OP downstep
   Align (OP, Rt, RD, Lf) Align the Rt edge of every OP morpheme with the Lf edge of a RD. = *Align OP, RD

In Chapter 7 §7.9, the fourth RD principle will be added, in view of the LD/HD interactions which will be established in §7.2-7.8 based on a range of ‘interference’ with H expression arising from the parsing and expression of the L feature.

5.5.7. Constraint Summary

I summarise the new rankings (168), and the entire constraint set up to this point (169), with the dominance relations visually sketched in (170).

(167) Constraint Set, version 10: new rankings
   a. Align_(HD, Lf, RD, Lf) from (167)
   b. Align_(σ₁̄[HD#], Lf, RD, Lf) from (167)
   c. Align_(OP, Rt, RD, Lf) from (167)

(168) Total constraint summary (partial): version 10
   • Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt
     • Expression rankings
       Express_H >> Dep-H >> almost everything
     • Morphology / H-extension rankings
       (AvoidProm&CrispStem) >> HD-Min >> WSA-Rt >> CrispStem
     • Reduplication rankings
       *H-in-Wap >> PU_RED/Base >> Max-H >> HD-Min >> AvoidProm
     • Phrase final // medial rankings
       PU-Lex(H)>> everything
     • OCP rankings
       Max-H >> (AvoidProm&CrispStem) >> *AE >> BA-Lf >> NonFin >> HD-Min

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- **Penult shapes rankings**
  \[ \text{Express}_H(\sigma) >> *\text{Rise} >> \text{EndLow}, \text{Align}_\text{EndLow} >> \text{Express}_H(\mu) >> \text{HD-Min} >> *\text{Fall} >> \text{AvoidProm} \]

- **OP rankings**
  \[ \text{Contrast}_{\text{HD}} >> *\text{Express}_{\text{Ult}} >> *\text{Express}_{\text{OP}} >> \text{Express}_H \]

- **Register Domain rankings**
  a. \( \text{Align}_{(\text{HD}, \text{Lf}, \text{RD}, \text{Lf})} \)
  b. \( \text{Align}_{(\sigma_{\text{HD}#}, \text{Lf}, \text{RD}, \text{Lf})} \)
  c. \( \text{Align}_{(\text{OP}, \text{Rt}, \text{RD}, \text{Lf})} \)

(170) **Constraint rankings, version 10: dominance orderings**

\[
\begin{align*}
\text{Contrast}_{\text{HD}} & \\
| & \\
*\text{Express}_{\text{Ult}} & \\
| & \\
*\text{Express}_{\text{OP}} & \\
| & \\
*\text{H-in-Wap} & \\
| & \\
| & \text{Express}_H(\sigma) \\
\text{PU}_{\text{RED/Base}} & \\
| & \\
| & *\text{Rise} \\
\text{Max-H} & \\
| & \\
| & \text{EndLow, Align}_\text{EndLow} \\
\text{AvoidProm}_{\&\_\text{CrispStem}} & \\
| & \\
| & *\text{AE} \\
| & \\
| & \text{Ba-Lf} \\
| & \\
| & \text{Non-Fin} \\
| & \\
| & \text{HD-Min} \\
| & \\
| & *\text{Fall} \\
| & \\
\text{AvoidProm} & \\
| & \\
| & \text{WSA-Rt} \\
| & \\
| & \text{CrispStem} \\
& \text{BA-Rt}
\end{align*}
\]

- The version 10 rankings are the same as version 9 (139), except that there are now also Register Domain alignment constraints, but these do not interact in any crucial way with the constraint set already assembled.
5. 6. Tone in nouns

In the final section of this chapter, we briefly examine the tonal patterns for Phuthi nouns. We have already seen nouns exemplified and discussed in the course of Chapter 2 §2.2.1, Chapter 4 §4.3.1, §4.3.2.1, and the present chapter (§5.1.1.1), and we will return to nouns in the discussions of the (depressor) phonology of the copula (Chapter 7 §7.5), begun in Chapter 2 §2.2.1.1, §2.2.1.7.

5. 6. 1. Nominal Tone Structure

Every Phuthi noun has a particular noun prefix, as indicated and exemplified in (171). Every syllabic prefix—that is, not the segmentally empty Class 1a—bears a H tone in its non-post-negative form, that is, in its citation form.

(171) Noun prefixes

<table>
<thead>
<tr>
<th>NC</th>
<th>NC Pref</th>
<th>Example</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ì-</td>
<td>mú-tfwana</td>
<td>child</td>
</tr>
<tr>
<td>2</td>
<td>ëba-</td>
<td>ëbá-tfwana</td>
<td>children</td>
</tr>
<tr>
<td>1a</td>
<td>Ø</td>
<td>ñtaaté</td>
<td>man / father</td>
</tr>
<tr>
<td>2b</td>
<td>bo-</td>
<td>bó-ñtaaté</td>
<td>men / fathers</td>
</tr>
<tr>
<td>3</td>
<td>ì-</td>
<td>mú-miito</td>
<td>throat</td>
</tr>
<tr>
<td>4</td>
<td>mì-</td>
<td>mí-miito</td>
<td>throats</td>
</tr>
<tr>
<td>5</td>
<td>li-</td>
<td>lí-tipho</td>
<td>nail</td>
</tr>
<tr>
<td>6</td>
<td>ëma-</td>
<td>ëmá-tipho</td>
<td>nails</td>
</tr>
<tr>
<td>7</td>
<td>si-</td>
<td>sí-liimo</td>
<td>year</td>
</tr>
<tr>
<td>8</td>
<td>ti-</td>
<td>tí-liimo</td>
<td>years</td>
</tr>
<tr>
<td>9</td>
<td>i-</td>
<td>í-tshaaba</td>
<td>mountain</td>
</tr>
<tr>
<td>10</td>
<td>ti-</td>
<td>tí-tshaaba</td>
<td>mountains</td>
</tr>
<tr>
<td>14</td>
<td>bu-</td>
<td>búú-tfu</td>
<td>humanity</td>
</tr>
<tr>
<td>15</td>
<td>ku-</td>
<td>kú-liima</td>
<td>cultivating (to cultivate)</td>
</tr>
</tbody>
</table>
Phuthi nominal tonology displays essentially the same properties that have been demonstrated to hold for the verb paradigms in Chapter 4 and this chapter (§5.1-5.5). The following tonal properties (172) characterise phrase-final nouns.

(172) **Tonal properties of nouns**
   a. H targets antepenult as rightwards extent of HD-alignment;
   b. H sponsored on antepenult extends to penult;
   c. H does not extend to penult if stem boundary intervenes between antepenult and penult;
   d. H on ultima always parses.

These patterns are achieved, as demonstrated in Chapter 4, by the constraints and interactions in (173), and are exemplified in (174).

(173) **Constraint interactions which implement tonal properties in (172)**
   a. NonFin >> AvoidProm >> WSA-Rt
   b. HD-Min >> AvoidProm
   c. (AvoidProm & CrispStem) >> HD-Min
   d. Max-H >> NonFin

(174) **Nominal tone patterns**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Post-negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>[tí-nó]nyaana</td>
<td>ti-nonyaana</td>
</tr>
<tr>
<td>[ébáá]-tfu</td>
<td>baa-tfu</td>
</tr>
<tr>
<td>[mú]-tfwaana</td>
<td>mu-tfwaana</td>
</tr>
<tr>
<td>...tii-[tfó]</td>
<td>...tii-[tfó]</td>
</tr>
</tbody>
</table>

In addition to the properties in (174), there are noun-specific lexical and prosodic properties; the main ones are expressed in (175).

(175) **Noun-specific prosodic properties**
   a. Every noun stem syllable can be lexically specified for tone (H or toneless);
   b. Segmental noun prefixes all carry a morphological H tone specification;
   c. Deverbative non-agentive nouns display verb tone properties.

---

80 As post-negative nouns display no prefix H tone, the stem tones are salient. (Citation form nouns on the left do display the prefix H).
(175a) gives rise to $2^n$ tone combinations for a noun of $n$ syllables long. This is exemplified in (176) with a complete set of (non-depressor) $2-\sigma$ stems, given both with their prefix tone absent (post-negative), and present (citation).

(176) **Bisyllabic stems: four possible tone combinations**

<table>
<thead>
<tr>
<th>Stem tone</th>
<th>Post-negative</th>
<th>Citation</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ØØ</td>
<td>...mu-tfwaana</td>
<td>mú-tfwaana</td>
<td>child</td>
</tr>
<tr>
<td>b. ØH</td>
<td>...mu-hlaabá</td>
<td>mú-hlaabá</td>
<td>ground, soil</td>
</tr>
<tr>
<td>c. HØ</td>
<td>...li-qhweelé</td>
<td>lí-qhweelé</td>
<td>piece of string</td>
</tr>
<tr>
<td>d. HH</td>
<td>...mu-táá</td>
<td>mú-táá</td>
<td>parent</td>
</tr>
<tr>
<td>e. HH</td>
<td>...li-pháási</td>
<td>lí-pháási</td>
<td>country, earth</td>
</tr>
<tr>
<td>f. HH</td>
<td>...li-lími</td>
<td>lí-lími</td>
<td>tongue</td>
</tr>
</tbody>
</table>

The claim that each syllable in an undervived noun is contrastive for tone is supported by evidence of what Goldsmith (1976) terms ‘tonal stability’. Even if the tone-bearing nucleus linked to a tone is deleted, the H tone perseveres in the same syllable position (177), most salient in stems ending on a H tone (177c,d,g,h). (The locative has been presented in Chapter 2 §2.2.1.4).

(177) **Tonal stability in nouns**

<table>
<thead>
<tr>
<th>Citation form</th>
<th>Citation gloss</th>
<th>Locative: -eeni</th>
<th>Locative gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-tfwaana</td>
<td>child</td>
<td>čé-mú-tfwán-eeñi</td>
<td>in/on/at the child</td>
</tr>
<tr>
<td>b. tí-hlooko</td>
<td>heads</td>
<td>čé-tí-hlékwen-eeñi</td>
<td>in/on/at the heads</td>
</tr>
<tr>
<td>c. mú-hlaabá</td>
<td>ground, soil</td>
<td>čé-mú-hlaab-eeñi</td>
<td>in/on/at the ground, soil</td>
</tr>
<tr>
<td>d. lí-qhweelé</td>
<td>piece of string</td>
<td>čé-lí-qhwel-eeñi</td>
<td>in/on/at the piece of string</td>
</tr>
<tr>
<td>e. mú-táá</td>
<td>parent</td>
<td>čé-mú-tál-íñi</td>
<td>in/on/at the parent</td>
</tr>
<tr>
<td>f. lí-pháási</td>
<td>country, earth</td>
<td>čé-lí-phás-eeñi</td>
<td>in/on/at the country, earth</td>
</tr>
<tr>
<td>g. mú-khóotí</td>
<td>friend</td>
<td>čé-mú-khot-íñi</td>
<td>in/on/at the friend</td>
</tr>
<tr>
<td>h. lí-lími</td>
<td>tongue</td>
<td>čé-lí-lími-eeñi</td>
<td>in/on/at the tongue</td>
</tr>
</tbody>
</table>

Similarly, stems of 3-σ and longer display a range of H-patterns, for which no further constraints or rankings are required. In this respect, then, nouns are ‘properly tonal’, instantiating both toneless and H possibilities for each syllable in their stems, as opposed to verbs, where most stem syllables are all tonally predictable given information about the stem tone category (toneless/low or High), and given the grammatical paradigm in which a particular verb finds itself.
5.6.2. Deverbative Nouns: Prosodic Mismatch and Cophonoology

There is one category of noun which displays a peculiar tonal property. Action deverbatives are nouns productively derived from verbal roots by means of the toneless suffix \(-o\), and they refer to a state or action, that is, they are not agentive (human) deverbatives. These action deverbatives display verbal tone properties, as if they were verbs, that is, they behave as if there were an additional two syllables at the right edge of the PWord. In other words, their tonal properties are exactly as with verbs, but only if their actual ultima syllable were the antepenult in the verb (or other noun). What is particularly disturbing about this pattern is that it applies only to stems from the High tone morphological stem class! This property is exemplified in (178-181), where both verbal and nominal forms of the same root are presented (from various noun classes). The examples which are particularly surprising are those in (180-181), since by all previous expectations the stem H should not enter the ultima at all.

Toneless/low stems

(178) 2-σ stems

<table>
<thead>
<tr>
<th></th>
<th>gloss</th>
<th>verb root</th>
<th>verb gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>mú-liimo cultivated land</td>
<td>si-ya-liima</td>
<td>we cultivate</td>
</tr>
<tr>
<td>b.</td>
<td>í-llo   crying</td>
<td>si-ya-lia</td>
<td>we cry</td>
</tr>
<tr>
<td>c.</td>
<td>í-yeeto action, deed</td>
<td>si-ya-yeeta</td>
<td>we do / make</td>
</tr>
</tbody>
</table>

(179) 3-σ stems

<table>
<thead>
<tr>
<th></th>
<th>gloss</th>
<th>verb root</th>
<th>verb gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>sí-kwáyeelo lid</td>
<td>si-ya-kwayeela</td>
<td>we put on a lid, cover</td>
</tr>
<tr>
<td>b.</td>
<td>sí-tshwántsho picture, drawing</td>
<td>si-ya-tshwántsho</td>
<td>we draw (a picture)</td>
</tr>
<tr>
<td>c.</td>
<td>í-wóteelo drowsiness</td>
<td>si-ya-wóteela</td>
<td>we become drowsy</td>
</tr>
</tbody>
</table>

High stems

(180) 2-σ stems

<table>
<thead>
<tr>
<th></th>
<th>gloss</th>
<th>verb root</th>
<th>verb gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>lí-bítö name</td>
<td>si-ya-bíta</td>
<td>we call</td>
</tr>
<tr>
<td>b.</td>
<td>í-thúúsa help</td>
<td>si-ya-thúúsa</td>
<td>we help</td>
</tr>
<tr>
<td>c.</td>
<td>tí-bóóna scenes</td>
<td>si-ya-bóóna</td>
<td>we see</td>
</tr>
</tbody>
</table>

(181) 3-σ stems

<table>
<thead>
<tr>
<th></th>
<th>gloss</th>
<th>verb root</th>
<th>verb gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>mú-khúłúumó speech, language</td>
<td>si-ya-khúłúuma</td>
<td>we speak</td>
</tr>
<tr>
<td>b.</td>
<td>í-bónísó show</td>
<td>si-ya-bónísó</td>
<td>we show</td>
</tr>
<tr>
<td>c.</td>
<td>í-sébéeto job</td>
<td>si-ya-sébéeta</td>
<td>we work</td>
</tr>
</tbody>
</table>
HD structure is supplied in (182) for the examples above.

(182) Deverbatives
   a. Toneless stem, 2-σ [í]-yeeto
   b. Toneless stem, 3-σ [í]-wó]teelo
   c. High stem, 2-σ [í]-[bóonó]
   d. High stem, 3-σ [í]-[sébéetó]  

High stems such as (182c-d) reveal that the stem H tone is being widescope-aligned to the right edge of the PWord—all the way to the ultima. The surface tone on these words only makes tonological sense if AvoidProm and NonFin are entirely inert. This particular subset of the noun inventory thus induces reranking of these two edge constraints, so that they fail to prevent the stem H tone from reaching either the penult or the ultima. The words display the constraint interaction in (183).

(183) Deverbative rankings
   a. WSA-Rt >> NonFin α >> β
   b. WSA-Rt >> AvoidProm α >> γ

The first problem with these reranked constraints, insofar as they apply to just a subpart of the Phuthi grammar, is that they seem to present a constraint ranking paradox: α >> β/γ, and β/γ >> α: the ranking in (183) conflicts with that established in Chapter 4 §4.1, repeated as (184).

(184) Established ranking: widescope alignment targets the antepenult
   a. NonFin >> WSA-Rt β >> α
   b. AvoidProm >> WSA-Rt γ >> α

---

81. The peculiar tonal nature of these words will is confirmed by deverbatives with one or more depressor consonants in their stems, as will become evident in Chapter 7 §7.5.

82. After fusion, this word is domained as: [í-sébéetó]. This happens in other word categories too, e.g. the absolute pronoun base prefixed by a copula (cf. Chapter 2 §2.2.2.1, footnote 178): guu-wé, where the fused HD is argued to be the entire word: [guu-wé], and the penult shifts its H to the ultima.

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That is, it is as if deverbative nouns are prosodically mismatched with regular verbs and nouns: they do not see right word-edge as a phrase-edge, but as an alignment zone free of the constraining anti-align effect of the W\textsubscript{AP} presence (§4.1.4.6, §4.4.2, §4.5.2.2). And yet these deverbative nouns display the anticipated long penult (W\textsubscript{AP}-head) effect. Thus, the previously established ranking of \texttt{AvoidProm} and \texttt{NonFin} must be challenged.

Although an optimality grammar is premised on a strict unique ranking of constraints as a core aspect of its structure, it has been recognised for some time that languages have subgrammatical patterns that require reranked constraints forming distinct ‘cophonologies’ (Orgun 1996; Inkelas 1998; Anttila 2002; Inkelas & Zoll 2003). The patterns exemplified in (183) above\textsuperscript{83} provide initial evidence for a tone cophonology (or cotonology) in Phuthi.

The second problem with the altered rankings in (183) is that they appear to apply only to High stems. If the new anti-edge ranking (183) applied to both toneless and High stems, we would expect (178a) and (179a) to have the hypothetical surface forms in (185).

(185) Putative surface patterns in toneless deverbative stems

<table>
<thead>
<tr>
<th>Hypothetical output</th>
<th>Actual output</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *[í-yéetó]</td>
<td>[í]-yeeto</td>
</tr>
<tr>
<td>b. *[í-wótéeló]</td>
<td>[í]-wó]teelo</td>
</tr>
</tbody>
</table>

The generalisation about the High stems in (180-182) appears to be that the rankings in (183) apply only to the alignment of a H feature within a deverbative, non-agentive stem, that is, a stem derived from a verb root. Toneless deverbative noun stems remain unaffected by the reranking because while a H tone may extend off the prefix into the toneless noun stem in the output form (185), the H originates outside of that stem.

But nonderived (that is, not deverbative but underived nominal) H stems (186) and \textit{agentive} deverbative stems (187) are also unaffected by the deverbative High stem reranking above (183), that is, remain faithful to the original \texttt{AvoidProm} >> WSA-Rt ranking.

\textsuperscript{83} We will examine similar and more pervasive reranking in the grammatical tone paradigms (e.g. Chapter 6 §6.2.2.1, §6.2.2.2, §6.3.1.2 - §6.3.1.4, §6.3.2.1 - §6.3.2.2), where right-edge alignment is more varied than even in the present section.
Nonderived stems containing stem-initial H

<table>
<thead>
<tr>
<th>Post-negative</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ...ti-hlítíýo</td>
<td>tí-hlítíýo</td>
</tr>
<tr>
<td>b. ...li-cžkúči</td>
<td>lí-cžkúči</td>
</tr>
<tr>
<td>c. ...li-rál:la</td>
<td>lí-rál:la</td>
</tr>
</tbody>
</table>

Agentive deverbative stems

| | |
| a. mu-sébééťj | worker | si-ya-sébééťa | we work |
| b. mu-bóníísí | one who shows | si-ya-bóníísá | we show |
| c. mu-khůlůúmí | speaker | si-ya-khůlůúma | we speak |

The post-negative form in (186) reveals the behaviour of lexical stem tone without being affected by the H prefix; the isolation form contains the noun prefix with prefix tone. In (187), the noun examples on the left contrast with the present indicative verbs on the right, and with non-agentive nouns derived from the same verb roots in (181) above.

Stems thus have two morphologically conditioned layers of constraint application: (a) alignment of the derived (non-agentive) stem-internal H; (b) general H alignment. An obvious strategy to pursue is provided by the theory of lexical phonology (Kiparsky (1982), Mohanan (1982); Kaisse & Shaw (1985) and references therein): a particular constraint ranking applies to the morphological stem domain ‘before’ the noun prefix is concatenated; that is, a distinction can be drawn between the lexical and postlexical tonology. But the Phuthi distinction is evidently finessed: the new, deverbative widescope ranking applies only if the noun stem contains internal morphological complexity, that is, if it is derived. This accords with the derived environment condition, which emerges as a constraining stipulation on lexical rules (read: constraints) in Lexical Phonology.

The previously established widescope pattern (184) does not apply across word boundaries here (which is the clearest instantiation of a postlexical constraint), but to morphological noun domains ‘after’ the H-tone noun prefix has been affixed. This division between derived stem domain and noun-prefix-with-stem domain is no surprise: Myers (1987) has argued convincingly for Shona—extendable to Bantu more generally—that noun prefixes are separate words which are assembled postlexically.
The two modules of the Phuthi tone grammar thus require distinct rankings of the same constraints, as indicated in (188), and charted in (189). \((\lambda)^{84}\) in (188a) refers to the level at which a particular ranking applies; in other words, the reranking is subject to \(\lambda1\) level-specific conditions, much like rerankings will be subject to paradigm-specific (\(\pi\)) conditions in Chapters 6 and 7.

(188) Right-edge ranking cophonologies
   a. derived stem-level alignment \(\text{WSA-Rt} \gg \text{AvoidProm, NonFin} \quad \lambda1\)
   b. postlexical phrasal alignment \(\text{NonFin} \gg \text{AvoidProm} \gg \text{WSA-Rt} \quad \lambda2\)

In the conceptualisation of Orgun (1996), Inkelas (1998), Anttila (2002), Inkelas & Zoll (2000, 2003), (188a) and (188b) reflect distinct cophonologies (as opposed to indexed constraints\(^{85}\), which I will invoke in Chapters 6 and 7; and cf. footnote 85).

Tableau 10 displays both stem-level and word-level constraint rankings; the output candidates are identified by cumulatively respecting the stem-level and word-level constraints. Constraints can only be evaluated once; thus stem-level constraints cannot be reevaluated at the word-level.

(189) Tableau 10: NonFin and AvoidProm have \(\lambda\)-specific cophonological rankings
High stem: í-ṣébéetó, ‘job’

| PWord level / í- + -(ṣebeto) / | Non Fin | Avoid Prom | WSA-Rt | derived stem level /-ṣebeto/ | Max-H | Dep-H | WSA-Rt | Non Fin | Avoid Prom |
|---|---|---|---|---|---|---|---|---|---|---|
| ²² (a) [í]-[ṣébéetó] | ** | | | | | | | | |
| ²² (b) [í]-[ṣé]beeto | ** | | | | | | | | |
| ²² (c) [í-ṣé]beeto | ** | | | | | | | | |

\(^{84}\) Where this type of symbol is used for a cophonology, it is not functioning as ‘constraint indexing’, but rather is shorthand for grouping together the constraints from a single cophonology.

\(^{85}\) Inkelas & Zoll (2003) argue strongly against the sole good argument (‘grammar dependence’), as they see it, for the alternative indexed constraint approach. There is no need in this work to adopt a particular stance on the distinction, but I assume the theoretical adequacy of the cophonological analysis (though I do use constraint indexing in the following two chapters to signify membership of a particular cophonology).
Toneless (Low) stem: í-wótelo, ‘drowsiness’

<table>
<thead>
<tr>
<th>PWord level / í-(wotelo) /</th>
<th>Non</th>
<th>Avoid</th>
<th>WSA-Rt</th>
<th>derived stem level /-wotelo/</th>
<th>Max-H</th>
<th>Dep-H</th>
<th>WSA-Rt</th>
<th>Non</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) [í-wó]teelo</td>
<td>**</td>
<td></td>
<td></td>
<td>-woteelo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [í]-[tó]eló</td>
<td>**</td>
<td></td>
<td></td>
<td>![wótééló]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [í-wótéél]lo</td>
<td>*</td>
<td></td>
<td></td>
<td>-woteelo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) [í-wótééló]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td>-woteelo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The optimal output of the toneless/low and High stem words at the PWord level is provided in column 1, and at the derived stem level in column 5;
- The optimal High-stem candidate (a) is selected at the level of stem constraints: (b) and (c) both violate WSA-Rt at the stem level;
- The stem-level constraints are all irrelevant for the evaluation of the optimal Low-stem candidate (d), however, unless a H is wrongly inserted at the stem-level (e); rather, the same constraints—but differently ranked—evaluate the right-alignment of the prefix H tone at the PWord level.

As a block, PWord constraints must outrank all of the stem-level constraints in the hierarchy. Thus, (190) indicates the ranking of the levels (or modules) in the OT grammar.

(190) **Ranking of morphological/phonological modules in an OT grammar**

PWord-level constraints >> Stem-level constraints

In this section, we have seen the first evidence of a constraint ranking necessary below the level of the PWord. But this is the second instance of level-specific rankings: in Chapter 4 §4.5, the reranking of WSA-Rt over AVOIDPROM was demonstrated for phrase-medial PWords; here, the reranking of WSA-Rt over both AVOIDPROM and NONFIN has been demonstrated for the morphological class of non-agentive deverbative nouns, at the level of derived stem. We will see further instances of paradigm-specific rerankings—also right-edge related—in Chapter 6 §6.3.

5. 6. 3. CONSTRAINT SUMMARY

I summarise the constraint set motivated up to this point, and the necessary rankings in (191-193). The only new information to add to the constraint set already motivated so far is the reranking required to explain stem tone in certain noun configurations. I indicate this with a λ to
signal that there is level-specific reranking required. This is the final constraint set for the non-depression lexical tone grammar.

(191) **Constraint Set Summary, version 11: new rankings**
- **Noun rankings**
  a. derived stem-level alignment $\text{WSA-Rt} \gg \text{AvoidProm, NonFin} \ \lambda_1$ (from 188)
  b. postlexical phrasal alignment $\text{NonFin} \gg \text{AvoidProm} \gg \text{WSA-Rt} \ \lambda_2$ (from 188)

(192) **Total constraint summary (partial): version 11**
- **Max-H, BA-Lf >> NonFin >> HD-Min >> Avoid Prom >> WSA-Rt >> BA-Rt**
- **Expression rankings**
  $\text{Express}_H \gg \text{Dep-H} \gg \text{almost everything}$
- **Morphology / H-extension rankings**
  $(\text{AvoidProm}&\text{CrispStem}) \gg \text{HD-Min} \gg \text{WSA-Rt} \gg \text{CrispStem}$
- **Reduplication rankings**
  $^{\*H}_{\text{-in-Wap}} \gg \text{PU}_{\text{RED/Base}} \gg \text{Max-H} \gg \text{HD-Min} \gg \text{AvoidProm}$
- **Phrase final // medial rankings**
  $\text{PU-Lex}(H) \gg \text{everything}$
- **OCP rankings**
  $\text{Max-H} \gg (\text{AvoidProm}&\text{CrispStem}) \gg ^*\text{AE} \gg \text{BA-Lf} \gg \text{NonFin} \gg \text{HD-Min}$
- **Penult shapes rankings**
  $\text{Express}_H(\sigma) \gg ^*\text{Rise} \gg \text{EndLow}, \text{Align}_\text{EndLow} \gg \text{Express}_H(\mu) \gg \text{HD-Min} \gg ^*\text{Fall} \gg \text{AvoidProm}$
- **OP rankings**
  $\text{Contrast}_\text{HD} \gg ^*\text{Express}_\text{Ult} \gg ^*\text{Express}_\text{OP} \gg \text{Express}_H$
- **Register Domain rankings**
  a. $\text{Align}_{(HD, Lf, RD, Lf)}$
  b. $\text{Align}_{(\sigma)_{\#}, Lf, RD, Lf}$
  c. $\text{Align}_{(OP, Rt, RD, Lf)}$
- **Noun rankings (cophonologies)**
  a. derived stem-level noun H alignment $(\text{WSA-Rt} \gg \text{AvoidProm, NonFin}) \ \lambda_1$
  b. postlexical phrasal H alignment $\text{NonFin} \gg \text{AvoidProm} \gg \text{WSA-Rt} \ \lambda_2$
Constraint rankings, version 11: dominance orderings

Contrast_HD
  | *Express_Ult
  | *Express_OP
  | *H-in-Wap
  | Express_H_(σ)
PU_RED/Base
  | *Rise
Max-H
  | EndLow, Align_EndLow
AvoidProm_&_CrispStem
  | Express_H(µ)
  | *AE
  | Ba-Lf
  | Non-Fin λ
  | HD-Min
  | *Fall
  | AvoidProm λ
  | WSA-Rt λ
  | CrispStem
  | BA-Rt

• λ indicates that these constraints are ranked level-specifically (that is, with reference to a particular cophonology).
5.7. Conclusion

In this chapter I have provided data that indicates a far wider range of lexical tone properties than was presented in Chapter 4. We have examined the behaviour of verbs and nouns where more than one H tone is active. I have shown that Phuthi displays two OCP effects: one where the expansion of a HD is blocked if adjacent HDs will result (§5.1), and a second where two adjacent HDs are fused (§5.2); fusion fails only at the antepenult/penult prominence boundary (and downstep is the result). I have teased out the distribution of falling and H tones on long penult syllables, proposing that Phuthi has ‘tonologised’ a property (final lowering) of the intonational phonology (§5.3). We have examined the tonal behaviour of one particular H morpheme: the Object Prefix, which is lexically H, yet seeks—all things being equal—to be expressed as toneless on the surface (§5.4). We have seen that Phuthi contains evidence for an overlaid set of Register Domains left-edge cues premised on morphological and phonological edges, in order to represent tonal downstep at the antepenult-penult boundary, and at the penult-ultima boundary (§5.5). Finally, I have shown that the tone grammar is sensitive to morphologically distinct configurations (non-agentive derived stem vs. postlexical word level), when it deploys particular cophonological constraint rankings (§5.6). Having seen all significant non-depression lexical tone patterns in the language, we turn our attention in the following chapter to a further tonal overlay in the Phuthi verb system: grammatical tone.
Chapter 6

Grammatical Tone

A broad range of verb paradigms in Phuthi are characterised by at least one or more grammatical H tones, that is, by one or more H domains whose presence cannot be predicted from lexical information about the verb stem or the affixes attaching to it, but whose surface tone patterns are nevertheless predictable from tonal specifications invoked by particular morphological paradigms. The tone paradigms under discussion here indicate tense, mood and aspect information\(^1\). The grammatical tone will be seen to overlay the lexical tone in many instances, producing a tonally far more complex output than was seen in any paradigm in Chapters 4 or 5.

There are major theoretical and descriptive points to be made in this chapter. Section §6.1 lays out the full range of H domain (HD) parameters for grammatical tone paradigms. Section §6.2 then shows that grammatical tone paradigms extend HDs to a parameterised right-edge target; in the case of the participial, the grammatical H tone (H\(_{\text{GRAM}}\)) originating on the prefix extends to the antepenultimate position; the present subjunctive and present relative also have an antepenult right target, but in addition they (a) wipe out the stem tone contrast entirely; and (b) parse a distinct H\(_{\text{GRAM}}\) on the ultima syllable; the optimal analysis of these paradigms involves right-aligning a distinct, morphologised ENDLOW locus. Section §6.3 continues with paradigms that target the right edge of the HD (a) the penult (short perfective), or (b) the ultima (imperative and perfective negative). In both cases, paradigm-specific reranking of AVOIDPROM and NONFIN achieve these distinct right-edge tone targets. Section §6.4 provides a short conclusion to the analysis of grammatical H paradigms. Cumulative summaries of constraint inventories and rankings are provided at the end of sections §6.2 and §6.3.

\(^1\) Grammatical voice (active vs. passive, cf. Chapter 2 §2.1.2, §2.2.4.6) is not distinguished by tone contrasts in Phuthi, nor in Bantu generally.
6.1. Establishing the Parameters

Grammatical tone patterns characterise subsets of the verb system, in the majority—if not all—of the Bantu languages\(^2\). In fact, in a wide variety of Eastern Bantu languages—including Kuria, Hehe, Kinga, Safwa, Makonde and Yao (Odden 1989, Hyman & Ngunga 1994) and Makua (Cheng & Kisseberth 1979)—from the Tanzania region, there are no lexical tone contrasts in verbs at all: all tone assignment is grammatical, based on morphological paradigms.

Goldsmith (1987), Downing (1990a,b, 1996), Bickmore (1996), among others, observe that in languages with grammatical H patterns, a grammatical H is assigned to a TBU at a fixed position in the stem—typically the initial, second, penultimate or final position, depending on the tense. It is only rarely that languages address positions further in from stem edges than penultimate or peninitial, but Kuria (Odden 1984), Makua (Cheng & Kisseberth 1979-1981) and other Mozambiquan languages target positions as far as the fourth from the stem or word edge. Phuthi, likewise, makes use of several grammatical H patterns, each characterised by a left edge (1) and right edge (2), in a limited number of positions, as the data in the sections of this chapter will reveal.

(1) Possible left edge for a grammatical H domain in Phuthi
   a. a (grammatically) H prefix
   b. the second syllable of the stem

(2) Possible right edge for a grammatical H domain in Phuthi
   a. antepenult (only if there is a separate grammatical H on the ultima)
   b. the penult
   c. the ultima

All grammatical H patterns in Phuthi instantiate one left- and one right-edge parameter of each of the two sets above. In addition, we will see that all paradigms characterised by (1b), that is, by left-alignment to the σ2 position, reserve the σ1 position for lexical tone marking. Thus, despite the grammatical H patterns which mostly result in identical tone shapes for both toneless

\(^{2}\) Jita displays these grammatical H patterns (Downing 1996), as do Hunde, Bukusu, Haya, Ganda, Shi (Goldsmith 1987, Bickmore 1996:8); Kinga, Safwa, Bena-Hehe, Matuumbi, Makua, Kuria (Odden 1987, 1989); Nyambo, Kerewe (Hubbard 1994), Yao (Hyman and Ngunga 1994), Shona (Hewitt and Prince 1989). Hyman (p.c., June 1993) confirms that this lexical / grammatical paradigm split occurs in every Bantu language he has worked on.
and H stems, a large number of the grammatical paradigms still reserve a single stem-initial syllable slot (σ1) for lexical identification of the stem tone class. This allows the toneless and H stems to maintain their categorial contrast in most cases, something which the language appears to value highly.

To prepare for discussion of grammatical tone that lies ahead, I present a significant subset of the mood and tense paradigms in Phuthi summarised in (3) below, with their HD alignment parameters. Data from each of the grammatical paradigms (e-o) will be presented and discussed in this chapter (except for the potential, with depressed prefix, -gā-, (cf. Chapter 2 §2.2.4.9, Appendix A, paradigm Q). The columns in Tableau 1, from left to right, indicate:

i. the common name for the paradigm;
ii. the tonal nature of the prefix: grammatical H (always H), or lexical H (variably H);
iii. whether there is a lexical σ1 stem tone contrast;
iv. the left edge of the lexical H (a-d) or the principle grammatical H (e-o);
v. the right edge of the lexical H (a-d) or the principle grammatical H (e-o);
vi. whether there is an additional grammatical H, and what syllable position it occupies;
vi. the maximum number of H tones active in a word of this paradigm (assuming a toneless SP where possible), and assuming no OP; where the SP must be grammatically H, this is indicated by ‘1+’.

vii. an indication of which sections of the thesis discuss this morphological paradigm and its tone properties (‘AppA’ refers to ‘Appendix A’).

(3) Tableau 1: Lexical and grammatical H configurations

<table>
<thead>
<tr>
<th>i</th>
<th>ii</th>
<th>iii</th>
<th>iv</th>
<th>v</th>
<th>vi</th>
<th>vii</th>
<th>viii</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lexical tense / mood</strong></td>
<td><strong>Subject prefix tone status</strong></td>
<td><strong>Lex H in stem σ1?</strong></td>
<td><strong>Lf edge of lexical H</strong></td>
<td><strong>Rt edge of lexical H</strong></td>
<td><strong>Additional gram H</strong></td>
<td><strong># of Hs active</strong></td>
<td><strong>discussed in</strong></td>
</tr>
<tr>
<td>(a) present long indicative</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem Lf edge</td>
<td>antepenult</td>
<td>--</td>
<td>Ø: 0 H: 1</td>
<td>Ch. 4, all sections; AppA(A)</td>
</tr>
<tr>
<td>(b) pres. indicative reduplicative</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem Lf edge</td>
<td>antepenult</td>
<td>--</td>
<td>Ø: 0 H: 1</td>
<td>Ch. 4, all sections; AppA(B)</td>
</tr>
<tr>
<td>(c) perfective long</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem Lf edge</td>
<td>antepenult</td>
<td>--</td>
<td>Ø: 0 H: 1</td>
<td>§4.1 4.2, 4.3; AppA(E)</td>
</tr>
<tr>
<td>(d) pres. indicative medial form</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem Lf edge</td>
<td>penult</td>
<td>--</td>
<td>Ø: 0 H: 1</td>
<td>§4.5; AppA(C)</td>
</tr>
</tbody>
</table>

[Tableau 1 continues on next page]
<table>
<thead>
<tr>
<th>i</th>
<th>ii</th>
<th>iii</th>
<th>iv</th>
<th>v</th>
<th>vi</th>
<th>vii</th>
<th>viii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammatical tense / mood</td>
<td>Subject prefix tone status</td>
<td>Lex H in stem σ1?</td>
<td>Left edge of main gram H</td>
<td>Right edge of main gram H</td>
<td>Additional gram H</td>
<td># of Hs active</td>
<td>discussed in</td>
</tr>
<tr>
<td>(e) present participial</td>
<td>grammatical H</td>
<td>no</td>
<td>subject prefix</td>
<td>antepenult</td>
<td>--</td>
<td>∅:1+0</td>
<td>H: 1+1</td>
</tr>
<tr>
<td>(f) potential</td>
<td>varies lexically H ~ ∅</td>
<td>no</td>
<td>-gg- prefix</td>
<td>antepenult</td>
<td>--</td>
<td>∅: 1</td>
<td>H: 2</td>
</tr>
<tr>
<td>(g) present relative</td>
<td>gram H ła- + lex varying SP</td>
<td>no</td>
<td>relative prefix</td>
<td>antepenult</td>
<td>ultima (suffix -kó)</td>
<td>∅: 1...+1</td>
<td>H: 1...+1</td>
</tr>
<tr>
<td>(h) present subjunctive</td>
<td>grammatical H</td>
<td>no</td>
<td>subject prefix</td>
<td>antepenult</td>
<td>ultima</td>
<td>∅:1+1</td>
<td>H: 1+1</td>
</tr>
<tr>
<td>(i) short perfective</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem σ2</td>
<td>penult</td>
<td>--</td>
<td>∅: 1</td>
<td>H: 2</td>
</tr>
<tr>
<td>(j) inclusive -ni</td>
<td>varies lexically H ~ ∅</td>
<td>yes</td>
<td>stem σ2</td>
<td>penult</td>
<td>--</td>
<td>∅: 1</td>
<td>H: 2</td>
</tr>
<tr>
<td>(k) present negative</td>
<td>grammatical H on prefix σ2</td>
<td>yes</td>
<td>stem σ2</td>
<td>penult</td>
<td>--</td>
<td>∅:1+1</td>
<td>H: 1+2</td>
</tr>
<tr>
<td>(l) imperative</td>
<td>--</td>
<td>yes</td>
<td>stem σ2</td>
<td>ultima</td>
<td>--</td>
<td>∅: 1</td>
<td>H: 2</td>
</tr>
<tr>
<td>(m) remote past</td>
<td>grammatical H</td>
<td>yes</td>
<td>stem σ2</td>
<td>ultima</td>
<td>--</td>
<td>∅:1+1</td>
<td>H: 1+2</td>
</tr>
<tr>
<td>(n) perfect negative</td>
<td>grammatical H on prefix σ2</td>
<td>yes</td>
<td>stem σ2</td>
<td>ultima</td>
<td>--</td>
<td>∅:1+1</td>
<td>H: 1+2</td>
</tr>
<tr>
<td>(o) subjunctive with OP</td>
<td>grammatical H</td>
<td>yes</td>
<td>stem σ2</td>
<td>ultima</td>
<td>--</td>
<td>∅: 2</td>
<td>H: 3</td>
</tr>
</tbody>
</table>

- This chart breaks down into natural parts along several parameters that reflect the tonological (phonological tonal) and morphological settings that Phuthi has selected along which to disperse its verbal paradigms. The following comments illuminate the patterns that are presented in Tableau 1 above:
- (a-d) are truly lexical (cf. Chapter 4): varying prefixes and lexically contrasting stems; (a-c) have widescope antepenult targets, but (d) has a widescope penult target;
- (a-d) have only potentially one (lexical) H active in their stem complexes.
- (e-f) are truly hybrid: a grammatical SP—in (e)—or other pre-stem prefix—in (f), but lexical stem tone, with expected widescope antepenult target.

3 The expected lexical H variation in potential paradigm prefixes must be assumed—it is not actually visible in the PR—since all potential prefixes surface low: the prefix H tones are obscured by the depressed prefix -gg- (cf. Chapter 2 §2.2.4.9 footnote 274; depression anticipation patterns in Chapter 7 §7.3; Appendix A, paradigm Q).

4 The ‘1...’ in column 7 indicates that the relative has a pre-prefix (ła-) which precedes the SP. To calculate the number of tones active in the OP paradigms (not given here, except for (3o)), one needs only to add ‘1’ to the total given in column 7 for any row of this table.
• (g-o) are truly grammatical: aside from varying prefix status (some lexical, some grammatical), all stems introduce at least one grammatical H;
• (g-h) are solely grammatical: all lexical tone contrast in stems is eradicated: a pre-stem grammatical H extends into the stem; these are the only paradigms with the same number of active tones in toneless and H stems (1 prefix H +1 ultima H);
• (i-o) encode lexical stem category in $\sigma_1$, and leave the remainder of their stems available for the grammatical H—or $H$s, in the case of (i);
• (g-i) are the only truly grammatical paradigms to target the antepenult, and this is only for a derived reason (the OCP effect conditioned by the presence of a second grammatical stem tone on the ultima);
• (i) has the largest number of $H$s potentially present in one prosodic word: four (lexical H prefix + $\sigma_1$ lexical stem slot + $[\sigma_2$-to-antepenult] grammatical stem H + additional grammatical H on the ultima);
• (j-o) contain the principle grammatical paradigm widescope targets: (j-k) select the penult; (l-o) select the ultima.

In addition to the summary of the points to be established in each section of this chapter, the following theoretical observations are indicated by the data in Tableau 1 above, and will be explicitly argued for in the course of this chapter.

(4) Patterns to be established in this chapter
a. Grammatical H morphological paradigms entail HDs that can neutralise lexical tone contrasts.
b. Grammatical H paradigms display $H$s according to syllable positions within verb stems which they characterise, along two parameterised edges: left edge = $\sigma_1$/ $\sigma_2$; right edge = antepenult/penult/ultima (which right-edge target is not dependent on phrase-mediality or phrase-finality).
c. Both string-final anti-align constraints motivated for lexical tone (AVOIDPROM, and NONFIN) are rerankable with respect to the general wide-align WSA-Rt constraint, according to grammatical paradigm; these three constraints must be ranked in a subgrammatical$^5$ system subcategorised for the verb paradigm type with which they occur, that is, Phuthi displays significant cophonological effects in the grammatical tone system.
d. Adjacent HDs are fused, even across the antepenult-penult prominence boundary.

I will attempt to introduce data from this range of paradigms in a way that allows us to build from simpler to more complex grammatical H patterns.

---

$^5$ Evidence for a subgrammatical system (a cophonology) is first presented in Chapter 5 §5.6.2. The whole set of cophonologies that emerge from Chapter 5, this chapter, Chapter 7, are considered together in Chapter 8 §8.3.3.
6.2. Antepenult target

The simplest grammatical paradigm involves a prefix which is assigned a H tone grammatically, but whose stems behave lexically as expected (H or toneless). The participial (§6.2.1.1) will illustrate this pattern.

6.2.1. Grammatical H Prefix

6.2.1.1. Participial

The present participial long form (3e in the tableau above), although listed in the table under grammatical paradigms, is a hybrid in a tonomorphological combination all on its own: stems appear to maintain their lexically toneless or H contrast (class membership), but all forms display a grammatically H prefix (henceforth: H\textsubscript{GRAM}), whose H tone extends to the antepenult (exactly as argued for lexical H tone in Chapter 4 §4.1) in the long form\textsuperscript{6}.

(5) \textbf{Participial Structure}
\begin{equation}
\{\text{SP}\} + \{\text{stem}\}
\end{equation}

\begin{align*}
\text{H\textsubscript{GRAM}} & (\text{H\textsubscript{LEX}}) \\
\hline
\end{align*}

\textbf{Long present participial: toneless stems}

(6) \textit{1-σ stem}
\begin{enumerate}
\item a. káá-ta \ldots him/her coming \quad síí-ta \ldots him/her coming
\item b. káá-nya \ldots him/her excreting \quad síí-nya \ldots us excreting
\end{enumerate}

(7) \textit{2-σ stem}
\begin{enumerate}
\item a. ká-liima \ldots him/her cultivating \quad síí-liima \ldots us cultivating
\item b. ká-basa \ldots him/her lighting a fire \quad síí-basa \ldots us lighting a fire
\end{enumerate}

(8) \textit{3-σ stem}
\begin{enumerate}
\item a. ká-líbaala \ldots him/her forgetting \quad síí-líbaala \ldots us forgetting
\item b. ká-pátaala \ldots him/her paying \quad síí-pátaala \ldots us paying
\end{enumerate}

\textsuperscript{6} The only difference between long and short forms is the length of the penult vowel (short in phrase-medial (short) forms); unlike the lexical indicative paradigms (present, perfective, present reduplicative), the participial does \textit{not} shift its right-edge tone target in phrase-medial contexts. Hence, it behaves like other grammatical paradigms to follow in this chapter (perfective negative, imperative): the right edge of the HD is not dependent on phrasal-edge position.
(9) 4-σ stem
   a. ká-líbátiisa ...him/her delaying  sí-líbátiisa ...us delaying
   b. ká-pátáliisa ...him/her causing to pay  sí-pátáliisa ...us causing to pay

(10) 5-σ stem
   a. ká-líbátísiisa ...him/her causing to delay  sí-líbátísiisa ...us causing to delay
   b. ká-pátálísiisa ...him/her paying intensively  sí-pátálísiisa ...us paying intensively

Long present participial: High stems

(11) 1-σ stem
   a. káa-phá ...him/her giving  sí-phá ...us giving
   b. káa-khá ...him/her drawing (water)  sí-khá ...us drawing (water)

(12) 2-σ stem
   a. ká-bóóna ...him/her seeing  sí-bóóna ...us seeing
   b. ká-mééma ...him/her inviting  sí-mééma ...us inviting

(13) 3-σ stem
   a. ká-bóníísa ...him/her showing  sí-bóníísa ...us showing
   b. ká-khúluúma ...him/her speaking  sí-khúluúma ...us speaking

(14) 4-σ stem
   a. ká-sébiísiisa ...him/her using  sí-sébiísiisa ...us using
   b. ká-khúluúmiísiisa ...him/her causing to speak  sí-khúluúmiísiisa ...us causing to speak

(15) 5-σ stem
   a. ká-sébiísiisa ...him/her working  sí-sébiísiisa ...us working intensively
   b. ká-khúluúmëþla ...him/her speaking  sí-khúluúmëþla ...us speaking on behalf of

In (7-10) and (12, 14-15) the expected widescope lexical target is as in all lexical paradigms (cf. Chapter 4 §4.1): the antepenult. Furthermore, the short stems behave as expected: in (7) NonFin >> HD-Min, in (8) AvoidProm >> Max-H, in (11) Max-H >> NonFin. In the 3-σ H stem (13) HD-Min >> AvoidProm. The only difference here from any lexical paradigm is that all participial subject prefixes (SPs) are H. Since this tonal prefix configuration will recur in a variety of grammatical paradigms, I provide the prefixes in (16); they are segmentally identical to the SPs seen in Chapters 4 and 5, except for the 3ps which varies: ká- in the participial, á- in the subjunctive.

7 Redundant penult length is indicated as in preceding chapters. Thus, all final mora sequences of the shape -mMm|pWord are in fact -HH syllables -σ|pWord (cf. Chapter 5 §5.3).
(16) **Grammatically H subject prefixes**

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>ꙫ-</td>
<td>ꙫ-</td>
</tr>
<tr>
<td>2nd</td>
<td>ꙙ-</td>
<td>ꙙ-</td>
</tr>
<tr>
<td>3rd</td>
<td>ꙙ- (~ ꙙ- ~ ꙙ-)</td>
<td>ꙙ-</td>
</tr>
</tbody>
</table>

Two theoretical remarks are in order with respect to the participial data already presented. First, there appears to be HD-fusion in the participial, since there is no trace of intonational downstepping at the prefix-stem (even at the antepenult-penult) juncture of the H participial prefix and H stem in (12) above. Fusion reaffirms the M\textsubscript{AX}-H >> *AE ranking seen in Chapter 5 §5.2. Representative High and toneless/low stem examples, with uncontroversially assigned domain structure, are given in (17).

(17) **Participial domain structure: fusion in High stems**

a. Toneless (low) stem \([\text{ká-}]-\text{baala}, [\text{sí-}]-\text{baala}\) = 8a

b. High stem \([\text{ká-bóó}]-\text{na}, [\text{sí-bóó}]-\text{na}\) = 12a

The second issue concerns the H status of the SP in this paradigm (and in other paradigms similar to it), since only the 3rd person SPs have been seen to be lexically H thus far (cf. all data in Chapters 4 and 5). In the participial data in (§6.2.1.1), the grammatical H tone specifications of all SPs override the lexical tone specifications of the same SPs in other paradigms such as the ‘lexical’ paradigms in Chapters 4 and 5 (e.g. present indicative short and long forms, perfective indicative long form) where some SPs are toneless (1st and 2nd person) and others are H (3rd person). We can infer that the the general faithfulness constraint, M\textsubscript{AX}-H, must be exploded into two instantiations, one lexical and one grammatical\(\textsuperscript{9}\) (18-19), in a ranked relationship (20).

---

\(\textsuperscript{8}\) The tone status of the 3ps vs. non-3ps SPs is resumed in Chapter 7 §7.6.

\(\textsuperscript{9}\) The crucial question in this chapter will be whether a lexical and grammatical H tone have distinct parsing or expression properties, given that the presence of two distinct H tones opens the door to a significantly wider range of tone domains and domain interactions. Researchers in Bantu have not typically seen the need for two distinct H tones. We will see in this chapter that there is evidence to support this move for Phuthi. Note, also, that this is not an example of an indexed constraint that could be replaced by a cophonology; the lexical and grammatical H tones have distinct alignment properties, and are ranked with respect to each other in the same paradigm.
(18) Max-H_{gram}
Parse a grammatical H tone.

(19) Max-H_{lex}
Parse a lexical H tone.

(20) MAX tone ranking
a. Max-H_{gram} >> Max-H_{lex} parsing H_{gram} (here: in a prefix) is valued over parsing H_{lex}
b. Max-H_{gram} >> Dep-H Max-H cannot be prevented by a no-insert constraint

For example, the 2nd person plural prefix in the participial is \textit{li}-, despite the fact that in the lexical paradigms, it is toneless \textit{li}- (Chapter 4 §4.1). Now, it may be suggested that perhaps it is merely the paradigm in which a prefix is specified as H which ‘wins’ in the PR. Thus, we could speculate that if \textit{li}- were H in the lexical paradigms, and grammatically toneless elsewhere, then the lexical tone specification would ‘win’. But the ranking in (20) will be shown to be independently—and crucially—true for short (1-σ) verb stems in the present relative (§6.2.2.1), present subjunctive (§6.2.2.2), and short perfective (§6.3.1.1) in this chapter. The exploding of Max-H has no effect on any of the argumentation provided in Chapters 4 and 5, since no grammatical tones (H_{gram}) are active in those paradigms; H_{gram} is thus intentionally irrelevant to previous discussion.

It remains to be seen in the current chapter whether other constraints—already motivated, or yet to be included in the constraint set—will need to be crucially ranked between these Max-H instantiations. Anticipating the findings, we will see that several constraints will need to be ranked between the two parse constraints, Max-H_{gram} and Max-H_{lex} (cf. §6.3.2). The parsing of a grammatical H SP in the participial (e.g. 2ppl: \textit{li}-), but the failure to parse (that is, insert) a H for the same prefix in a lexical tone paradigm (2ppl: \textit{li}-) is exemplified in Tableau 2 (21). A lexically H prefix (and, therefore, also grammatically H in this paradigm) is included here (3ppl: \textit{bá}-), for comparison.
(21) **Tableau 2:** Preservation of grammatical H over lexical toneless specification

Grammatical paradigm: participial SP (2pp *li-*) ‘you (pl.)...’

<table>
<thead>
<tr>
<th></th>
<th>toneless SP: /li-/</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>❄️ (a)</td>
<td>li-</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(b)</td>
<td>li-</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grammatical paradigm: participial SP (3pp *bá-*) ‘they...’

<table>
<thead>
<tr>
<th></th>
<th>H SP: /bá-/</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>❄️ (c)</td>
<td>bá-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>bá-</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Lexical paradigm: present indicative SP (2pp *li-*) ‘you (pl.)...’

<table>
<thead>
<tr>
<th></th>
<th>toneless SP: /li-/</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>❄️ (e)</td>
<td>li-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f)</td>
<td>lí-</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lexical paradigm: present indicative SP (3ppl *bá-*) ‘they...’

<table>
<thead>
<tr>
<th></th>
<th>H SP: /bá-/</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>Dep-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>❄️ (g)</td>
<td>bá-</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(h)</td>
<td>bá-</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The splitting of Max-H into lexical and grammatical instantiations which are differently ranked is at once anticipated as a possibility—given the possibilities of constraint explosion and families of minimally differing constraints (P&S 1993)—and disturbing, because the active tone contrasts in the system are H and nothingness (tonelessness); being able to refer to differently targetable instances of any active feature gives the grammar great power, on the other hand. The remainder of this chapter will consider the relationship of lexical and grammatical H tones.

### 6.2.2. **Neutralised Stem Tone**

The long present relative tense and the present subjunctive mood display a H_{GRAM} at the left edge of the word or stem, a stem which appears otherwise tonally inert (the lexical H vs.
toneless contrast is completely neutralised), and a Hₐgram suffix tone (which, in the case of the relative comes with a segmental sponsor -kó). The paradigms with this neutralised structure are few; I focus here on just the two mentioned. Both lack any evidence of lexical tone being active at all. Both violate a general lexical paradigm contrast that maintains verb stem membership in either the toneless/low or H class (effectively the FaithLexTone constraint proposed in §6.3.1.4 (112) below maintains this class contrast).

6. 2. 2. 1. Present Relative (long form)

The present relative will be seen from the discussion that follows the data below to entail this structure (22).

(22) Relative structure
lá- {PREF}{STEM}-kó

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hₐgram (H_lex)</td>
<td>Ø</td>
</tr>
</tbody>
</table>

- a H relative morpheme, lá-, pre-prefixed to all verbs;
- possible presence of lexical H on SP;
- complete absence of lexical stem tone (therefore ‘grammatically toneless’);
- a H-sponsoring suffix -kó.

Present relative: lá- + toneless stem + -kó

(23) 1-σ stem
a. lá-taa-kó (s/he) who comes
b. lá-nyaakó (s/he) who excretes

---

10 One instantiation of Meeussen’s Rule which occurs in many languages (but nowhere else in Phuthi than in these grammatical constructions) would eliminate one of the H tones in this lexical-grammatical sequence, by completely underparsing it; this would need to be a version of *Adjacent_Sponsors, which constraint was rejected in Chapter 5 §5.2 as unmotivated. The constraint would, like the anti-parse constraint motivated here (36 below), *Max-H_lex, need to be part of a paradigm-specific cophonology.

11 In examples (23) to (32), relative prefix lá- coalesces (fuses morphologically) with 3ps SP a- (33); this is uncontroversial, given that the 3ps is a- in non-indicative moods (subjunctive, participle, relative), and given that all other (CV-structured) relative prefixes are lexically H. This is distinct from the -e- substitution of pseudo-coalescence (Chapter 2 §2.2.2.3 footnote 188), where if 3ps SP were u-, we would expect that la- + u- > le- (recalling that Phuthi—like Swati—does not have true coalescence (merging vowel features) found in Zunda Nguni languages such as Xhosa, Zulu and Ndebele). Further, all the forms presented above are phrase-final; thus, even though there is a post-stem suffix, the true phrasal penult—what in other paradigms is the final syllable of the stem—is long, e.g. lá-taa-kó, lá-limaa-kó.
(24) **2-σ stem**
   a. lá-límáa-kó  
   (s/he) who cultivates
   b. lá-básaa-kó  
   (s/he) who lights the fire

(25) **3-σ stem**
   a. lá-lfálaa-kó  
   (s/he) who forgets
   b. lá-pátálaa-kó  
   (s/he) who pays

(26) **4-σ stem**
   a. lá-lfátísaa-kó  
   (s/he) who delays
   b. lá-pátálísaa-kó  
   (s/he) who causes to pay

(27) **5-σ stem**
   a. lá-tépél lísaa-kó  
   (s/he) who does something slowly
   b. lá-pátálísísaa-kó  
   (s/he) who pays intensively

**Present relative: lá- + H stem + -kó**

Syllables which are expected to be lexical stem-H sponsors in (28-32), but are not realised as such, are given in italics.

(28) **1-σ stem**
   a. lá-phaa-kó  
   (s/he) who gives
   b. lá-khaa-kó  
   (s/he) who draws (water)

(29) **2-σ stem**
   a. lá-bónaa-kó  
   (s/he) who sees
   b. lá-mémáa-kó  
   (s/he) who invites

(30) **3-σ stem**
   a. lá-bónísaa-kó  
   (s/he) who shows
   b. lá-khulúmaa-kó  
   (s/he) who speaks

(31) **4-σ stem**
   a. lá-sébétísaa-kó  
   (s/he) who uses
   b. lá-khulúmísaa-kó  
   (s/he) who causes to speak

(32) **5-σ stem**
   a. lá-sébétísélaa-kó  
   (s/he) who uses for
   b. lá-khulúmél laa-kó  
   (s/he) who speaks on behalf of
Because lexical stem tone is absent, toneless and H stem paradigms are tonally identical; even 1-σ and 2-σ stems offer no tonal contrast of any sort between toneless and H stems. Thus 1-σ (23) and (28) are tonally identical; so are 2-σ (24) and (29). This contrasts with most other paradigms in the language where some sort of lexical tone distinction is maintained between tone paradigms, even if it is only a downstep (cf. present negative prefix-stem downstep for toneless stems, vs. no downstep for High stems, Chapter 7 §7.8.1).

But if H stems are generally lexically encoded with a H tone, it could be expected that it should be rare for a H tone to be completely absent from its lexical sponsor morpheme. And it is rare, yet such is the case in the present relative data seen above (28-32). Before considering an anti-parse constraint that would underparse a lexical H, I deal with the reverse: the stem H could be faithfully present in the H domain structure, but some sort of phonotactic constraint(s) keeps it from being expressed—that is, underexpressing. The implications are given in (33).

(33) **Expected patterns for High stems**
   a. Lexically toneless and H stems should contrast in most or all forms of this paradigm;
   b. H stems should display the minimality effect (35a).

But both (33a-b) are false here. The H contrast is lost even on short 1-σ stems (34b). If short H stems were lexically toned, we would expect (34c).

(34) **Short relative stems (penult length marked)**

<table>
<thead>
<tr>
<th>stem type</th>
<th>relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. toneless stem</td>
<td>[lä]-taa-[kó]</td>
</tr>
<tr>
<td>b. actual H stem</td>
<td>[lä]-phaa-[kó]</td>
</tr>
<tr>
<td>c. expected H stem</td>
<td>*[lä]-[phá]a-[kó] or *[lä]-[pháá]-[kó] 12</td>
</tr>
</tbody>
</table>

(33b) leads us to expect (35a), but we encounter instead only (35b).

(35) **Potential HD-MIN ineffectual in relative stems**
   a. expected  *[lä]-[bóná]a-[kó] or perhaps *[lä]-[l bónáa]-[l kó]
   b. actual    [lä-bó]naa-[kó]

12 Such a surface tone pattern should, of course, include a fall across the penult, in line with the principles of ENDLOW outlined in Chapter 5 §5.3, thus: *lä-phaa-kó.
Since I have argued that a H does not spread onto a toneless pre-H syllable (OCP blocking), (35a) is really not expected at all, despite HD-MIN requirements. Thus, it continues to be the case that lexical H stems retain no domain evidence of their H status in the present relative. To achieve this in an ODT grammar, something must violate MAX-H, but only with reference to the stem H, not the two affixed Hs. Such a very specific constraint could be *MAX-H_{lex} \pi (36), where the \text{lex} subscript indicates that only a lexical H is targeted. I propose that the morphological environment of the present relative paradigm (and below: the subjunctive) conditions the application of this lexical\(^\text{13}\) anti-parse constraint (36), as a member of the universal constraint set (37a), with the ranking in (37b); \pi indicates that this ranking is paradigm-specific.

\begin{align*}
(36) \quad &\text{MAX-H}_{lex} \pi \\
&\text{Do not parse lexical H in paradigm } \pi \text{ (present relative).}
\end{align*}

\begin{align*}
(37) \quad \text{Anti-MAX constraint ranking} \\
\text{a. } &\text{*Max-H}_{lex} \in \xi
\quad \xi = \text{the universal constraint set} \\
\text{b. } &\text{*Max-H}_{lex} \gg \text{Max-H}_{lex} \pi
\end{align*}

Although (37a) suggests that this new constraint is part of the universal constraint set, after P&S (1993) and M&P (2001) who maintain that all constraints are universally present in all grammars, this present relative morphological configuration must actually introduce this anti-parse (anti-Max) constraint into the constraint evaluation. Thus, we must resort to re-ranking the *MAX-H_{lex} constraint out of sight for all other paradigms, where it has no role (38 below). There must be a distinct cophonology\(^\text{14}\) whose scope is a subset of the grammatical paradigms (present relative; subjunctive), in (37b), whereas everywhere else in the grammar (38), the opposite ranking holds.

\(^{13}\) It is actually even messier than indicated here: *Max-H_{lex} must apply only to the stem environment, to underparse stem H, and not to prefixes or suffixes, whose UR tones are also lexical. We may resort, again, to the lexical phonology model (Mohanan 1986, Kaisse & Shaw 1985), where phonological application is partly conditioned by morphological domain, as introduced in the discussion of re-ranked edge constraints in deverbative nouns (Chapter 5 §5.6).

\(^{14}\) Further cophonologies will emerge in this chapter (e.g. the resumption of the discussion of right-edge anti-align constraints, in §6.3.1: § 6.3.1.2 - §6.3.1.4; §6.3.2: §6.3.2.1, §6.3.2.2).
(38) Ranking in paradigms where lexical H is parsed
Max-H_{LEX} >> *Max-H_{LEX}

Objections may immediately be raised to a constraint as paradigm-specific as this, especially that the constraint picks out a supposed subtype of an otherwise uniform surface tonal feature (H tone), it will be seen under the discussion of subjunctives (§6.2.2.2), and in following sections, that several very specific parse- and align-related constraints are needed to cope with morphological vagaries (albeit robustly attested ones) in Phuthi.

We can compare with the data just provided the behaviour of 2-σ relative prefixes, that is, relative \{la- + SP\} + \{stem\} (39). I continue to assume that a lexically H SP such as bá- (3pp) remains underlyingly H unless there is compelling evidence to the contrary (and there is none).

(39) Two pre-stem syllables in the relative
   a. Toneless stem lá-bá-límaa-kó (they) who are cultivating
   b. High stem lá-bá-bónaa-kó (they) who are seeing

No new information is added; the tolerance of adjacent H-sponsors is confirmed; we can assume that lá- and -bá- fuse in (39a-b), since there is no downstep between them, which is in line with the fusion patterns established in Chapter 5 §5.2. We observe that the word-final -kó of the relative paradigm provides confirmation of a ranking motivated in Chapter 4 §4.1: MAX-H >> NONFIN. Tableau 3 (40) illustrates the present relative underparsing of lexical stem Hs due to highly ranked *Max H_{LEX}, and the satisfactory alignment of grammatical affixes in the present relative; only High stems are illustrated, but the output tone shapes are identical for toneless/low stems, as I have shown in the toneless (low) examples in (23-24) above.
(40) **Tableau 3:** Present relative short High stems

1-σ stem: *lá-phaa-kó*, ‘s/he who gives’

<table>
<thead>
<tr>
<th>Surface</th>
<th>*Max-H_{lex}</th>
<th>Max-H</th>
<th>(CrispStem &amp; Avoid Prom)</th>
<th>*AE</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [lá]-phaa-[kó]</td>
<td>* (LEX)</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [lá-phá]-[kó]</td>
<td>* (LEX)</td>
<td>*</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [lá-pháá]-kó</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [lá-pháá]-[kó]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [lá-pháá]-kó</td>
<td>*!</td>
<td>*</td>
<td>(GRAM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [lá-phá]-[kó]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) [lá-pháa]-[kó]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- For simplicity, HD-M\textsubscript{Min} examines the leftmost H features only (not the suffix H -kó);
- ‘LEX, GRAM’ in the Max-H column refer to lexical or grammatical Hs that are underparsed;
- (a-g) present six surface possibilities for a 1-σ stem: optimal (a) involves an irrelevant Max-H violation of the lexical tone, and is closest to (b) which incorrectly allows a H to violate the conjoint stem prominence constraint; even though (e) involves only one Max-H violation like (a) and (b), it upsets the weightier *Max-H_{lex} constraint; (g) assumes fusion of all three HDs.

2-σ stem: *lá-bónaa-kó*, ‘s/he who sees’

<table>
<thead>
<tr>
<th>Surface</th>
<th>*Max-H_{lex}</th>
<th>Max-H</th>
<th>(CrispStem &amp; Avoid Prom)</th>
<th>*AE</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h) [lá-bó]naa-[kó]</td>
<td>* (LEX)</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(i) [lá]-bonaa-[kó]</td>
<td>* (LEX)</td>
<td>*</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(j) [lá-bó]naa-kó</td>
<td>*! (LEX, GRAM)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) la-bonaa-[kó]</td>
<td>*! (GRAM,LEX)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) [lá-bó]naa-[kó]</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(m) la-[bó]naa-[kó]</td>
<td>*!</td>
<td>*</td>
<td>(GRAM)</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(n) [lá-bóná]a-[kó]</td>
<td>*!</td>
<td>* (LEX)</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- (h-n) present seven surface patterns for a 2-σ stem: optimal (h) is only marginally better than (i) which violates considerably lower HD-M\textsubscript{Min} in failing to expand the prefix HD by at least one syllable; (l) is only theoretically different from optimal (h), but is strong evidence for underparsing H\textsubscript{lex}, as (l) should otherwise be optimal;
- HD-M\textsubscript{Min} is assessed as violated in (l) with reference to the second of the three H sponsors; this assessment is troubling, because the first and second sponsors share a fused HD, yet their ‘original’ sponsor location and would-be HD construction is still
relevant (cf. comments in Chapter 7 §7.8.1.10 (310) footnote 200, for similar problems with respect to fused LDs).

- (m) underparses the H_{GRAM} which underparsing is almost never tolerated; (n) overextends the parsed H_{GRAM} onto the penult;
- MAX-H_{LEX} and MAX-H_{GRAM} are evaluated in a single column, as there is no crucial ranking among them yet.

6. 2. 2. 2. Present subjunctive

We turn now to the second paradigm from Tableau 1 (3h) above which appears to absolutely neutralise lexical stem Hs, and which has a grammatical H on the ultima. First, we survey the range of patterns. I then propose an analysis, invoking a second instantiation of phonologised ENDLOW (the first was when analysing the final fall-high sequence across a H penult and H ultima, in Chapter 5 §5.3).

As with the present relative in §6.2.2.1, two grammatical H tones are active: one on the prefix (SP), and a second on the ultima suffix (41); this will be confirmed by the data in (42-51).

(41) Subjunctive structure
{SP}-{STEM}-é
|                     |
| H_{GRAM} ∅ H_{GRAM} |

- a grammatical H on the SP
- moot presence of lexical H on SP;
- complete absence of lexical stem tone (therefore ‘grammatically toneless’);
- a H-sponsoring suffix -é.

Present subjunctive: H SP + toneless stem + -é

H sponsors are omitted from the data that follows until after discussion of the constituent structure of these items.

(42) 1-σ stem
a. áá-t-e ...that s/he comes
b. áá-ny-e ...that s/he excretes

(43) 2-σ stem
a. á-líím-e ...that s/he cultivates
b. á-báás-e ...that s/he lights a fire
(44) 3-σ stem
   a. á-líbaal-é ...that s/he forgets
   b. á-pátaal-é ...that s/he pays

(45) 4-σ stem
   a. á-libátiis-é ...that s/he delays
   b. á-pátáliis-é ...that s/he causes to pay

(46) 5-σ stem
   a. á-tépél
   liis-é ...that s/he helps do something slowly
   b. á-pátálísiis-é ...that s/he pays intensively

Present subjunctive: H SP + (neutralised) High stem + -é

Syllables which are expected—all other things being equal—to be lexical stem-H
sponsors in (47-51) are given in italics.

(47) 1-σ stem
   a. áá-ph-e ...that s/he gives
   b. áá-kh-e ...that s/he draws (water)

(48) 2-σ stem
   a. á-bóó-e ...that s/he sees
   b. á-méém-e ...that s/he invites

(49) 3-σ stem
   a. á-bóniis-é ...that s/he shows
   b. á-khúluum-é ...that s/he speaks

(50) 4-σ stem
   a. á-sébétíis-é ...that s/he uses
   b. á-khúlúmiis-é ...that s/he causes to speak

(51) 5-σ stem
   a. á-sébétíseel-é ...that s/he uses for
   b. á-khúlúméli-é ...that s/he causes to speak

Firstly, as for the present relative seen in the preceding section, two H tones are active in
the subjunctive, as is clearly visible in the longer (3-σ+) verb stems: one is at the left edge of the
verb complex, the other on the ultima. Again as in §6.2.2.1 above, since the two lexical classes
(toneless and H stems) behave in a tonally identical way in this paradigm, I assume that the visible active Hs are both H_{GRAM}. Thus, in the subjunctive paradigm, H_{LEX} is underparsed for what we have otherwise seen in this work to be the lexical ‘H’ verb paradigms in Phuthi.

(52) **Two grammatical Hs active**

a. Toneless stem [á-libá]tti[sé] ...that s/he delays (45a)
b. High stem [á-sébé]tti[sé] ...that s/he uses (50a)

To achieve the correct sponsor locations of these two HDs, I propose in (53) two edge-targeting alignment constraints (cf. Bickmore (1996) for similar proposals for grammatical Hs). It is clear that the H_{GRAM} here targets the left edge of the word, not the macrostem (unlike other H_{GRAM} paradigms to follow). We need to specifically index\textsuperscript{15} the subjunctive paradigm (PWord\textsubscript{SUBJUNC}), as non-subjunctive H_{GRAM}-bearing PWords do not require edge-alignment\textsuperscript{16} of H_{GRAM}.

(53) **Alignment constraints for subjunctive paradigm**

a. Align\textsubscript{PWord}(_{SUBJUNC}, Lf, H_{GRAM}, Lf) = ALIGN\textsubscript{(H_{GRAM}, Lf)} = one H_{GRAM} at every word left-edge

b. Align\textsubscript{PWord}(_{SUBJUNC}, Rt, H_{GRAM}, Rt) = ALIGN\textsubscript{(H_{GRAM}, Rt)} = one H_{GRAM} at every word right-edge

These two constraints achieve proper alignment, but do not actually instantiate the two H_{GRAM} features in this paradigm. I assume that every morphological paradigm ‘comes with’ the requisite number of active H_{GRAM}-features, but without the activeness of the ALIGN constraints in (53), the H_{GRAM}-features will not be aligned at all\textsuperscript{17}. Thus, the two subjunctive ALIGN constraints cannot address particular instantiations of H. They merely require one instance of left-edge H-alignment and one instance of right-edge alignment for them to be satisfied in the grammar.

The universal vs. particular parameters of ALIGN allow (53b) to require just one instance of a H to be right-aligned, whereas as WSA-RT is set up to align every H-token rightwards. Thus,

---

\textsuperscript{15} This is an example of morphological indexing which cannot be replaced by a reranked cophonology: it is not that WSA-RT has been reranked, but that there is a distinct (basic) alignment constraint at the right word-edge.

\textsuperscript{16} In the preceding section (§6.2.2.1), the alignment of the grammatical tones was not formally proposed in the form of constraints. The grammatical tone alignment proposals in the current section can be extended back to the present relative as well.

\textsuperscript{17} This combination of a grammatical H being supplied by the UR, and ALIGN constraints to force its proper alignment, produces the effects of a ‘floating tone’ in the autosegmental conceptualisation.
cannot be the same constraint as WSA-Rt. The \( H_{\text{GRAM}} \) anchored by (53a) at the left edge of the subjunctive word (on the SP) now behaves as other Hs do: it spreads rightwards as far as possible—to the antepenult. I assume that AvoidProm prevents this H from reaching beyond the antepenult (although the OCP constraint, *AE, would achieve the same effect, given that the ultima contains its own H tone).

The rightmost H must parse (and will always violate NonFin). Since a H never extends leftwards from a sponsor, the PR pattern falls neatly out of these two constraints. Tableau 4 (54) demonstrates these interactions for stems 3-\( \sigma \) or longer (this example is a 4-\( \sigma \) toneless/low stem, although we have already seen that High stems behave in the same fashion as toneless). 1-\( \sigma \) and 2-\( \sigma \) stems, to which we return below, are analytically far more complex; in light of them, the analysis will be modified but Tableau 4 indicates the basic sufficiency of the constraints motivated to this point.

(54) **Tableau 4: Proper alignment of the two subjunctive \( H_{\text{GRAM}} \) tones**

\( \ddash -\text{lirátiisé} \), ‘s/he should delay’

<table>
<thead>
<tr>
<th>( \ddash -\text{lirátiisé} )</th>
<th>Max-( H_{\text{GRAM}} )</th>
<th>Align (( H_{\text{GRAM}}, \text{Lf} ))</th>
<th>Align (( H_{\text{GRAM}}, \text{Rt} ))</th>
<th>NonFin</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [á-líbátiñe]</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [á]-libatís[é]</td>
<td>*</td>
<td></td>
<td><strong>!</strong>, 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [á-líbátíi][sé]</td>
<td>*</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [á-í][ba][tíí][se]</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>****, *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) a-[líbáti][sé]</td>
<td>*!</td>
<td></td>
<td></td>
<td>**, 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [á-líbátiisé]</td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

- non-optimal candidates fail in predictable ways: (b) fails on the fairly low-ranked WSA-Rt; (c) overextends Rt-alignment of the first H-feature; (d) and (e) each fail to satisfy one of the undominated subjunctive edge alignment constraints given in (53); (f) fails completely to parse one of the grammatical Hs.

In this section I offer a coherent analysis of the subjunctive tone pattern, the departure point being the broad shape of the tone peaks and the trough (which I will relate to the analysis of phonologised penult final lowering from Chapter 5 §5.3). If the lexical H in the High stems were in fact active in (47-51) above, we would be hard put to explain the two generalisations in (55).
Observations about H patterns in the subjunctive

a. there are no tonal contrasts between toneless and H stems at all—not even in the 1-σ or 2-σ stems (42,43 vs. 47,48)—even though the short H stem could potentially display two surface HDs (56b, cf. footnote 18);
b. as with the present relatives, there are no HD-MIN effects in what are otherwise H stems: (56b) manifests HD-MIN effects only if -bo- is not a sponsor; elsewhere -bo- is a sponsor, since it lies at the left edge of a H stem.

With respect to the 1-σ and 2-σ stems in (56a-b) the subjunctive behaves quite differently from the present relative treated in the preceding section: in these stems, there is only one stretch of H-ness (cf. two H excursions for the present relative in §6.2.2.1 above, even in short stems). Nevertheless, both toneless and H stem paradigms continue to behave in a tonally identical way. As with the present relative, it seems clear from (56) that an anti-parse (or *Max) constraint is introduced by the present subjunctive paradigm, suppressing the lexical stem H in (56b).

Short subjunctive stems: 1-σ and 2-σ

a. toneless stems [áá]-te; [á-lií]me
b. H stems\(^{18}\) [áá]-phe; [á-bóó]ne

Failing to parse the lexical H in (56b) must dominate the optimal parsing of lexical H tones (57), just as in (37b) above. Thus, the present subjunctive is added to the present relative as a paradigm that invokes this anti-parse cophonology.

Present subjunctive: anti-Max constraint and ranking

\*Max \(H_{lex}\) >> Max-\(H_{lex}\)

With this small set of rankings adequately established, we turn in §6.2.2.3 to the broader analysis of the subjunctive stem shapes already presented in Tableau 4 (54) but yet to be unpacked. We will then turn our attention to the paradigm residue: 1-σ and 2-σ stems (§6.2.2.4).

---

\(^{18}\) Even if failure to parse the lexical stem H tone in 1-σ stems were due not to the proposed anti-parse \*Max \(H_{lex}\) constraint but rather to the shortness of the form \(*[áá]a-[phé]\) might give way to merged HDs and an underexpressed ultima \(*[áá]-phe\), as in Chapter 5 §5.4.2.6), in 2-σ stems, however, we expect if not \(*[á]a-[bóó][n-é]\) then under the same anti-ultima expression analysis \(*[á]-bóó-[n-é]\), with automatic positional downstep between SP and stem (cf. §5.5.3).
6.2.2.3. **EndLow**: an optimal gap

If we review the salient shapes of the subjunctive tone pattern in a word such as á-libátiis-é, we observe the following patterns (58).

(58) **Salient subjunctive tone pattern observations**
- there is always a single syllable left empty, i.e. without evidence of a HD;
- this syllable is as far to the right as possible in a subjunctive word;
- there are two stretches of H-ness, i.e. two HDs;
- the leftmost HD in this paradigm must constitute at least two syllables.

The tone gap—tone ‘lapse’, in the terminology of Steriade (2000)—noted in (58a) has received no formal attention in the analytic approaches proposed so far in this section. The gap would be regarded as empty merely by the alignment properties of surrounding domain structure. However, we have already seen in Chapter 5 §5.3 that Phuthi phrasal words seek a location for the tone pattern to end low (that is, to decline), in other words, as if a boundary L tone were to be parsed at the phrase right-edge\(^\text{19}\). I propose to extend this phonological requirement, albeit slightly reconfigured, to the data from the subjunctive paradigm seen above in (42-51).

In Chapter 5 §5.3 it was argued that every phrase-final PWord seeks to have a locus of declination, and that this aligns itself optimally to the right word-edge, that is, to the ultima. The declination at the ultima falls beyond the final HD; by contrast, if the ultima and penult are both occupied by HD structure, then the declination occurs—minimally misaligned—inside the HD. In words which have either one or two HDs extending across both penult and ultima, there is an obligatory lowering on the second *mora* of the long penult syllable which, therefore, interrupts the uninterrupted HD parse. This was seen to apply in the case of nouns and of verbs in lexical paradigms and also of verbs in grammatical paradigms (e.g. the imperative\(^\text{20}\)), in Chapter 5 §5.3, §5.5.6, where an intonational phonology vehicle for this decline (EndLow/boundary low) was established: Register Domains (RDs). It became clear in the earlier discussion that RDs have a

\(^{19}\) I have been coy about actually introducing a parsed boundary tone feature such as ‘L\(_{\text{phrasal}}\)’, because in Chapter 7 §7.2ff. I will have recourse to the use of a L feature in a distinct lexical and phonological way (in order to indicate depression, triggered phonologically by all instances of breathy voice, and also grammatically in certain paradigms, and even lexically). Here, however, EndLow effectively requires a boundary L tone at the phrase right-edge.

\(^{20}\) The imperative is properly examined in §6.3.3.1 below.
special status in the phonology that directly addresses the register-implementing mechanism of the phonetic pitch module.

There are differences in this present subjunctive paradigm from the penult declination we saw earlier in §5.3: (a) declination here always persists for an entire syllable, unlike the single mora declination in §5.3; (b) declination is optimally on the penult, not the ultima (as it was in §5.3). Furthermore, it is argued here that the declination in the subjunctive is never manifested as a lowering of the intonation inside a HD (as occurs with the non-optimal declination on H penults in Chapter 5), but as a prosodic locus not inside a HD (here: between HDs).

The properties of the two declination types are contrasted in Tableau 5 (59).

(59) **Tableau 5: EndLow properties**

<table>
<thead>
<tr>
<th>EndLow declination type</th>
<th>Duration</th>
<th>Location</th>
<th>section discussed in</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) phonetic: general to all phrasal H-H-final words</td>
<td>1 mora</td>
<td>ultima ('beyond' HD); or: penult (inside HD)</td>
<td>Chapter 5 §5.3</td>
</tr>
<tr>
<td>(b) phonological: paradigm-specific</td>
<td>1 syllable (1 or 2 moras)</td>
<td>penult; or else: ultima (both outside of HD)</td>
<td>Chapter 6 §6.2.2.2</td>
</tr>
</tbody>
</table>

Regarding two constraints—introduced in Chapter 5 §5.3.2.2 (78)—to be used here to achieve the phonological declination in the subjunctive paradigm (60-61), with the difference that EndLow-σ here requires that a full (penult) syllable be Low, whereas the EndLow constraint in §5.3.2.2 was satisfied with a single low mora.

(60) **EndLow-σ**

EndLow (PWord, Rt, π, Rt)

Be phonologically low in a prosodic word of paradigm π, π ∈ {present subjunctive; present relative}.

(61) **Align_EndLow_Rt**

(continued from Chapter 5 §5.3.2.2)

Align (PWord, Rt, EndLow, Rt)

Align the EndLow low target at the Rt edge of a PWord.

Returning to the subjunctive pattern given in (58) above, only (58a) is inviolable: there is always a syllable that satisfies EndLow. But the perfect rightwards alignment of EndLow is
almost always prevented by the presence of the right-edge HGRAM. Only in the short 1-σ and 2-σ stems, does ALIGN ENDLOW Rt succeed perfectly, and this only because parsing the second HGRAM fails in these short stems. I suggest that the reason for the right-edge HGRAM failing to parse is not related to an OCP violation but rather to the fact that if both grammatical Hs did parse, there would be no location for the undominated ENDLOW to be fulfilled; this gives the ranking in (62).

(62) Partial ranking for subjunctive stems (to be revised)
EndLow-σ >> Max-HGRAM >> Align EndLow, Rt

We have also seen that the optimal minimal length of the left-edge subjunctive HD (58d) is two syllables; this fails only in the 1-σ stems (in order to satisfy ENDLOW). Thus, I instantiate at this point the paradigm-specific constraint, HD-MINSUBJUNC (63), and the transitive ranking in (64).

(63) **High Domain Minimality (Present Subjunctive) (HD-MINSUBJUNC)**

* [σ]HD
A H domain in the present subjunctive cannot consist of a single syllable.

(64) Partial ranking for subjunctive stems (revised, to be revised)
EndLow-σ >> HD-MINSUBJUNC >> Max-HGRAM >> Align EndLow, Rt

Finally, the left-edge HD in the subjunctive is always present; thus the ranking in (65).

(65) **Subjunctive stems (final ranking)**
Align_HGRAM-Lf; EndLow-σ >> HD-MINSUBJUNC >> Max-HGRAM >> Align_EndLow,Rt  
>> Align_(HGRAM,Rt)

These interactions are laid out in Tableau 6 (66), for all crucial stem lengths (the 1-σ stem is lexically H (66a-g), the 2-σ and 3-σ stems are lexically toneless/low (66h-q), but the lexical tone properties are irrelevant in the subjunctive).

---

21 This is an exact copy of the general HD-MIN constraint introduced in Chapter 4 §4.1, with the particularising indexing of the subjunctive added.

22 Unfortunately, there are no Phuthi words of only 1-σ length to test the ENDLOW vs. ALIGN (HGRAM, Lf) ranking on, although we may speculate that such a single syllable would display the HGRAM, and not the ENDLOW tonelessness.
Tableau 6: EndLow analysis of subjunctive tone
1-σ stem, High stem: áá-phé, ‘s/he should give’

<table>
<thead>
<tr>
<th>/ á- + -ph-e /</th>
<th>Align (H_GRAM, Lf)</th>
<th>EndLow-σ</th>
<th>HD-Min subjunc</th>
<th>Max-H_GRAM</th>
<th>Align EndLow, Rt</th>
<th>Align (H_GRAM, Rt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>aá-phé</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[aá-phé]</td>
<td>(!)</td>
<td>(*)</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[aá-phé]</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[áá]-phé</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[aá]-[phé]</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aá-[phé]</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aá-phé</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2-σ toneless/low stem: á-liíme, ‘s/he should cultivate’

<table>
<thead>
<tr>
<th>/ á- + -lim-e /</th>
<th>Align (H_GRAM, Lf)</th>
<th>EndLow-σ</th>
<th>HD-Min subjunc</th>
<th>Max-H_GRAM</th>
<th>Align EndLow, Rt</th>
<th>Align (H_GRAM, Rt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[á-liíme]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á-liíme]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-lií[mé]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-[lií],mé</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-[lií],mé</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a-lií[mé]</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3-σ toneless/low stem: á-libátiíse, ‘s/he should delay’

<table>
<thead>
<tr>
<th>/ á- + -libat-is-e /</th>
<th>Align (H_GRAM, Lf)</th>
<th>EndLow σ</th>
<th>HD-Min subjunc</th>
<th>Max-H_GRAM</th>
<th>Align EndLow, Rt</th>
<th>Align (H_GRAM, Rt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[á-libátiíse]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á-libátiíse]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-libatíse[é]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-libátiíse[é]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[á]-libátiíse[é]</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the 1-σ stem candidates, (b-d) and also (k) now fail on the absence of an EndLow syllable, not on the issue of fusion, to which no reference needs be made, but due to ill-formed domain structure.

Before finalising this analysis, there are alternative analyses for the residue 1-σ and 2-σ stems that are worth briefly considering.
6.2.2.4. Present subjunctive 1-σ stems: alternatives to EndLow?

In the monosyllabic stems (42, 47 above), there are only two syllables in these words on which the (two) grammatical Hs could appear, because the suffixed subjunctive H is not attached to a segmental suffix which follows the verb, but rather to final vowel -é (which supplants the otherwise almost ubiquitous final vowel -a): toneless áá-t-e, áá-ny-e, and High áá-ph-e, áá-kh-e. However, only one of the subjunctive grammatical Hs is visible in the PR—presumably the leftmost H, since it appears in its predicted position: word-initially on the SP. We do not suppose, for example, that áá-phe (47a) is [áá]-phe (with misaligned or improperly built final H domain), because the strength of the basic domain construction faithfulness constraints motivated in Chapter 4 is clear: Incorporation and BA-LF always ensure that a sponsored H surfaces at least in situ, and never leftwards of the sponsor position. A basically aligned HD is the automatic reflex of being a sponsor in the UR. We have not seen any significant violation of these domain faithfulness constraints. Thus, we are left to conclude that áá-phe is [áá]-phe, which necessitates completely underparsing the rightmost Hgram. Yet in discussing the absence of the lexical stem H in (66g-l), and in examining penult syllables in Chapter 5 §5.3, I observed that a 2-σ word certainly could support two H syllables, yet this paradigm chooses not to. The question, then, is why the ultima grammatical H would elect not to surface.

There are three alternative possibilities (67a-c), in addition to the chosen strategy (67d) already demonstrated in (65-66) above.

(67) **Why no ultima H in 1-σ subjunctives?**

- **a.** NonFin >> Max-Hgram
  - the word-edge anti-align constraint could override parse
- **b.** *AE >> Max-Hgram
  - the OCP constraint could override parse
- **c.** *Express_Ult >> Max-Hgram
  - the anti-expression of the ultima could override parse
- **d.** EndLow >> Max-Hgram
  - the boundary intonation requirement could override parse

I will resolve that (67d) continues to offer the most explanatory way forward; each of the other strategies leads to an analytic cul-de-sac, because it cannot oblige the short 1-σ and 2-σ subjunctives to deliver a toneless ultima in any sort of explanatory way.

First, (67a) would only be possible if there were *two* distinct instantiations of NonFin (as suggested in 68a), since I have already argued in Chapter 4 §4.1 that phrase-final Hs are parsed *in
situ (constraint interaction repeated in 68b). The two exploded anti-align constraints would be ranked with $\text{MAX-H}$ as in (68c).

\[(68) \text{ Two instantiations of $\text{NonFin}$?} \]
\[\text{a. general $\text{NonFin}$ vs. $\text{NonFin}_{\text{SUBJUNCTIVE}}$} \]
\[\text{b. $\text{Max-H} >> \text{NonFin}$ (from Chapter 4 §4.1)} \]
\[\text{c. $\text{NonFin}_{\text{SUBJUNCTIVE}} >> \text{Max-H} >> \text{NonFin}$} \]

Paradigm-specific constraints such as $\text{NonFin}_{\text{SUBJUNCTIVE}}$ as well as several other $\text{NonFin}$ constraints have been suggested in Cassimjee (1995, 1998), in order to deal with paradigm-specific problems such as the current one, where HDs attempt to stretch to the ultima from a preceding syllable, but must be barred from crossing the penult-ultima boundary. As in (68c), Cassimjee’s version of $\text{NonFin}_{\text{SUBJUNCTIVE}}$ must be ranked higher than general $\text{NonFin}$. The obvious problem with such a proposal is that it is only in the short 1-$\sigma$ and 2-$\sigma$ stems that an ultima $H_{\text{GRAM}}$ is underparsed. In all other subjunctive stems, this final parsing is acceptable.

Turning briefly to the second alternative approach to short subjunctive stems in (67b)—the OCP analysis (*$\text{AE} >> \text{Max-H}$)—there is likewise immediately a problem. I showed in Chapter 5 §5.1 that the reverse of this suggested ranking holds: $\text{MAX-H} >> *\text{AE}$, precisely so that deleting a lexical H is not preferred to parsing two H sponsors adjacent to one another. But in the current subjunctive case, the H which is not parsed is a grammatical H, indicating—if this OCP approach holds water—that $\text{MAX-H}_{\text{GRAM}}$ should lie below *$\text{AE}$. Yet, I have already demonstrated above that parsing a grammatical H takes precedence over parsing a lexical H ($§6.2.1.1$ (20)), as the participial, relative and subjunctive themselves demonstrate (discussion above). We are faced, then, with the ranking paradox in (69) ($\text{MAX-H}$ is rewritten in its exploded $\text{MAX-H}_{\text{GRAM}}$ and $\text{MAX-H}_{\text{LEX}}$ instantiations).

\[(69) \text{ *$\text{AE}$ ranking paradox} \]
\[\text{a. $\text{Max-H}_{\text{LEX}} >> *\text{AE}$} \]

\[\text{adjacent lexical H-sponsors are tolerated (even though their H domains are fused, cf. Chapter 5 §5.2)} \]

---

23 Hence, this could not stand as a morphologically conditioned cophonology, unless short stems were argued to somehow occupy a separate grammatical space (which they do not).
b. *AE >> Max-H_{GRAM} a grammatical H-sponsor is not tolerated immediately adjacent to a lexical H preceding it (in 1-σ subjunctive stems above: 56a-b, 66a)
c. Max-H_{GRAM} >> Max-H_{LEX} cf. §6.2.1.1 (20a), §6.2.2.1 (28)
d. *AE >> Max-H_{GRAM} >> Max-H_{LEX} >> *AE ranking paradox (by transitivity)

Responding to this ranking crisis, we could propose exploding *AE into two constraints ranked on either side of the Max-H constraints, the higher ranked *AE_{SUBJUNCTIVE} (now 70) being a paradigm-specific constraint, with the ranking in (71).

(70) *AE_{SUBJUNCTIVE}
HD edges may not be adjacent in the subjunctive paradigm.

(71) Exploded *AE ranking in the subjunctive
*AE_{SUBJUNCTIVE} >> Max-H_{GRAM} >> Max-H_{LEX} >> *AE

This interaction is demonstrated in Tableau 7 (72), which fails due to the apparently optimal candidate (72a) succeeding in parsing the lexical stem tone, where the suboptimal (but actual output) candidate (72b) fails too, though keeping all tone off its ultima. The tableau is unable to properly account for the empty ultima.

(72) Tableau 7: Failed *AE subjunctive interaction áá-‘in order that s/he give’

<table>
<thead>
<tr>
<th>/a/-ph-ê/</th>
<th>H_{GRAM}</th>
<th>H_{GRAM} H_{LEX}</th>
<th>*Max H_{LEX}</th>
<th>*AE_{SUBJUNCTIVE}</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>*AE</th>
<th>NonFin</th>
</tr>
</thead>
<tbody>
<tr>
<td>áá-ê</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(áá-ê)</td>
<td>(a) [áa-phé]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(c) [áa-phé]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(d) áa-phé</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(e) [áa]-[phé]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(f) [áa]-[phé]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

It is clear from the incorrectly predicted selection of (72a) that an additional parameter is at work in candidate evaluation. In addition to the exploded *AE variant, there must be an explicit ban on fusion, so that two adjacent grammatical HDs do not fuse, in order to satisfy the
*AE ban. We could propose a paradigm-specific *FUSION constraint, but even though this might grind out the correct output candidate, we would not yet have accounted for 2-σ stems (below), which, in turn, are going to require even more constraints.

Without yet identifying a superior analysis of 1-σ subjunctive stems, I turn briefly to the third alternative solution proposed above (67c): anti-expression. We could maintain that to obviate an ad hoc *FUSION constraint, we might tolerate the predicted optimal domain structure of (72a), but in addition, we might force the ultima syllable inside the HD not to express as H on the surface. This was the elected solution to OP tone in Chapter 5 §5.4.2.6, where it was proposed that a lexical ultima in the {OP+1-σ stem} configuration simply fails to express, and that this is tolerated only because a higher ranked system constraint, CONTRAST_HD, forces at least one syllable in the (fused) HD to express, in order that the OP identity might not be entirely lost in the output form. But even at that point, the utilising of an anti-Express constraint to achieve what otherwise did not appear to have any phonotactically grounded reason for being an unacceptable tone configuration was not an analytic move readily taken. It allowed us to achieve the correct output only by manipulating feature expression (though potential cross-paradigm evidence for underexpressing the OP was provided).

In fact, all sorts of surface patterns could be correctly assigned domain structure, with anti-expression ‘holes’ inside them, if anti-expression were tolerated in an unconstrained fashion. Even longer stems, such as á-líbátiis-é could be provided with a single HD: [á-líbátiis-é], where this structure would result from two adjacent HDs being fused in response to *AE_SUBJUNCT. The entire (long) penult would thus be anti-expressed (the right edge of the ‘first’ pre-fusion HD). But such a move would defeat the whole purpose of transparently surface-true optimal domains, which lies at the heart of OT/ODT. It would be an entirely unsatisfactory pseudo-solution to these short subjunctive stems.

In addition, the proposed anti-expression of the 1-σ stem subjunctive ultima obscures the fact that this pattern (42, 47, 72) reflects a type of NONFINALITY. Other things being equal, Phuthi prefers not to have any HD-structure on its ultima. This outcome seems highly enough valued to interfere with proper domain construction, both with the OP earlier (Chapter 5 §5.4), and here with the subjunctive.
Before reconfirming the optimal solution to 1-σ stems (67d), I consider once again the other short stem class that the analysis must address: 2-σ present subjunctive stems.

6. 2. 2. 5. Present subjunctive 2-σ stems

2-σ stems are often the most difficult to account for in a grammatical tone paradigm: they are long enough to support potentially two tone 1-σ domains, but too short to allow any widespread alignment pattern or any OCP effects to be contrastively observed.

There is evidence for just a single HD in á-lííme (43) and á-bóóne (48). Assuming that the leftmost H syllable reflects the left edge H-sponsor, we must now consider whether the penult H in these 2-σ stems reflects (73a) or (73b).

(73) Possibilities for resolving H-placement in 2-σ subjunctive stems
    a. the ultima grammatical H is parsed, but misaligned leftwards to the penult;
    b. HD-MIN is extending the domain of the first HGRAM; the second HGRAM remains unparsed.

I argue that the H penult cannot be a misaligned right-edge HGRAM (73a), since BA-Lf is never dominated in the surface manifestation of a positionally anchored UR H24. Even though it was argued in Chapter 5 §5.2 that *AE >> BA-Lf in order to make adjacent HDs fuse, sponsors never relocate leftwards. Proposing such a realignment (74) would break with all other tone patterns in the language, and would be unmotivated (except, perhaps, as a response to NonFIN, although NonFIN in lexical paradigms does not force this kind of realignment).

(74) Non-optimal 2-σ subjunctive
    *[á]-[líí]-me,

The representation proposed in (74) has the HD surrounding the syllable [líí] as the surface correspondent to the UR sponsor on -me, thus violating INCORPORATION. But we have seen no abstract misaligning leftwards of this ultima grammatical H. It is therefore proposed that the penult high syllable results from an HD-MIN effect, in (75a). There is still a serious problem: it

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24 There is the marginal case of unincorporation (Chapter 7 §7.7.1) where a H sponsor is not within its own parsing domain; but even there, while INCORPORATE is violated, BA-LF is not. BA-LF is also violated in the special case of ‘post-lexical’ fusion of adjacent HDs (cf. Chapter 5 §5.4).
must be explained why (75b) is not optimal, given that it appears to be the most reasonably domain-structured output. After all, (75b) parses both grammatical Hs, and satisfies the boundary EndLow condition. In these respects (75b) appears more faithful than optimal (75a).

(75) Non-optimal and optimal 2-σ subjunctive
    a. [á-líí]me
    b. *[á]-lii[mé]

Now, although non-optimal (75b) violates HD-MIN, HD-MIN is ranked lower than either of the Max-H constraints and should not be able to even select (75a), as demonstrated by the transitive rankings in (76).

(76) Transitive rankings
    a. Max-HGRAM >> Max-LEX §6.2.1.1 (20a)
    b. Max-HGRAM >> NonFin implied for all ultima-parsed Max-HGRAM since §6.2.2
    c. NonFin >> HD-Min Chapter 4 §4.2
    d. Max-HGRAM >> HD-Min result of transitive rankings

Accordingly, HD-MIN in its present low position cannot force (75b) to be rejected, since (75b) would faithfully parse both HGRAM sponsors, in line with (75d). Thus, we are forced to confirm that there exists a distinct, more highly ranked instantiation of HD-MIN, specific to the subjunctive paradigm, as introduced in (63) above; this HD-MINSUBJUNCT outranks Max-HGRAM (77).

(77) Exploded HD-Min ranking
    HD-MINSUBJUNCT >> Max-HGRAM >> (*Max HLEX >> Max-HLEX >> *AE >> BA-Lf >> NonFin) >> HD-MIN

A similar proposal for exploding HD-MIN has been made for subjunctive prefixes in Xhosa (Cassimjee 1995:378-9)25. Yet this still would not preclude a surface form such as [á-líímé], where both HGRAM tones parse and where HD-MINSUBJUNCT is (partially) respected. Fusion could meld the two adjacent HDs together in such a form. Thus, we would have to invoke a constraint (speculated on in the discussion of 1-σ stems) such as *FUSION (78) which forbids the

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25 This proposal has no reference from Cassimjee (1998), because the discussion of subjunctives in the 1995 MS has been removed in the subsequent book (cf. 1998:151, footnote).
two HDs (in a 2-σ subjunctive stem) to fuse. In this case, \text{*AE}_{\text{SUBJUNC}} could be satisfied only by having the rightmost \text{H}_{\text{GRAM}} underparse. Thus, a constraint such as \text{*FUSION} would dominate both instantiations of \text{*AE} (79).

(78) \text{*Fusion} (to be rejected)
Do not fuse adjacent H domains.

(79) \text{*Fusion} \gg \text{*AE}_{\text{SUBJUNC}} (\ldots \gg \text{*AE})

The generating of a well-formed subjunctive 2-σ stem surface tone pattern would proceed as in Tableau 8 (80).

(80) Tableau 8: HD-MIN explosion in 2-σ subjunctive stems (to be rejected)
\á-líím-e, ‘that s/he cultivates’

<table>
<thead>
<tr>
<th>/ á- + -líí-mé / H_{\text{GRAM}}</th>
<th>*Fusion</th>
<th>*AE_{\text{SUBJUNC}}</th>
<th>HD-MIN_{\text{SUBJUNC}}</th>
<th>Max-H_{\text{GRAM}}</th>
<th>BA-Lf</th>
<th>NonFin</th>
<th>HD-Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [á-líí]me</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [á]-líím-e</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [á]-líí[mé]</td>
<td><em>!,</em></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [á]-[líí],mé,</td>
<td>*!</td>
<td><em>!</em></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [á-líí]-mé</td>
<td>*!</td>
<td>0,*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [á-líí-mé]</td>
<td>*!</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- (a) fails to parse both \text{H}_{\text{GRAM}} tones, but is optimal; (b) is minimally suboptimal by failing to extend the leftmost \text{H}_{\text{GRAM}} to the penult; (c)—the expected PR, other things being equal—fails to extend its HD; (d) misaligns the HD from its parsing syllable—the ultima; (e) has fatally adjacent edges; (f) fatally fuses both HDs together.
- \text{NonFin} continues to play no role in output selection.

We would thus have introduced three new constraints—\text{*FUSION}, \text{*AE}_{\text{SUBJUNC}}, \text{HD-MIN}_{\text{SUBJUNC}}—in pursuit of explaining the surface tone shapes in the 1-σ and 2-σ stems of the subjunctive paradigm. None of these constraints, however, offers much insight into what the subjunctive paradigm seems to be trying to achieve by way of surface tone shapes. Although granted that morphology-specific constraints or rankings are needed to account for paradigm-specific shapes, and even conceding that constraints such as the top three innovated in
Tableau 8 (80) may do additional work in related paradigms not discussed in this chapter but also active in the language, it nevertheless seems clear that the ENDLOW approach proposed at the start of §6.2.2.3 is more insightful, and is adequate. It offers a broader insight into what the subjunctive is like.

We need to be reminded, however, from the earlier discussion of ENDLOW, that even with this mandatory pitch-trough (ENDLOW), we still need HD-MINSUBJUNC, to ensure that in bisyllabic forms the first two syllables (starting with the leftmost HGRAY) are parsed as H, e.g. álíím-e ‘that s/he cultivates’, where the second HGRAY is suppressed.

In conclusion, I observe that the status of the ‘gap’ in the subjunctive has now been raised from merely what falls out of an OCP restriction on HDs (in the lexical paradigms, cf. Chapter 5 §5.1, §5.2, §5.4); and here: above), to a necessary element in the tonal phonology of a paradigm such as subjunctive. We may speculate that this has integrated an element of the broad phrasal intonation into the morphophonology of subjunctive tone in Phuthi.

No reference need be made either to fusion or to (an exploded instantiation of) *AE.

*FUSION and *AE-SUBJUNC thus serve no purpose here since they are uninsightful, overspecified alternatives to an ENDLOW analysis, and they are now abandoned.

Thus, this account of the regular subjunctive pattern, and of the 1-σ and 2-σ stem pattern, receives an adequately explanatory account by focusing on the role of obligatory intonational declination at the right edge of the subjunctive phrase.

But does the ENDLOW account encode the weakly active role of NONFIN that was suggested as being obscured in the anti-express account in §6.2.2.2 above? While the ENDLOW account has made no explicit reference to NONFIN, the align constraint which attempts to align the ENDLOW locus to the right edge of the word does encode rightness; but the undomained status of the ENDLOW gap on the penult would need to be linked to NONFIN if this connection were to be made explicit.

This ENDLOW account of the subjunctive could be straightforwardly extended to the present relative paradigm from the preceding section (§6.2.2.1), with one difference: the present relative suffix -kó is invariably H (it may well be that -kó is more clitic-like, that is, morphologically distinct from tense/aspect suffixes such as -a, -e, -iye; clitichood may entail distinct morphological properties; either way, -kó is likely to be invariably H because it contains enough segmental material for a whole syllable, unlike the subjunctive -é); thus, in the present relative, ALIGN_(HGRAY, RT) >> ALIGN_(ENDLOW, RT). The full set of present relative data could thus be accounted for with a cophonology very similar to the one just seen in the present subjunctive account, but distinct in (a) re-ranking the ALIGN_(HGRAY, RT) constraint higher in the constraint hierarchy; and in (b) not needing the paradigm-specific HD-MINSUBJUNC. But the account offered in §6.2.2.1 for the present relative is quite sufficient as it stands.
As a final note to this section, we can observe that while we have rejected constraints such as \textsc{NonFinSubjunc} and \textsc{AESubjunc}, an indepth study of a single tone grammar such as Cassimjee (1998) is fundamentally correct: there is a very significant quantity of paradigm-specific information that a language like Xhosa (in this case, Phuthi) must be able to compile. Cophonologies\textsuperscript{28} such as has been argued for here in the case of the present subjunctive are thus inherent to the processing of Phuthi grammatical tone paradigms.

Since a very considerable burden of grammatical labour spent on keeping morphological paradigms distinct is implemented by the tone grammar in a Bantu language, it is not surprising that constraints may need to be multiplied, suspended, and reranked. Despite the messiness of such patterns, and then of the constraints they demand, such data cannot responsibly be swept under the analytic carpet\textsuperscript{29}. As a first step, we need simply to acknowledge the existence of the paradigms in their tonal complexity. This point will be amply demonstrated by the material to be examined in the remainder of this chapter. An important theoretical point that is emerging (and will continue to emerge) is that we should not simply tolerate but indeed expect in the grammatical paradigms of a tonology such as found in Phuthi multiple instances of the same constraint\textsuperscript{30} (e.g. \textsc{HD-Min}, \textsc{HD-MinSubjunc}), where each constraint variant has subtle but distinct properties, according to morphological paradigm or phonological/morphological level of the grammar.

### 6.2.3. Constraint Summary

I summarise the grammatical tone/voice constraint set up to this point (81). I indicate the paradigms to which paradigm-specific constraints and rankings apply. Some of the constraints have been seen to be paradigm-specific (e.g. \textsc{HD-MinSubjunc}, \textsc{Max Hlex}) and are duly marked in (82) with \(\pi\) (‘paradigm-specific’). I return to the question of reranking at the end of §6.3.

\textsuperscript{28} The notion of cophonology first introduced in Chapter 5 §5.6.2 has been further considered in §6.2.2.1-§6.2.2.2 above, and is extended in §6.3.1.2 - §6.3.1.4, §6.3.2.1 - §6.3.2.2.

\textsuperscript{29} One cannot do what is sometimes done by analysts and simply dismiss ‘short stems’ are ‘short’—thus misbehaved—and not worthy of comment. They also receive their tone configuration from the tonal phonology in a systematic way. It is salutary to work through the intricacies of these stems in various paradigms, as is being attempted here, in order that the extent of phonological regularity vs. irregularity become clearer.

\textsuperscript{30} This finding may well cut across frameworks: multiple constraints here may be multiple rules or filters in a different model of phonology.
Constraint Set Summary (for grammatical paradigms), version 1: new rankings

Grammatical vs. lexical H

From this section—Pres(ent) Rel(ative), Pres(ent) Subjunc(tive):

a. Max-H_{GRAM} >> Max-H_{LEX} >> NonFin  (from 20a)
b. Pres Rel, Pres Subjunc: Align_(H_{GRAM}, Lf); Align_(H_{GRAM}, Rt)  (from 53)
c. Pres Rel, Pres Subjunc: *Max H_{LEX} >> Max-H_{LEX}  (from 57)
d. Pres Rel, Pres Subjunc: EndLow-σ; Align_(EndLow, Rt)  (from 60, 61)
e. Pres Subjunc: HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> (… HD-Min)  (from 65)
f. Align_(H_{GRAM}, Lf); EndLow-σ >> HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> Align_(EndLow, Rt)  (from 65)

g. Pres Rel: Align_(H_{GRAM}, Rt) >> Align_(EndLow, Rt)  (foonote 26)
h. Pres Subjunc: Align_(EndLow, Rt) >> Align_(H_{GRAM}, Rt)  (from 65)

Constraint rankings (grammatical tone), version 1: dominance orderings

Align_(H_{GRAM}-Lf) (π); EndLow-σ (π)

| HD-Min_{SUBJUNC} (π)
| Max-H_{GRAM}
| *Max H_{LEX} (π)
| Align_(EndLow, Rt) (π)

π₁ ┌──────┐ π₂
| Align_(H_{GRAM}, Rt) (π)
| Max-H_{LEX}
| *AE
| BA-Lf
| NonFin
| HD-Min

• (π) = present relative & present subjunctive
• π₁ = present relative; π₂ = present subjunctive
6.3. σ2 paradigms

Widescope H alignment in the present relative and present subjunctive paradigms seen in §6.2 reached no further rightwards than the antepenult syllable, not because of AvoidProm and NonFin anti-alignment but because of (a) the additional grammatical H parsed on the ultima (and the OCP effect which emerges from that); and because of (b) the need to maintain a locus for right-aligned EndLow (that is, declination). While the antepenult is the usual wide-align target for a lexical paradigm, it is decidedly the unusual target for a grammatical paradigm. All other grammatical paradigms in Phuthi select either the penult (§6.3.1.1) or ultima (§6.3.3.1, §6.3.3.2) as the right edge of their H expansion, as we shall see.

In anticipation of robust data sets to confirm the patterns, I observe that a wide variety of grammatical verb patterns—including the short perfective (cf. Appendix A, paradigm J), present inclusive (cf. Appendix A, paradigm V) and present negative (cf. Chapter 7 §7.8.1; Appendix A, paradigm U), and all the remaining paradigms to be discussed in this chapter—target the stem σ2 position as the left edge of their surface HD (the ‘σ2 pattern’); that is, a grammatical H appears in the verb stem, stretched between the σ2 position and a prosodically defined right-edge target syllable (one of the last three syllables in the word). In every case the grammatical H tone behaves in a widescope fashion similar to that of the lexical H, in that it seeks to expand rightwards to the prosodic word edge. As with a lexical H, this rightward expansion may be restricted by one or more anti-alignment constraints, both of which we have already seen: NonFin, AvoidProm. By contrast with the lexical H paradigms, however, there is considerable variation in how grammatical paradigms are parameterised with respect to the particular right edge they seek: a few (including the subjunctive and present relative) target the antepenult, as we have seen in §6.2; most, however, reach to the penult or ultima. The right-edge settings are indicated in Tableau 9 (83), which repeats information about paradigm right-edge targets from Tableau 1 (3). In addition, I indicate in the tableau the changes in right-edge target (relevant only in the lexical paradigm: phrase-medial vs. postlexical (phrase-final). I omit information on the additional ultima H of the present relative and subjunctive, which has already been discussed.
Tableau 9: Lexical and postlexical Rt-edge targets in grammatical H paradigms

<table>
<thead>
<tr>
<th>Verb paradigm</th>
<th>Lexical / grammatical paradigm</th>
<th>Rt edge lexical target</th>
<th>Rt edge postlexical target</th>
<th>Section in which analysed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Present indicative (long)</td>
<td>lexical</td>
<td>penult</td>
<td>antepenult</td>
<td>Ch.4, §4.1ff.</td>
</tr>
<tr>
<td>(b) Present indicative reduplicative</td>
<td>lexical</td>
<td>penult</td>
<td>antepenult</td>
<td>Ch.4, §4.1ff.</td>
</tr>
<tr>
<td>(c) Long perfective</td>
<td>lexical</td>
<td>antepenult</td>
<td>antepenult</td>
<td>Ch.4, §4.1ff.</td>
</tr>
<tr>
<td>(d) Present participial</td>
<td>grammatical</td>
<td>antepenult</td>
<td>antepenult</td>
<td>§6.2.1.1</td>
</tr>
<tr>
<td>(e) Present relative (long)</td>
<td>grammatical</td>
<td>antepenult</td>
<td>antepenult</td>
<td>§6.2.2.1</td>
</tr>
<tr>
<td>(f) Present subjunctive</td>
<td>grammatical</td>
<td>antepenult</td>
<td>antepenult</td>
<td>§6.2.2.2</td>
</tr>
<tr>
<td>(d) Short perfective</td>
<td>grammatical</td>
<td>penult</td>
<td>penult</td>
<td>§6.3.1.1</td>
</tr>
<tr>
<td>(e) Present negative</td>
<td>grammatical</td>
<td>penult</td>
<td>penult</td>
<td>§7.8.1</td>
</tr>
<tr>
<td>(f) Imperative</td>
<td>grammatical</td>
<td>ultima</td>
<td>ultima</td>
<td>§6.3.2.1</td>
</tr>
<tr>
<td>(g) Remote past</td>
<td>grammatical</td>
<td>ultima</td>
<td>ultima</td>
<td>§7.8</td>
</tr>
<tr>
<td>(h) Perfective negative</td>
<td>grammatical</td>
<td>ultima</td>
<td>ultima</td>
<td>§7.3.2.2</td>
</tr>
<tr>
<td>(i) Subjunctive with OP</td>
<td>grammatical</td>
<td>ultima</td>
<td>ultima</td>
<td>§6.3.2.2</td>
</tr>
</tbody>
</table>

In all the $\sigma_2$ patterns below (§6.3.1, §6.3.3), it will become clear that the first syllable of the verb stem ($\sigma_1$) is reserved for encoding the lexical tone class membership of the stem: either toneless or H.

6.3.1. Penult widescoping target

6.3.1.1. Short perfective

The left-edge of the grammatical H in the short perfect paradigm is the first evidence we shall see that a grammatical stem tone begins its HD in the $\sigma_2$ position.

(84) Short perfective grammatical H: $\sigma_2$-to-penult

a. Left edge: $\sigma_2$ position in a stem (either H or toneless)
b. Right edge: stem penult

Data from toneless and H stems (without domain structure) manifest this grammatical pattern, and also suggest that the $\sigma_1$ position is being reserved for the (extra) lexical H that
comes with lexically H stems. The short perfective structure\textsuperscript{31} is given in (85) as it will emerge in (86-95) below.

\begin{align*}
\text{(85) Short perfective structure} \\
\text{SP-}\{[σ_1][σ_2][σ_3]...[σ]\}_{\text{stem}} \text{Word }...
\end{align*}

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(H)</td>
<td>(H\text{LEX})</td>
<td>H\text{GRAM}</td>
</tr>
</tbody>
</table>

The short perfective is the syntactically phrase-medial counterpart of the long perfective \textit{lexical} tone paradigm\textsuperscript{32}).

\textbf{Toneless SP + toneless stems: σ2 grammatical H pattern}

\begin{align*}
\text{(86) 2-σ stem (1+1)}^33 \\
\begin{align*}
a. & \text{ si-tíye... we have come...} \\
b. & \text{ si-nyíye... we have excreted...} \\
c. & \text{ si-lwéne... we fought... < -lwana ‘fight’}^34
\end{align*}
\end{align*}

\begin{align*}
\text{(87) 3-σ stem (2+1)} \\
\begin{align*}
a. & \text{ si-limíye... we have cultivated...} \\
b. & \text{ si-yetíye... we have made...} \\
c. & \text{ si-libéle... we have forgotten... < -libala ‘forget’}
\end{align*}
\end{align*}

\textsuperscript{31} The short perfective has been introduced in Chapter 2 §2.2.4.7 (117). Cf. Appendix A, paradigm J.

\textsuperscript{32} The long perfective has been introduced in Chapter 2 §2.2.4.6 (116), and has been seen in Chapter 4 §4.1.1.1 (10), §4.1.3 (30), §4.1.4.7 (58-59), §4.2 (69), §4.2.1.2 (78), §4.3.2.1 (99), (101); and Chapter 5 §5.2.1.1 (29). Cf. Appendix A, paradigm E.

\textsuperscript{33} To facilitate exposition in this data set, and all that follow, I have only indicated the first morpheme boundary: between prefix and stem; the second boundary invariably precedes the relevant suffix: -\textit{iye} for the short perfective, -\textit{a} for the imperative. The numbers in parentheses, e.g. ‘(1+1)’, signify the simple (underived) stem length + the suffix here, for comparative reference with paradigms elsewhere.

\textsuperscript{34} I include the non-perfective base stems for the (c) example in each of (86-94) and (95b,c) because the perfective suffix -\textit{iye} is not morphologically salient in these examples; rather, these stems reflect a form of the perfective that is ‘imbricated’ (cf. Chapter 2 §2.2.4.8). Tonally, however, they behave as all other stems in the same paradigm. Imbrication intrinsically requires two syllables across which to deploy its ‘harmonised’ perfective. Even with these examples, then, there can be no short perfective stems of only one syllable in length.
(88) 4-σ stem (3+1)
    a. si-lebúkíye... we have forgotten...
    b. si-limísíye... we have helped cultivate...
    c. si-sjláfélé... we have become dirty... < -silafala ‘become dirty’

(89) 5-σ stem (4+1)
    a. si-libátísíye... we have delayed...
    b. si-patálísíye... we have helped to pay...
    c. si-libátíséne... we have delayed one another..< -libatisana ‘delay e.o.’

(90) 6-σ stem (5+1)
    a. si-tepélísíye... we have caused to act slowly...
    b. si-libátísísíye... we have delayed one another...
    c. si-minúléléléne... we have unrolled for one another... < -minulzelana ‘unroll for each other’

Toneless SP + H stem: σ2 grammatical H pattern

(91) 2-σ stem (1+1)
    a. si-phíye... we have given...
    b. si-khíye... we have drawn...
    c. si-télé... we have become full... < -tala ‘become full’

(92) 3-σ stem (2+1)
    a. si-bóníye... we have seen...
    b. si-bútíye... we have asked...
    c. si-lúphéle... we have grown old... < -luphala ‘grow old’

(93) 4-σ stem (3+1)
    a. si-sébétíye... we have worked...
    b. si-bónísíye... we have shown...
    c. si-phúmélle... we have succeeded... < -phumelela ‘succeed’

(94) 5-σ stem (4+1)
    a. si-sébétísíye... we have used...
    b. si-bútísísíye... we have asked intensively...
    c. si-yáruléléléne... we have divided among e.o... < -yarulelela ‘divide among each other’
(95) \(6-\sigma\) stem (5+1)
   a. si-hlóníphúlýe... we are disrespecting...
   b. si-khúlúmél léne... we have spoken for e.o... \(<\text{-khulume}\)lana ‘speak for each other’
   c. si-sébétél léne... we have worked for e.o... \(<\text{-sebete}\)lana ‘work for each other’

The surface H patterns of the toneless and H stems (using a 5-\(\sigma\) stem, for example) must, at a minimum, have the domain structure in (96).

(96) Possible short perfective HD-structure (to be modified)
   a. toneless SP-\(\sigma[\sigma...\sigma]\sigma\#\)
   b. H SP-\([\sigma...\sigma]\sigma\#\)

(96) suggests that there is only one active H tone in both toneless and H stems, and that some kind of non-initiality constraint is preventing this H from reaching the \(\sigma_1\) position in the toneless stems alone, but such an account would fail on several grounds. It would fail to explain at least (i) why, in the short perfective, only the toneless stems receive a grammatical H, and why such a H is not manifested in the lexically H stems; and (ii) why there is in fact a connection between stem tone category and the HD status of \(\sigma_1\).

I propose, therefore, that (97) is the accurate HD representation for short perfective stems\(^{35}\), as will be seen.

(97) Short perfective HD-structure (final)
   a. toneless SP- \(\sigma[\sigma...\sigma]\sigma\#\)
      \(\text{H}_{\text{GRAM}}\)
   b. H SP- \([\sigma...\sigma]\sigma\#\)
      \(\text{H}_{\text{LEX}}\) \(\text{H}_{\text{GRAM}}\)

\(^{35}\) For the H stems, the data has already revealed that there is fusion of adjacent HDs (that is, no downstep), e.g. \(\sigma_1\) (lexical) H and \(\sigma_2\) (short perfective grammatical) H ‘si-sébétísíye... ‘we have used...’. This will continue to be the case when a H SP (e.g. \(bá\)-) is introduced to this paradigm. Fusion is predicted even across the antepenult/penult boundary because there is no penult length (that is, no prominence) to trigger AVOIDPROM, nor the conjoint (AVOIDPROM_&_CRISPSTEM) which would otherwise block fusion and trigger downstep in examples (92a-c) si-bóníye.... ‘we have seen...’ (which contrasts with long perfective si-bóníye ‘we have seen’, where there is also no downstep, but in this case because both syllables are H by the same H feature, that is, by a minimality—or HD-MIN—effect).
We must now consider the two edge-properties of the grammatical H tone. Chiefly we must consider (a) how to prevent this grammatical H from reaching σ1 position in the toneless stems; and (b) how to characterise the rightwards extension to the penult.

6.3.1.2. Setting the right edge parameter

Considering first the right edge, the grammatical H extends to the penult. I suggest that any one of three routes could achieve this (98).

(98) Possible grammatical-H right-edge target strategies
a. The right-edge anti-align constraints AVOIDPROM and NONFIN are suspended or reranked under certain grammatical paradigm conditions (a cophonology).
b. WSA-Rt is re-ranked (a cophonology).
c. There are separate right-align constraints particular to the alignment of HGRAM (indexed constraints).

I will analyse the data above, and in sections to follow, with the reranking (cophonological) strategy, (98a), subsequently to admit that there is no particularly compelling reason to select any one strategy over the other two.

Using (98a), I propose that a distinct cophonology for the short perfective (and other grammatical paradigms which target the penult36) is a paradigm-specific re-ranking37 of WSA-Rt to a higher position in the dominance hierarchy to where it outranks AVOIDPROM; this would allow the expanding H to reach the penult syllable in its rightwards expansion (99).

(99) Re-ranking WSA-Rt
a. NonFin >> AvoidPROM >> WSA-Rt        lexical paradigm cophonology fragment
b. NonFin >> WSA-Rt >> AvoidPROM        a grammatical paradigm cophonology fragment

36 The only other grammatical tone paradigm discussed in this work where the penult is the H target is the present negative (§7.8.1).
37 Many scholars take the present indicative as the tone paradigm constructed with default parameter settings; it is typically tonally the least complex. (Even in this case, that would make either the antepenult or the penult the default right edge, depending on phrase-finality.) Hence, we could speak of re-ranking WSA-Rt. But we need take no position on the ‘original’ or default ranking in any particular phonology: there simply is more than one right-edge ranking (more than one cophonology).
The issue of reranking was first broached in Chapter 4 §4.5, in connection with the lexical vs. postlexical distinction in the right edge target site for an expanding HD. I observed there that it has been argued that OT grammars are likely to entail variable rankings of certain constraints in the case of paradigm-specific configurations. This variation exemplified in Tableau 10 (100) from the data just seen, where the site of choice for the right-edge is the penult, which entails reranking of WSA-R\textsubscript{T} relative to AvoidProm.

(100) **Tableau 10:** AvoidProm is demoted in the short perfective

<table>
<thead>
<tr>
<th>/ ...-libat-is-iye /</th>
<th>NonFin</th>
<th>WSA-Rt</th>
<th>AvoidProm</th>
</tr>
</thead>
<tbody>
<tr>
<td>H\textsubscript{GRAM}</td>
<td>F</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(a) ...-libátíṣíye</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) ...-libátiṣiye</td>
<td></td>
<td><em>!</em></td>
<td></td>
</tr>
<tr>
<td>(c) ...-libátísíye</td>
<td><em>!</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Turning to alternatives, we could briefly consider the split H\textsubscript{GRAM} feature solution proposed in (98b), where a novel WSA-R\textsubscript{T} constraint would govern the behavior of a H\textsubscript{GRAM} such that only a H\textsubscript{GRAM} tone domain would reach the penult, whereas a H\textsubscript{LEX} would reach no further than the antepenult, as guaranteed by the constraint interactions in (101); the two instantiations of WSA-R\textsubscript{T} are given in bold.

(101) **An additional WSA-R\textsubscript{T} constraint** (to be rejected)

NonFin $>>$ WSA-R\textsubscript{T} (H\textsubscript{GRAM}) $>>$ AvoidProm $>>$ WSA-R\textsubscript{T} (H\textsubscript{LEX})

This line of analysis involves no re-ranking, but rather two discretely indexed wide-align constraints. Besides the now two almost identical instantiations of WSA-R\textsubscript{T}, referring to separated instantiations of the H tone—even if we accept that there are places where it is necessary to distinguish between H\textsubscript{GRAM} and H\textsubscript{LEX} as I have shown in §6.1 (and continue to assume throughout this work)—it is still undesirable to proliferate constraints which diacritically select distinct instantiations of a feature as referent. In addition, I have observed in Chapter 5 §5.6.2 (footnote 85) that Inkelas & Zoll (2003) argue strongly against what seems to be the only remaining support of indexed constraints (as opposed to cophonologies): grammar dependence. It would seem that there is no theoretical advantage (but rather a disadvantage) in continuing to
allow both indexed constraints and cophonologies. And while the two versions of WSA-Rt in (101) are not technically indexed for paradigm, the very use of $H_{\text{GRAM}}$ vs. $H_{\text{LEX}}$ almost has the effect of paradigm indexing, since the two types of $H$ occur in almost mutually exclusive environments.

The cophonology (reranking) line of analysis elected above, will be shown to affect all three anti-edge constraints, since there are going to be grammatical morphological paradigms in this chapter which extend a $H_{\text{GRAM}}$ even to the ultima (§6.3.3). If we adopted the fresh WSA-Rt instantiation in (101), we would ultimately need a third WSA-Rt that would outrank NonFin too (102).

(102) Three WSA-Rt constraints (to be rejected)

\[
\begin{align*}
\text{WSA-Rt (}H_{\text{GRAM}}\text{)}#1 & \gg \text{NonFin} \gg \text{WSA-Rt (}H_{\text{GRAM}}\text{)}#2 & \gg & \text{AvoidProm} \gg \text{WSA-Rt (}H_{\text{LEX}}\text{)}
\end{align*}
\]

In this case there would be no lexical/grammatical distinction to call on, for differentiating between the WSA constraints; rather there would have to be a morphological class that invoked WSA-Rt ($H_{\text{GRAM}}$)#1; and a separate class that invoked WSA-Rt ($H_{\text{GRAM}}$)#2 (including the short perfective paradigm under discussion here). Thus, constraint indexing would be inevitable.

Finally, pursuing (98c), AvoidProm could simply be considered an ‘irrelevant’ constraint in the short perfective grammatical H paradigm, a constraint which is ‘invisible’ here, or whose violations are ‘invisible’ (103).

(103) Suspending AvoidProm

\[
\begin{align*}
\text{NonFin} & \gg (\text{AvoidProm} \gg) \text{WSA-Rt}
\end{align*}
\]

But the theory does not allow for intermittent presence of constraints. In addition, this amounts to indexing AvoidProm only for those paradigms where it does have a role to play. So, we would have gained nothing.

Rather, as in (101), AvoidProm needs simply to be reranked below WSA-Rt, as laid out in Tableau 10 (100) above. It will be seen in §6.3.2 that there is a third possible cophonology for right-aligning H constraints.
6. 3. 1. 3. Left-edge alignment of grammatical H

Considering now the left edge of the grammatical H domain: this grammatical tone aligns itself as far to the left of a stem as possible, but avoids the $\sigma_1$ position. It would be far more optimal not to have to refer to lexical and grammatical Hs with distinct feature encoding, since the tones have the same surface pitch properties. We have, however, already seen from the present relative and subjunctive paradigms in this chapter that at least $\text{Max-H}$ must be able to distinguish between lexical and grammatical Hs ($\text{Max-H}_{\text{GRAM}} >> \text{Max-H}_{\text{LEX}}$). For now, the left edge alignment of the short perfective grammatical H is characterised by $\text{ALIGN H}_{\text{GRAM-LF}}$ (GRAMMATICAL ALIGN-LEFT) in (104), which we must assume is invoked by the constraint grammar only when the appropriate morphological situation arises, that is, when the cophonology is invoked by any of the paradigms in Tableau 10, including the short perfective.

(104) **GRAMMATICAL ALIGN-LEFT** (Align$_{H_{\text{GRAM-LF}}}$)
 Align ($H_{\text{GRAM}}$, Lf, MStem, Lf)
 Align the left edge of every $H_{\text{GRAM}}$ with the left edge of the morphological stem.

A version of this constraint was implicit in the left-alignment discussion of the grammatical Hs in §6.2.1.1 (participial), §6.2.2.1 (present relative) and in §6.2.2.2 (present subjunctive); in particular, this was given in (53) as $\text{ALIGN (PWord}_{\text{SUBJUNC}}, \text{LF, } H_{\text{GRAM}}, \text{LF})$ for the present subjunctive paradigm. Every grammatical paradigm requires some version of (104), aligning to the left edge of either the prefix or the morphological stem. For many, there is also misalignment to $\sigma_2$ achieved through the interference of $\text{FAITHLEXTONE}$ (cf. (112) below).

Importantly, paradigms will need distinct cophonologies with varying rankings of varying instantiations of $\text{ALIGN H}_{\text{GRAM-LF}}$. Alternatively, paradigms can be considered to rank their particular indexed instantiations of (104) distinctly. For example, we will see an ordering paradox in (128) below if we admit only one ranking (or only one instantiation) of $\text{ALIGN H}_{\text{GRAM-LF}}$: the present relative/subjunctive left-alignment (to the word left edge) will need to be ranked more highly than that of the short perfective (to the stem left-edge).

This new grammatical align constraint (104) is important for anchoring a grammatical H tone at its paradigm-specific left edge. Such grammatical H-alignment is neither a widescope constraint nor a basic alignment constraint: there is no local edge from which WSA-LF can be
measured, nor is there an obvious sponsor syllable. It is more like the original Anchor_H_(Lex) constraint proposed in Chapter 4 4.1.3 (21) to anchor a lexical H tone to the stem left-edge, except that in the present case, every stem (irrespective of lexical status) acquires such a left-aligned grammatical tone.

The common approach to grammatical tones in pre-OT Bantu tonology (that has been representation-oriented) is to posit a floating H tone (Goldsmith 1976, Kisseberth 1984, Pulleyblank 1988); this H would then be docked to the stem left-edge. In some OT work, floating Hs have been posited for input forms (Bickmore 1996, Myers 1996, Zoll 1996, Ham 1997, Pulleyblank 1997). I have suggested in Chapter 4 §4.1.2—and in §6.2.2.2 above (footnote 17)—however, that ‘float’ is not a meaningful concept in a non-representational framework such as ODT (Cole & Hsiao 1997). If a ‘floating’ tone always surfaces in predictable syllable positions, then there is no point in having it float at all. Thus, parameterisable Align_H_gram-Lf (104) remains the tool for aligning the grammatically inserted H, whose instantiation we now turn to.

6.3.1.4. Encoding a grammatical H tone: instantiation vs. alignment

There are at least two ways (105a-b) of encoding the requisite grammatical H tone, which was demonstrated to be present in all short perfective stems, both toneless stems (86-90) and H stems (91-95).

(105) Two ways to encode a H_gram
a. a morphological paradigm invoking a grammatical tone pattern ‘comes with’ an associated grammatical H feature;
b. an alignment constraint forces the appearance of a HD, without necessary reference to the source of the particular H-sponsor.

(105b) is expressed by the ranking in (106), that is, a HD is forced to appear, to satisfy this align constraint, and this happens only as Align_H_gram-Lf is ranked higher than Dep-H, which otherwise forbids any H-insertion.

(106) Forcing the appearance of a grammatical H? (to be rejected)
Align_H_gram-Lf >> Dep-H

450
In Chapter 5 §5.3, in the discussion of EndLow declination—a constraint which must be satisfied, but which can be misaligned—I alluded to the problem of trying to instantiate and align with a single constraint. Odden (OT list, 1996) has raised this issue, which was then briefly discussed on the Optimality List, but remained unresolved. Odden points to the ambiguity of interpretation that is present among the three candidates in Tableau 11 (107): both a completely absent grammatical H (107a) and a minimally misaligned grammatical H (107b) require a single error asterisk; (107a) is tolerable when there is no active H feature in the representation, whereas (107b)—the complete failure to instantiate the grammatical H—is not tolerable.

(107) **Tableau 11: Ambiguous evaluation in instantiating and aligning**

<table>
<thead>
<tr>
<th>/ σ σ σ σ σ /</th>
<th>NonFin</th>
<th>Align H, Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) σσσσσ</td>
<td></td>
<td>? (*)</td>
</tr>
<tr>
<td>(b) σσσ[σ]σ</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(c) σσ[σ]σσ</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(d) σ[σ]σσ</td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>(e) σσσσ[σ]</td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

I hence split the grammatical tone pattern into two parts (108): (a) an instantiation constraint, and (b) an ALIGN constraint (which otherwise would attempt to simultaneously instantiate and align elements *ex nihilo*).

(108) **Splitting the tasks of feature-instantiation and feature-location**

  a. instantiation: such a (grammatical) H *must* exist;
  b. alignment: if a H exists, then it must be aligned in a particular way (here, to the stem left-edge).

The ALIGN formalism which typically reads as (109a) must now be reconfigured as (109b).


  a. For all X there exists a Y such that X and Y are aligned.
  b. Align (A1, D1, A2, D2) means: ‘For all A1, *if there exists* an A2, then A1 and A2 are aligned’.

---

38 Odden wrote on the Optimality List listserv, optimal@ucsd.edu, on 22 November 1996.
(109b) is the way in which I interpret \textsc{Align}\_\textsc{H}_{\textsc{Gram}}\_\textsc{Lf} above, applied to a grammatical tone; thus, I assume that grammatical paradigm stems come with a \textsc{H}_{\textsc{Gram}} (in line with the claims made for a cophonology input). The parsing of this H is ensured by \textsc{Max}\_\textsc{H}_{\textsc{Gram}} , whereas the alignment (or minimal misalignment) of this H is achieved by \textsc{Align}\_\textsc{H}_{\textsc{Gram}}\_\textsc{Lf}. The proper parse ranking for grammatical tone in (106) is reconstrued as (110).

\[(110) \quad \text{Forcing the appearance of a grammatical H} \]
\[\text{Max-H}_{\textsc{Gram}} \gg \text{Dep-H} \]

In conjunction with \textsc{Align}\_\textsc{H}_{\textsc{Gram}}\_\textsc{Lf}, this constraint would produce the following PR forms (where the HD on the toneless/low stem will seen ultimately to be incorrect), ignoring the presence of lexical H for the moment.

\[(111) \quad \text{Unconstrained left-alignment of grammatical H (to be revised)} \]
\[\text{a. Toneless (low) stem } * \text{ SP- } [\textsc{Gram}\sigma\sigma\ldots] \]
\[\text{b. High stem } \text{ SP- } [\textsc{Gram}\sigma\sigma\ldots]^{39} \]

\[\bullet \] The left edge syllable in the grammatical HD is underlined, even though this syllable is only ‘anchored’ in the grammatical tone module. I will follow this convention in all that follows.

I propose, therefore, a faithfulness constraint\textsuperscript{40} to preserve the stem $\sigma_1$ position for the lexical tone contrast (H vs. toneless/low) in (112), and the interaction with left alignment of grammatical tone as in (113).

\textsuperscript{39} The domain structure for the H stem is ultimately not correct either; the first H syllable in the stem is lexical (cf. 116 below).

\textsuperscript{40} Thanks to Laura Downing (p.c., 1999) for providing this insight. There is also an analytic alternative: in these $\sigma_2$ paradigms, a grammatical tone seems to be repelled from the $\sigma_1$ position in both toneless/low stems and H stems. Thus, an anti-align constraint such as \textsc{NonInitiality} could capture this $\sigma_1$ dispreference for parsing a grammatical H, much as extrametricality (\textsc{NonFin}) has been shown to do string-finally. Since this constraint suggests a tone pattern that has symmetrically identical properties to \textsc{NonFinality}, I would term it \textsc{NonInitiality} (\textsc{NonInit}), in the vein of other recent tone work (Cassimjee 1995, 1998; Donnelly 1995a; Cole & Hsiao 1997, Kager 1999). \textsc{NonInit} would be phrased as: ‘*\text{Align}_\text{MStem, Lf, H, Lf}’’. The term \textsc{NonInitiality} has also been used in the stress literature, with reference to metrical structure that avoids a string-initial syllable or mora (e.g. Rowicka 1996, on Munster Irish). But given the asymmetry between \textsc{NonInit} (grammatical tone misalign at left edge) and \textsc{NonFin} (misalignment
(112) **FAITHFULNESS_lexical_tone (FaithLexTone)**

Be faithful to the underlying lexical tone contrast (that is, preserve lexical contrast).

(113) FaithLexTone >> Align_H_gram, Lf

Given (113), and crucially assuming that FaithLexTone is left-aligned, that is, that the optimal locus for lexical tone preservation is \( \sigma_1 \), the following candidates (114) are optimal.

(114) **FaithLexTone left-alignment**

a. Toneless (Low) stem

   SP- \( \sigma \) \([\text{gram}]\sigma\sigma\sigma...\)

b. High stem

   SP- \( [\sigma] \) \([\text{gram}]\sigma\sigma\sigma...\)

Clearly, Max-H_lex must also outrank Align_H_gram-Lf (115).

(115) Max-H_lex, FaithLexTone >> Align_H_gram-Lf

FaithLexTone is a categorial constraint: it is either obeyed, or violated (never misaligned); Align H_gram, Lf can be violated gradiently, on the other hand, as is minimally necessary in this paradigm. But there is something unique to FaithLexTone in the analysis thus far: it is the first time I explicitly invoke a tone contrast as requiring preservation, even when one of the two possible tone settings simply requires absence of a HD (the toneless/low stems). That is, in toneless/low stems, one syllable must be kept available to preserve the lexical contrast; it will always be the stem-initial syllable (in principle it could be any syllable, but the lexical tone contrast is only ever certain on \( \sigma_1 \)). Preserving the contrast entails banning the presence of any other material that would neutralise the H/toneless lexical contrast, irrespective of how this is achieved. Further, I assume that FaithLexTone checks the \( \sigma_1 \) HD for the type of HD: it must be lexical (not grammatical), as borne out in Tableau 12 (118j) and Tableau 13 (124n). Thus, FaithLexTone is a truly phonological constraint, not a phonetic one.

There is a final point to be considered: we could expect one of the *AE constraints to reject the optimal output in (114b), since the H_gram has to be aligned leftwards, and should stop short of \( \sigma_2 \) if there is an OCP effect, producing erroneous (116).

of *any* tone at right edge), and the inability to capture the lexical faithfulness contrast, I explore this account no further here.
Expected H-stem HD-structure, given *AE

However, *AE is ranked below MAX-H_Lex and MAX-H_Gram (Chapter 5 §5.1-2), rendering it ineffectual (117); and it is not reranked here.

*AE ineffectual in σ2 pattern

The full set of constraints governing the left edge of a grammatical HD is evaluated in Tableau 12 (118).

Tableau 12: Aligning the left edge of H_Gram

<table>
<thead>
<tr>
<th>/ SP- + -σσσσ... / H_Gram</th>
<th>Max-H_Gram</th>
<th>Dep-H</th>
<th>Max-H_Lex</th>
<th>FaithLex Tone</th>
<th>Align_H_Gram-Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) SP- σ[σσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(b) SP- σσ[σσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>!</em></td>
</tr>
<tr>
<td>(c) SP- [σσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>(d) SP- [σ]_Lex σσσσ...</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>(e) SP- σσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>High short perfective</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ SP- + σσσσσ... / H_Lex H_Gram</td>
<td>Max-H_Gram</td>
<td>Dep-H</td>
<td>Max-H_Lex</td>
<td>FaithLex Tone</td>
<td>Align_H_Gram-Lf</td>
</tr>
<tr>
<td>(f) SP- [σ]_Lex[σσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(g) SP- [σ]_Lexσ[σσσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>!</em></td>
</tr>
<tr>
<td>(h) SP- [σσ]_Lex[σσσσ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>!</em></td>
</tr>
<tr>
<td>(i) SP- σ[σσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>(j) SP- [σσσσσσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>(k) SP- [σ]_Lexσσσσσ...</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

- Max-H_Lex is irrelevant in (a-e) because these are toneless/low stems; optimal (a) respects FaithLexTone, even though failing to align perfectly to the left; (b) aligns even less perfectly; (c-d) violate FaithLexTone; (d) would contain a spuriously inserted lexical H tone (given richness of the base, this is possible); (e) completely fails to parse the grammatical H.
• Most of the High stem forms (f-k) have already been seen: (f) irrelevantly violates ALIGN\_H\_GRAM\_LF; (g) misaligns the HD\_GRAM left edge one syllable too much; (h) would sound like (f) on the surface, but it similarly misaligns the H\_GRAM left edge and extends the lexical HD though HD-MIN is not invokable at this level in the constraint grammar; (i) and (j) are rejected outright for failing to parse the lexical stem H, and (j) violates FAITHLEXTONE because the wrong type of HD is found in the σ1 position; (k) fails to parse the grammatical H.

Finally, we turn to the residue of short perfective short stems: 2-σ (1-σ + -(i)ye)\(^{41}\) (119).

(119) **Short perfective short 2-σ stems**

a. Toneless stem si-t-íye... ‘we have come...’
b. H stem si-ph-íye... ‘we have given...’

The identical tone shapes indicate (a) that the H\_GRAM is successfully parsed, come what may, since (119a) has no H\_LEX; and (b) that the successful parsing of H\_GRAM can override the FAITHLEXTONE constraint (120), thus conflating (neutralising) the two tone classes in just this example.

(120) **Short stems neutralise lexical tone contrast**

Max-H\_GRAM >> FaithLexTone

We can analyse the second observation (119b) and its ranking (120) in one of three ways (121); I will conclude that the first strategy (121a) is optimal.

(121) **Analysing short perfective 1-σ stems**

a. an ENDLOW-based analysis, as with the short subjunctive stems in (§6.2.2.2) above;
b. some sort of anti-EXPRESS condition;
c. another instantiation of NONFIN ranked high.

(121b) has already been dismissed in the preceding section as theoretically problematic, given that there is no salient Clash reason for underexpressing the contents of the HD here, no matter how short it is; (c) has been deemed possible, but undesirable if it involves multiple indexed instances of the same constraint; (a), however, has been seen to be adequate, functional

\(^{41}\) We recall that there can be no proper 1-σ stems in this paradigm because the suffix itself is 2-σ; -(i) in -(i)ye is in parentheses because it merges with the onset provided by the stem-final onset to create a well-formed syllable.
and insightful in the analysis of the subjunctive, echoing the general phonological decline behavior seen in Chapter 5 §5.3.2. The only difference in the current paradigm, is that the \textsc{EndLow} syllable gap is always perfectly right-aligned, never misaligned; an \textsc{EndLow}-type analysis would seem to be equivalent to one based on \textsc{NonFin}, save for the ranking problems. Maintaining an \textsc{EndLow} analysis, I indicate the necessary rankings with examples in (122), assuming, in addition, the necessary (undominated) \textsc{EndLow}-\(\sigma\) instantiation constraint.

\textbf{(122) Short perfective rankings}

\begin{itemize}
\item[a.] \texttt{Align\_}(\textsc{EndLow}, \textsc{Rt}) \texttt{\textgreater\textgreater} \textsc{FaithLexTone} \quad \textsc{si-t-iye} \texttt{\textgreater\textgreater} *\textsc{si-t-iy\textbar} \\
\item[b.] \texttt{Max-H}\textsubscript{\textsc{Gram}} \texttt{\textgreater\textgreater} \textsc{FaithLexTone} \quad \textsc{si-t-iy\textbar} \texttt{\textgreater\textgreater} *\textsc{si-t-iye}, *\textsc{si-t-iy\textbar} \\
\item[c.] \texttt{Max-H}\textsubscript{\textsc{Gram}} \texttt{\textgreater\textgreater} \texttt{Align\_}(\textsc{EndLow}, \textsc{Rt}) \quad \text{instantiation necessary to evaluate alignment}
\end{itemize}

For 1-\(\sigma\) High stems, we might suppose that (123a-b) should be possible, where both the lexical and grammatical H can be parsed in the 2\(\sigma\) H stems, either without fusion\textsuperscript{42} (123a) or with fusion (123b). But both outputs are erroneous, since they fail to implement the highly valued obligatory \textsc{EndLow} locus.

\textbf{(123) Hypothetical short perfective 2-\(\sigma\) (1\(\sigma\)+1\(\sigma\)) High stems}

\begin{itemize}
\item[a.] *\texttt{si-}[\texttt{ph\textbar\textbar}]\textsubscript{\textsc{Lex}}[\texttt{y\textbar\textbar}]\textsubscript{\textsc{Gram}}\ldots \quad \text{both lexical and grammatical Hs are parsed (no fusion)} \\
\item[b.] *\texttt{si-}[\texttt{ph\textbar\textbar}]\textsubscript{\textsc{Lex}}-y\textsubscript{\textsc{Gram}}\ldots \quad \text{both lexical and grammatical Hs are parsed (fusion)}
\end{itemize}

The optimal outputs for 2-\(\sigma\) stem lengths are given in Tableau 13 (124), both toneless/low (a-c) and High stems (d-h); in addition, output sets for 3-\(\sigma\) stems are evaluated (i-l, m-p)\textsuperscript{43}.

\textsuperscript{42} We recall that fusion is predicted at all (non-depressor-bearing) HD-HD interfaces, except across the antepenult-penult when the penult is long (phrase-final). Fusion under depression conditions is taken up again in Chapter 7 §7.8.1.10 (292), and under Register Domains in §7.9.

\textsuperscript{43} There is potentially slight confusion with the marking of H sponsors: an underlined syllable (\(\sigma\)) prior to this chapter has indicated a lexical H sponsor. In the grammatical paradigms we are currently investigating, I regard the (properly left-anchored) \(\sigma\)1 position as the grammatical H tone sponsor (marked in all candidates). The only stem syllable in the short High stem (124d-h) doubles as lexical and grammatical H sponsor, and is thus double-underlined.
(124) **Tableau 13: Short perfective 2-σ and 3-σ stems**

Toneless (low) 2-σ stem: *si-tɨye... ‘we have come...’

<table>
<thead>
<tr>
<th>/ si- + -t-iye... / H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>EndLow &lt;sub&gt;σ&lt;/sub&gt;</th>
<th>Max-H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>Align EndLow, Rt</th>
<th>Max-H&lt;sub&gt;LEX&lt;/sub&gt; FaithLex Tone</th>
<th>Align H&lt;sub&gt;GRAM&lt;/sub&gt;, Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) si-[tɨ]ye...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) si-t[ɨ]ye...</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) si-tiye...</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

High 2-σ stem: *si-phɨye... ‘we have given...’

<table>
<thead>
<tr>
<th>/ si- + -ph-iye... / H&lt;sub&gt;LEX&lt;/sub&gt; H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>EndLow &lt;sub&gt;σ&lt;/sub&gt;</th>
<th>Max-H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>Align EndLow, Rt</th>
<th>Max-H&lt;sub&gt;LEX&lt;/sub&gt; FaithLex Tone</th>
<th>Align H&lt;sub&gt;GRAM&lt;/sub&gt;, Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) si-[phɨ]ΓRAMye...</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(e) si-ph[ɨ]yΓAM...</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(f) si-[phɨ]lexyle...</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(g) si-phiy...</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>(h) si-[phɨ]lex[y]ΓAM...</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Toneless/low 3-σ stem: *si-limɨye... ‘we have cultivated...’

<table>
<thead>
<tr>
<th>/ si- + -lim-iye... / H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>EndLow &lt;sub&gt;σ&lt;/sub&gt;</th>
<th>Max-H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>Align EndLow, Rt</th>
<th>Max-H&lt;sub&gt;LEX&lt;/sub&gt; FaithLex Tone</th>
<th>Align H&lt;sub&gt;GRAM&lt;/sub&gt;, Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) si-li[mɨ]ΓRAMye</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(j) si-[limɨ]ΓRAMye</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(k) si-lim[y]ΓAM</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) si-li[mɨ]ΓRAMye</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

High 3-σ stem: *si-bon-ɨye... ‘we have seen...’

<table>
<thead>
<tr>
<th>/ si- + -bon-iye... / H&lt;sub&gt;LEX&lt;/sub&gt; H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>EndLow &lt;sub&gt;σ&lt;/sub&gt;</th>
<th>Max-H&lt;sub&gt;GRAM&lt;/sub&gt;</th>
<th>Align EndLow, Rt</th>
<th>Max-H&lt;sub&gt;LEX&lt;/sub&gt; FaithLex Tone</th>
<th>Align H&lt;sub&gt;GRAM&lt;/sub&gt;, Lf</th>
</tr>
</thead>
<tbody>
<tr>
<td>(m) si-[bό]lex[nɨ]ΓRAMye</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(n) si-[bό]ΓRAM[nɨ]lexye</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(o) si-bon[ɨ]ΓRAMYE</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(p) si-[bόnɨ]lexye</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
In the output set, both (m) and (n) would be equally acceptable if \textsc{FaithLexTone} can only see H vs. toneless; but if, as I have suggested, \textsc{FaithLexTone} checks for the type of H on \( \sigma 1 \), and finds the wrong type in (n), then (m) is unambiguously optimal\(^{44}\).

### 6.3.2. Constraint Summary

I summarise the new rankings (125), then discuss an ordering paradox (126) which will be resolved into two cophonologies (129); then I give the entire constraint set up to this point (130) for grammatical tone paradigms, with the dominance relations visually sketched in (131).

\begin{enumerate}
\item \[ \sigma 2 \text{ grammatical pattern} \]
\begin{enumerate}
\item Max-H\textsc{Lex}, FaithLexTone >> Align\_H\textsc{gram}-Lf (from 113, 115)
\item NonFin >> WSA-Rt >> AvoidProm \( \pi \) (from 99b)
\begin{itemize}
\item specific to penult paradigms: present relative, short perfective
\end{itemize}
\item Max-H\textsc{gram} >> Dep-H (from 110)
\item Max-H\textsc{gram} >> Max-H\textsc{lex} (from 81a)
\item Max-H\textsc{gram} >> FaithLexTone (from 120)
\end{enumerate}
\end{enumerate}

On careful examination of the grammatical left-alignment and the \textsc{Max} constraints, there is an ordering problem if we admit only one instantiation of \textsc{Align\_H\textsc{gram}-LF}: according to the constraints from this section (125), through transitivity, both \textsc{Max-H} constraints must outrank \textsc{Align\_H\textsc{gram}-LF} (126a); yet from the previous set of grammatical H constraints summarised in (83), referring to the present relative / participial paradigms, \textsc{Align\_H\textsc{gram}-LF} clearly outranks both \textsc{Max-H} constraints.

\(^{44}\) We have also seen that \textsc{Align} constraints can refer separately to grammatical and lexical H tones in certain paradigms (including the current one), but only in terms of H feature location, not the nature of phonetic H expression. The example in (124n) has its tone domains H\textsc{gram}-H\textsc{lex} in the wrong sequence. Though this is phonetically irrelevant in the final analysis, since nothing needs to refer to the tone instances independently once both are active in a stem (unless it is a short 2-\( \sigma \) stem where a grammatical H is present even when a lexical H is not), candidates (m) and (n) are not only distinguishable for checking by \textsc{FaithLexTone}, but also would indicate a ranking of two left-align constraints: \textsc{Anchor\_H (Lex)} = \textsc{Align\_ (MStem, Lf, H, Lf)}—Chapter 4 §4.1.1 (21) = lexical tone alignment—outranks \textsc{Align\_H\textsc{gram}-Lf} = \textsc{Align\_ (H\textsc{gram}, Lf, MStem, Lf)}—§6.2.2.2 = grammatical tone alignment.
(126) Ranking paradox with Align\_H\textsubscript{GRAM}-Lf
a. Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \textgreater\textgreater FaithLexTone \textgreater\textgreater Align\_H\textsubscript{GRAM}-Lf \quad \text{(from 125a,d)}
b. Align\_H\textsubscript{GRAM}-Lf \textgreater\textgreater Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \quad \text{(from 81a,f)}

Thus, there are clearly further paradigm-specific rerankings of this single left-align constraint, or two possible distinct grammatical Align\_LEFT constraints, as given in (127), where the constraints according to the left-edge target: the morphological stem (127a), or the prosodic word edge (127b).

(127) Two instantiations of the grammatical left align constraint: Align\_H\textsubscript{GRAM}-Lf
a. Align\_H\textsubscript{GRAM}-Lf, PWord, Lf \quad \text{(from 53a: participial, present relative, subjunctive)}
b. Align\_H\textsubscript{GRAM}, Lf, MStem, Lf \quad \text{(from 104, 106: short perfective)}

We cannot say, simply, that (127a) is ranked higher than (127b), as in (128), because in this case, every H\textsubscript{GRAM} will attempt to align to the left edge of the PWord, given the highly ranked Align\_(H\textsubscript{GRAM}-Lf, PWord, Lf).

(128) Erroneous exploded left-align ranking for grammatical paradigms
Align\_(H\textsubscript{GRAM}-Lf, PWord, Lf) \textgreater\textgreater Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \textgreater\textgreater FaithLexTone \textgreater\textgreater Align\_(H\textsubscript{GRAM}, Lf, MStem, Lf)

Rather, there are two distinct cophonologies (129a,b), corresponding to the two left-align instantiations in (127a,b). I continue to refer to the general Align\_H\textsubscript{GRAM}-Lf constraint as it is, unless specific cophonological properties are relevant.

(129) Two left-align grammatical cophonologies
a. Align\_(H\textsubscript{GRAM}-Lf, PWord, Lf) \textgreater\textgreater Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \textgreater\textgreater FaithLexTone
b. Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \textgreater\textgreater FaithLexTone \textgreater\textgreater Align\_(H\textsubscript{GRAM}, Lf, MStem, Lf)

I can now offer the total constraint summary thus far (130), with new rankings (130i-n), with the dominance relations visually sketched in (131).

(130) Total constraint summary for grammatical paradigms (partial): version 2
- **Grammatical vs. lexical H** (81 above)
a. Max-H\textsubscript{GRAM} \textgreater\textgreater Max-H\textsubscript{LEX} \textgreater\textgreater NonFin
b. Pres Rel, Pres Subjunc: Align\_(H\textsubscript{GRAM}, Lf); Align\_(H\textsubscript{GRAM}, Rt)

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c. Pres Rel, Pres Subjunc: *Max H_{lex} >> Max-H_{lex}
d. Pres Rel, Pres Subjunc: EndLow-σ; Align_(EndLow, Rt)
e. Pres Subjunc: HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> ... HD-Min
f. Align_(H_{GRAM}, Lf); EndLow-σ >> HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> Align_(EndLow, Rt)
g. Pres Rel: Align_(H, Rt) >> Align_(EndLow, Rt)
h. Pres Subjunc: Align_(EndLow, Rt) >> Align_(H_{GRAM}, Rt)

• σ2 rankings (125 above)
i. Max-H_{LEX}, FaithLexTone >> Align_H_{GRAM}-Lf
j. NonFin >> WSA-Rt >> AvoidProm π
   (specific to penult paradigms: present relative, short perfective)
k. Max-H_{GRAM} >> Dep-H
l. Max-H_{GRAM} >> Max-H_{LEX}
m. Max-H_{GRAM} >> FaithLexTone
n. Align_(H_{GRAM}-Lf, PWord, Lf) >> Max-H_{GRAM} >> Max-H_{LEX} >> FaithLexTone
   >> Align_(H_{GRAM}, Lf, MStem, Lf)

(131) Total constraint rankings (grammatical tone), version 2: dominance orderings

Align_(H_{GRAM}-Lf, PWord, Lf) π participial / present relative / subjunctive
   └EndLow-σ
    └HD-Min_{SUBJUNC} π subjunctive
     │
     │ Max-H_{GRAM}
     │
     │ *Max-H_{LEX} π participial / pres. relative / subjunctive
     │
     │ └Align_(EndLow, Rt) (π)
     │     └π1 π1 = present relative; π2 = present subjunctive
     │     └π2
     │
     │ Align_(H_{GRAM}, Rt) (π)
     │
     │ FaithLexTone π short perfective
     │
     │ Align_(H_{GRAM}, Lf, MStem, Lf) π short perfective
     │
     │ Max-H_{LEX}
     │
     │ *AE
     │
     │ NonFin
     │
     │ HD-Min

• ‘penult paradigms’ (e.g. short perfective) require reranking:
  NonFin >> AvoidProm >> WSA-Rt ⇔ NonFin >> WSA-Rt >> AvoidProm
6.3.3. **ULTIMA WIDESCOPE TARGET**

A second large set of $\sigma_2$ grammatical paradigms—this chapter Tableau 1 (3: l-o)—targets the ultima for the right edge of the $H_{\text{GRAM}}$ span, while behaving like other ‘$\sigma_2$’ paradigms (e.g. the short perfective) with respect to the left edge. I will exemplify chiefly from the imperative (§6.3.3.1), since this paradigm lacks overt SPs, and allows for maximally transparent examination of stem tone. Data from the perfective negative (§6.3.3.2) will then allow this analysis to be supported and confirmed.

6.3.3.1. Imperative

The imperative H domain structure that will emerge from the data in (133-142) is schematised in (132), where again $\sigma_1$ is reserved for the lexical tone contrast. The general pattern is that for toneless/low stems (133-137), there is a single H span in the word, stretching from $\sigma_2$ to the ultima; in H stems (138-142), there is a single H span in the word, stretching from $\sigma_1$ to the ultima.

(132) **Imperative structure**

```
{[\sigma_1][\sigma_2.......][\sigma_{\text{stem}}]}_{\text{Word}}
```

```
\mid \mid
H_{\text{LEX}} \quad H_{\text{GRAM}}
```

The data in (133-142) presents the range of tone shapes for the imperative. All words are phrase-final. The leftmost H is marked as a (grammatical) sponsor for each toneless/low stem; $\sigma_1$ and $\sigma_2$ are both marked as sponsors for H stems: the first is lexical, the second grammatical.

**Imperative: toneless (low) stems**

(133) $1-\sigma$ stem

| a. iitjhó | say so! |
| b. jítá  | come!  |
| c. tá    | come!! |
| d. tjhó  | say so!! |
The default pattern for monosyllabic Phuthi stems in the imperative is that they occur with a dummy initial syllable, i- (~i-), as in (133a-b). It has long been observed by a variety of scholars (such as Downing 1998) that some Bantu languages, including Nguni (which includes Phuthi) respect morphological stem minimality, at least in certain paradigms. To do so, they augment overshort stems to fill a minimal stem template with a piece of semantically empty morphology (a ‘stabilizer’, after Gowlett 1984). Nevertheless, the ‘plain’ stems can also occur in Phuthi (133c-d), especially when followed by further material in the phrase, and when delivered with emphasis by the speaker.

(134) 2-σ stem
   a. liimá    cultivate!
   b. baasá    light a fire!

(135) 3-σ stem
   a. libáalá  forget!
   b. lebúuká  thank!

(136) 4-σ stem
   a. libátiisá delay!
   b. yamúkéelá receive!

(137) 5-σ stem
   a. tepé téríisá help slow down!
      l@/ch96:0130+6658 líisá help slow down!
   b. libátiisíisá delay intensively!

**Imperative: High stems**

(138) 1-σ stem
   a. fáfá     give!
   b. fakhá    draw (water)!
   c. phá      give!!
   d. khá      draw!!

As in (133c-d) above, the non-minimal imperative versions of 1-σ stems do also occur (138c-d), albeit more rarely.
The distribution of the grammatical tone (H_{GRAM}) is clearly from $\sigma_2$ to ultima, as indicated for toneless (low) stems; we can presume that—as with the short perfective—the surface H expressed in the High stems on $\sigma_1$ is the lexical contrast associated with those stems (represented as H_{LEX}, and captured by FAITHLEXTONE).

The constraint ranking forcing the distribution of the H_{GRAM} is identical to that seen for the short perfective in section §6.3.1.1 above, except that the H stretches all the way to the ultima. Thus, NONFIN must be reranked out of the way in evaluations for this paradigm, and all other paradigms with the same properties (the remote past, perfective negative -ta-, subjunctive with OP). Assuming, as was argued in §3.1.2 above, that suspension of constraints is not a viable option in OT, then it can be maintained here too that certain right-edge constraints are reranked paradigm-specifically. For the present set of paradigms, the reranking of both anti-edge constraints allows WSA-Rt to be fully satisfied (143b). For the previous section (§6.3.1.1), and for lexical tone in phrase-medial position (Chapter 4 §4.4), NONFIN still prevents full

---

45 The two 5-\(\sigma\) examples contain a long, falling (H-L) syllabic penult [l:].

46 The remote past morphology is introduced in Chapter 2 §2.2.4.7 (117b), and is further analysed in Chapter 7 §7.6.2. Cf. also Appendix A, paradigm L.

47 The perfect negative morphology is introduced in Chapter 2 §2.2.4.10 (127c), and is further analysed below in §6.3.3.2. Cf. also Appendix A, paradigm M.

48 The subjunctive with OP—cf. Appendix A, paradigm I (52-55)—does not display the same grammatical paradigm pattern as the subjunctive without the OP (cf. §6.2.2.2 above), but rather the pattern of the imperative (with or without OPs), that is the $\sigma_2$-to-ultima pattern.
right-alignment (143b). For the first part of this chapter (§6.2), and for all phrase-final words in Chapters 4 and 5, the ‘original’ antepenult/penult target is achieved by (143c). These constitute three distinct cophonologies.

(143) Anti-edge rankings
   a. WSA-Rt >> NonFin >> AvoidProm       ultima right-edge grammatical paradigms
   b. NonFin >> WSA-Rt >> AvoidProm       penult right-edge paradigms
   c. NonFin >> AvoidProm >> WSA-Rt       lexical paradigms

The ultima target pattern will be considered in Table 14 (146), with the full ranking of constraints relating to H_GRAM (as given for Table 13 in (124)) re-presented in (144).

(144) Ultima H_GRAM rankings
   EndLow-σ >> Max-H_GRAM >> Align EndLow, Rt >> Max-H_LEX >> FaithLexTone >>
   Align H_GRAM-Lf

There is one revision to be made to this constraint set: ENDLOW-σ is not relevant for the imperative (nor for any paradigm favouring extension to the ultima): proof of this comes from the 2-σ toneless/low stems, where the single (grammatical) H surfaces on the ultima (134a-b), not on the penult (as for the present relative and subjunctive). In addition, in the 2-σ High stems, both lexical and grammatical Hs surface (139a-b), even though by (144) above we would have expected the H_GRAM on the ultima to underparse. Thus, the pitch trough constraints in their syllabic form (embodied by ENDLOW-σ) must be reranked to where they cannot interfere at all with perfect right alignment (similar to the reranking of NONFIN, AVOIDPROM and WSA-Rt).

As argued for the penult-ultima fall-high sequence in Chapter 5 §5.3, the general ENDLOW and ALIGN_(ENDLOW, Rt) continue to cause the second mora of the penult to lower, as confirmed by all data from the imperative where the stem is long enough to be a candidate for misaligned final lowering to appear on the penult above (135-142). This lowering is implemented by the Register Domain instruction to the ultima, as argued for in §5.5.6.

49 By ‘lexical paradigms’ is indicated either antepenult or penult target, depending on position in phrase: H in a phrase-final lexical word targets the antepenult, but in a phrase-medial word the penult.
(145a) gives the new ranking subset; (145b) recapitulates the ranking demonstrated in Chapter 5 §5.3.1 earlier, which make it clear that EndLow cannot lower the entire ultima inside a HD in order to satisfy be the declination requirement; (145c) reflects the reranked right-edge constraints from (143a) above, in the last of the three possible anti-edge cophonologies.

(145) Ultima H tolerated in Imperative
a. Max-H_{GRAM} >> Max-H_{LEX} >> ... EndLow-σ; Align EndLow-σ-Rt based on (144) above
b. Express_H(σ) >> EndLow >> *Rise >> Express_H(μ) >> *Fall from §5.3.2.2 (75)
c. NonFin >> AvoidProm >> WSA-Rt ⇐

Finally, the unusual (but possible) toneless 1-σ imperatives (133c-d) are expressed as H, overriding FaithLexTone. But this falls out of the already existing ranking in (144).

In Tableau 14 (146a-s), I omit the edge-descending EndLow-σ constraint from the evaluation, because EndLow-σ is never satisfied in this paradigm (although the general (moraic) EndLow constraint (cf. Chapter 5 §5.3.2.1) continues to be satisfied in all penult-ultima H-H forms (146g,n,q)); I give the HDs in H stems as fused (there is no downstep), in accordance with the fusion properties established in Chapter 5 §5.2; the 2-σ toneless/low (146c-f) and High (146n-p) forms are ‘extended’ 1-σ verb stems (and tonally identical to real 2-σ stems such as liimá ‘cultivate!’ and bóoná! ‘see’).

(146) Tableau 14: Ultima alignment of H_{GRAM} in the imperative
1-σ toneless/low stem: tá, ‘come!!’

<table>
<thead>
<tr>
<th>/ t-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>H_{GRAM}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) [tá]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) ta</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2-σ toneless (low) stem: "jitá, ‘come!’"

<table>
<thead>
<tr>
<th></th>
<th>/ jì-t-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(c)</td>
<td>jитá</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [jítá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [jíta]</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) jíta</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3-σ toneless/low stem: "libáalá, ‘forget!’"

<table>
<thead>
<tr>
<th></th>
<th>/ libal-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) lí[báalá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) lí[báá]la</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) líbáalá</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(j) líbáá]la</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1-σ High stem: "phá, ‘give!!’"

<table>
<thead>
<tr>
<th></th>
<th>/ ph-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(k) [phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) phá</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(m) [phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2-σ High stem: "úphá, ‘give!’"

<table>
<thead>
<tr>
<th></th>
<th>/ ii-ph-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n) [íí_LEX, phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*, 0</td>
<td></td>
</tr>
<tr>
<td>(o) íí[phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(p) íí[phá]</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3σ High stem: "bóntíšá, ‘show!’"

<table>
<thead>
<tr>
<th></th>
<th>/ bon-is-a /</th>
<th>Max-H_{GRAM}</th>
<th>Max-H_{LEX}</th>
<th>FaithLexTone</th>
<th>Align_H_{GRAM}, Lf</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(q) [bó_LEX, níí]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(r) [bó_LEX, níí]</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(s) bó[níí]</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• In (146n,q,r), ALIGN-HGRAM, LF must be evaluating the left-alignment of the HGRAM even if this H is fused at its left edge to a lexical HLEX. An analogous configuration for evaluation involves fused L domains (Chapter 7 §7.8.1.10 Tableau 20 (310) footnote 200), where each separate L sponsor must violate *L-in-H once, even if the LDs are fused.

6.3.3.2. Perfective negative

The perfective negative structure emulates the imperfect in that it also involves a grammatical H pattern, aligning leftwards to σ2, and rightwards to the ultima syllable. The perfective negative differs morphologically in that it contains (a) a 2-σ negative SP (whose second syllable is H); and (b) a negative marker -ta-, which is toneless, as captured schematically in (147)—in anticipation of the data to follow in (148-157)—and which marker’s left edge is opaque for H extension (‘spread’); discussion of tone status and opacity follow below.

(147) Perfective negative structure

\[ \neg_1\text{-SP}-\neg_2\{\sigma_1 \sigma_2...\}\text{STEM} \]

\( \begin{array}{c}
\text{NEG}_1 \quad \text{NEG}_2 \\
(\text{HLEX}) \quad \text{HGRAM} \quad (\text{HLEX})
\end{array} \)

- NEG\(_1 = a-\)
- NEG\(_2 = -ta-\)
- \{STEM\} = \{ROOT\} + -i

The range of tone shapes for the perfective negative is given in (148-152) for toneless/low stems, and in (153-157) for High stems.

Perfective Negative: NegSP + toneless/ow stem + -i

(148) 1-σ stem
a. asį-taa-tí we have not come
b. asį-taa-nyí we have not excreted

(149) 2-σ stem
a. asį-ta-liiímį we have not cultivated
b. asį-ta-baasí we have not lit a fire

(150) 3-σ stem
a. asį-ta-libąalí we have not forgotten
b. asį-ta-lebúukí we have not thanked

(151) 4-σ stem
a. asį-ta-libátisí we have not delayed
b. asʧ-ta-yamûkêelî we have not received

(152) 5-σ stem
a. asʧ-ta-tepi[ll]ísí we have not helped slow down
b. asʧ-ta-libâtísísí we have not delayed intensively

Perfective Negative: NegSP + H stem + -i

(153) 1-σ stem
a. asʧ-taa-phí we have not given
b. asʧ-taa-khî we have not drawn (water)

(154) 2-σ stem
a. asʧ-ta-bóoní we have not seen
b. asʧ-ta-bûutí we have not asked

(155) 3-σ stem
a. asʧ-ta-bónísí we have not shown
b. asʧ-ta-sêbêetí we have not worked

(156) 4-σ stem
a. asʧ-ta-sêbêtísí we have not used
b. asʧ-ta-bûtísísí we have not asked intensively

(157) 5-σ stem
a. asʧ-ta-hlûnîphû[ll]í we have not been disrespectful
b. asʧ-ta-khûmêmê[ll]í we have not spoken up on behalf of

The behaviour of the prefix H (in these examples: 1pp SP -sî-) is unexpected: all patterns to the present moment lead us to expect that (149-152) (a) examples repeated as (158a-d) would surface as (158e-h). That is, we expect the H to extend off the SP onto the unambiguously toneless -ta- tense morpheme, for all toneless stems. The failure of this pattern suggests one of two possibilities: (a) that the H on -sî- is inert, in some sense, and it cannot ‘see’ into the morphological stem complex; or (b) that the left edge of -ta- is opaque to being spread onto.

(158) Non-extension of perfective negative prefix tone
Attested surface form, violating HD-MIN
a. a[sî]-ta-lii[mû]
b. a[sî]-ta-li[ßállî]
c. a[sǐ]-ta-li[bātlisǐ]
d. a[sǐ]-ta-te[pēlīisǐ]

**Expected surface form, satisfying HD-Min**
e. *a[sǐ-tá]-lii[mǐ]
f. *a[sǐ-tá]-li[bālǐ]
g. *a[sǐ-tá]-li[bātlisǐ]
h. *a[sǐ-tá]-te[pēlīisǐ]

We do not expect -sǐ- to extend its H rightwards in the case of H stems (153-157), because in every case σ₁ is occupied by the lexical H. Thus HD-MIN is prevented from being fulfilled by *AE, the OCP constraint (from Chapter 5 §5.1), even though relatively lowly ranked compared to H₁GRAM. But we do need some sort of explanation for the failure to satisfy HD-MIN for the toneless stems (158e-h).

This non-extension of H is the first example of a relatively common phenomenon in grammatical tone systems (Cassimjee 1998, Mmusi 1992, Odden 1996): H tones are parameterised as to which morphological domain boundaries they can cross. Certain morphological domains appear to be opaque, unenterable from the left by a H tone domain. The best we can offer is to propose a speculative CrispEdges constraint instantiation (159) which forbids a HD from straddling the left boundary\(^50\) of this particular domain.

\begin{align*}
(159) \quad \textbf{CrispEdge} \quad \textbf{[PERFECTIVE NEGATIVE]} \quad \text{(CrispEdge}_p) \\
\quad *(\sigma +_π \sigma)_{HD} \\
\quad \text{A HD cannot straddle boundary } +_π, \text{ where } π \text{ is a paradigm (here: the perfective negative).}
\end{align*}

This is another example of a very paradigm-specific constraint. It seems simpler to rerank CrispSTEM (Chapter 4 §4.3.2, §4.3.3)—or here: CrispEdge—in a perfective negative cophonology (160).

---

\(^50\) This ‘opaque’ -ta- boundary is crossable—as are nearly all boundaries—just in the case of a depressor shift requirement (§7.4.1), in order to avoid clash (e.g. if the SP should be simultaneously depressed and H, that is, 1ps gi-), cf. Appendix A, paradigm M.
(160) Perfective Negative cophonology reranking
   a. CrispEdge >> HD-Min     perfective negative
   b. HD-Min >> CrispEdge     lexical paradigms (cf. Chapter 4 §4.3.2.2)

      But the CrispSTEM constraint proposed in Chapter 4 specifically addresses the macrostem
      (OP+stem) left edge in lexical paradigms. Yet the edge under consideration here is the SP-ta
      edge, which contains a morpheme boundary, but not a macrostem edge. Thus, we may indeed
      need two distinct, indexed CrispEdge constraints: one for the general CrispEdge anti-parse effect
      in the lexical paradigms, and one for the perfective negative (159 above), as ranked in (160), or
      otherwise two distinct cophonological rankings.

      There are a few additional paradigms not exemplified here which display the same
      grammatical tone pattern as that seen in the imperative and perfective negative (e.g. present
      subjunctive with OP; remote past negative).

6.3.4. Constraint Summary

      I summarise the new rankings (161), and the entire (non-depression) constraint set up to
      this point (162) for grammatical tone paradigms, with the dominance relations visually sketched
      in (163).

      The only new constraint information is (a) the reranking of NonFin below WSA-Rt in the
      ultima paradigms (imperative, perfective negative), as indicated in (144a) above; and (b) the
      CrispEdge [Perfective Negative] constraint which outranks HD-Min.

      One could try to argue that -ta- is incorporated morphologically into the perfective
      negative stem domain, but it is not clear what the evidence for this would be, since the
      inflectional tense/aspect markers (as -ta- surely must be) do not constitute part of the macrostem
      domain.
(161) Constraint Set Summary (for grammatical paradigms), version 3: new rankings

Ultima H in imperative
a. NonFin >> AvoidProm >> WSA-Rt  ⇐ general (mostly lexical) cophonology
    WSA-Rt >> NonFin >> AvoidProm  π
    π = ultima paradigms cophonology  (143)

b. EndLow-σ >> Max-H_{GRAM} >> Align EndLow, Rt >> Max-H_{LEX}
    (based on 144)

c. CrispEdge  π >> HD-Min
    (here:  π = Perfective Negative Stem Domain)

(162) Total constraint summary for grammatical paradigms (partial): version 3

• Grammatical vs. lexical H  (from 20)
  a. Max-H_{GRAM} >> Max-H_{LEX} >> NonFin
  b. Pres Rel, Pres Subjunct: Align_((H_{GRAM}, Lf); Align_((H_{GRAM}, Rt)
  c. Pres Rel, Pres Subjunct: *Max H_{LEX} >> Max-H_{LEX}
  d. Pres Rel, Pres Subjunct: EndLow-σ;  Align_((EndLow, Rt)
  e. Pres Subjunct: HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> ... HD-Min
  f. Align_((H_{GRAM}, Lf); EndLow-σ >> HD-Min_{SUBJUNC} >> Max-H_{GRAM} >> Align_((EndLow, Rt)
  g. Pres Rel:  Align_((H, Rt) >> Align_((EndLow, Rt)
  h. Pres Subjunct:  Align_((EndLow, Rt) >> Align_((H_{GRAM}, Rt)

• σ2 rankings  (from 81)
  a. Max-H_{LEX}, FaithLexTone >> Align_H_{GRAM}-Lf
  b. NonFin >> WSA-Rt >> AvoidProm  π  (specific to penult paradigms: present relative, short perfective)
  c. Max-H_{GRAM} >> Dep-H
  d. Max-H_{GRAM} >> Max-H_{LEX}
  e. Max-H_{GRAM} >> FaithLexTone
  f. Align_((H_{GRAM}, Lf, PWord, Lf) >> Max-H_{GRAM} >> Max-H_{LEX} >> FaithLexTone
     >> Align_((H_{GRAM}, Lf, MStem, Lf)

• Ultima H in imperative  (from 161)
  a. NonFin >> AvoidProm >> WSA-Rt  ⇐
    WSA-Rt >> NonFin >> AvoidProm  π  (specific to ultima paradigms: imperative, perfect negative)
  b. EndLow-σ >> Max-H_{GRAM} >> Align_((EndLow, Rt) >> Max-H_{LEX}
  c. CrispEdge  π >> HD-Min
    (here:  π = Perfective Negative Stem Domain)
(163) Total constraint rankings (grammatical tone), version 3: dominance orderings

```
Align_{(H_{GRAM}, Lf, PWord, Lf)} \pi
\quad \text{participial / present relative / subjunctive}
```

```
| HD-Min_{SUBJUNC} \pi
| Max-H_{GRAM}
| *Max-H_{LEX} \pi
```

```
\quad \Rightarrow Align_{(EndLow, Rt)} (\pi)
```

```
\quad \Rightarrow Align_{(H_{GRAM}, Rt)} (\pi)
```

```
\quad \Rightarrow FaithLexTone \pi
```

```
\quad \Rightarrow Align_{(H_{GRAM}, Lf, MStem, Lf)} \pi
```

```
| Max-H_{LEX}
| *AE
```

```
\quad \Rightarrow NonFin \pi_{3,4}
```

```
| HD-Min
```

```
\quad \Rightarrow AvoidProm \pi_{1,2}
```

```
| WSA-Rt
```

- \( \pi_{1,2} \) \text{ penult paradigms (e.g. short perfective):} 
  NonFin >> AvoidProm >> WSA-Rt \ \Leftrightarrow \ (NonFin >> \textbf{WSA-Rt} >> AvoidProm) \pi_{1,2}

- \( \pi_{3,4} \) \text{ ultima paradigms (e.g. imperative, perfective negative) require reranking:} 
  NonFin >> AvoidProm >> WSA-Rt \ \Leftrightarrow \ (\textbf{WSA-Rt} >> NonFin >> AvoidProm) \pi_{3,4}

\textbf{472}
6.4. Conclusion

I have demonstrated several things in this chapter, both empirical and theoretical. Firstly, I have shown that the parameters of grammatical tone paradigms in Phuthi are significantly different from those of the lexical paradigms seen in Chapters 4 and 5, in that (a) one (or two) H tones are supplied by the grammar to the morphological paradigm, irrespective of the lexical H tone status of the verb, and in that (b) both the left and right edge parameters of the (grammatical) H tone span can vary, according to paradigm.

I have examined in detail the following paradigms which have allowed us to see the full range of tonal patterns in Phuthi’s highly productive verb system: present participial (§6.2.1.1), long present relative (§6.2.2.1), subjunctive (§6.2.2.2), short perfective (§6.3.1.1), imperative (§6.3.2.1), perfective negative (§6.3.2.2). In the majority of these, despite the grammatical tone overlay, the lexical tone contrast (H vs. toneless/low) is preserved, at least on stem σ1 of the verb concerned: participial (§6.2.1.1), short perfective (§6.3.1.1), imperative (§6.3.2.1), perfective negative (§6.3.2.2).

It has been demonstrated clearly that some grammatical tone verb paradigms have a single grammatical H prefix which right-targets the antepenult: participial, subjunctive, present relative (just as H targets the antepenult in a lexical tone paradigm). These grammatical paradigms may contain a second grammatical H on the ultima of the PWord (present relative, subjunctive). All other grammatical tone paradigms target stem σ2 at the left edge; the σ1 position on all (non-short) stems is kept available for preserving the lexical tone contrast (High vs. toneless). The σ2 grammatical tone pattern stretches from σ2 to variable right-edges: the penult (short perfective, present negative) or the ultima (imperative, perfective negative). The parameterisable grammatical paradigm right edges, which are in stark contrast to the fixed antepenult right-edge limit in the lexical paradigms (or penult, for phrase-medial forms), have been accounted for by paradigm-specific cophonologies (reranking of the three right-edge anti-align constraints).

Altogether, I have demonstrated that the complexities of grammatical tone in Phuthi can be resolved into a fairly small set of constraints, some of which, however, are indexed for specific paradigms (and cannot be non-depressor-bearing translated into a parallel cophonology): e.g. HD-MIN<sub>SUBJUNC</sub> (§6.2.2.2), ALIGN<sub>H<sub>GRAM</sub></sub>-LF (§6.3.2 (129a,b)).
We have seen that it is crucial to be able to refer in some paradigms to the differently ranked MAX-H constraints, referring separately to a lexical $H_{\text{LEX}}$ as opposed to a grammatical $H_{\text{GRAM}}$. This continues to be some theoretical unease in this strategy, but given that these two H tones interact with each other in contrasting ways, and manifest distinct edge-alignment constraints, no alternative has presented itself thus far.

We have now seen the complete range of tone patterns in Phuthi for non-depressor-bearing lexical paradigms (Chapters 4 and 5) and non-depressor-bearing grammatical paradigms (this chapter). We turn in Chapter 7 to the depressor system in Phuthi, where the interaction of voice (depression) with all the tone parameters of Chapters 4 to 6 will be examined in detail.
ASPECTS OF TONE AND VOICE IN PHUTHI

BY

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Chapter 7

Tone, Breathiness and Depression

This is the final chapter containing analysis of Phuthi phonological prosody, in which we examine the interaction of H tone with tonal depression (triggered by breathy phonation, and sometimes triggered independently—definitions of these terms follow).

After a brief literature review, I present the full set of Phuthi phonological tone and voice interactions in eight sections of data and analysis (each section has its own brief conclusion), and a final conclusion. I review a fragment of the tone/voice literature in Section §7.1, focusing on works that consider tone voice interactions in Nguni. In Section §7.2, I examine the basic phonology of local tonal depression in Phuthi. Five aspects of the primary depression patterns are presented, together articulating the failure of breathy syllables (C\textit{CV}) to display a H tone even when in the scope of a H domain (where the H domain is articulated by the domain principles in Chapters 4-6). Tone/voice antagonism is initially accounted for with a local CLASH constraint, identifying ungroundedness. I reflect on the nature of tone domain locality: because the H/L interaction happens at two levels (domain structure vs. domain expression), locality can remain unviolated. In Section §7.3, an extended pattern is examined: depression anticipation, where all syllables from stem left-edge to breathy voiced trigger syllable lower H to low (L). I argue that the segmental phonation (here: tonal depression) feature parses a Low Domain (LD), whose left edge realigns to the stem edge; I propose that CLASH can only be cast as a competition for simultaneous HD and LD (tone depression) expression, not as a local effect only on a breathy syllable. A salient analytic advantage of ODT over theories with an impoverished notion of featural domain, or with no feature domain edges at all, is demonstrated in the ability of ODT to parse a LD nested inside a HD, without violating locality (locality is defined crucially at the level of domain structure, not of domain expression). In Section §7.4, I observe that depressed syllables at the right edge of a HD cause tone shift rightwards by one mora off the antepenult/penult/ultima and that they block shift from that position when immediately preceding a second depressed syllable. I reject the analytic notion of parasitic—that is, derived—breathy voiced HDs
in favour of a single tier analysis that hinges on obligatory expression of the HD right-edge and on obligatory expression of the head of a HD (which head position is identified by the paradigm-specific ranking of the complete set of right-edge realign constraints. I argue that the apparent violation of locality at the surface in the parsing of H in fact falls out of competing LD and HD construction (where LD is always fully nested in HD), and out of competing L and H expression (where L always wins). In Section §7.5, I examine grammatically invoked depression phenomena from the noun system (formation of the morphological copula). In addition to the expected shift and block phenomena, I find that the depressed copula prefix provides evidence that L-domains also display minimality effects: there is right-edge realignment of L; and there is also left-edge realignment of L (but always respecting crispness). In Section §7.6, I focus on the only SP/OP candidate for being a permanently depressed prefix: -gi- ‘I / me’ which triggers the anticipated depressor shift and depressor blocking. I also examine masked depression in the form of non-third person SPs which only rarely receive the opportunity to reveal their depressed status, and this only under conditions of cross-paradigm comparison (e.g. with the past subjunctive). Finally, I present paradigm-specific data from the past subjunctive, where SPs are always depressed, and OPs display partial depression properties, that is, quasi-depression (but where these OPs also fail to convince us that they are lexically depressed in general). In Section §7.7, I consider a phenomenon highly marked in any phonological grammar: apparently overlapping feature domains of the same feature type, which are argued to reflect unincorporated sponsors; and a disjoint (discontinuous) reflex of a single tonal sponsor feature. Both phenomena are tolerated only under a specific L/H clash configuration at the prefix/stem boundary. Section §7.8 considers the evidence for the non-conflatability of L and breathy voice in the form of non-shifting L domains, that is, L domains not parsed by a segmentally triggered L but rather where L is grammatically triggered, and where depression without breathiness is the result. I examine the present indicative negative, where a grammatical L (distinct from lexical L) is motivated for insertion in the penult position of toneless stems only. This grammatical LD is OCP-sensitive, and fails where another (segmentally triggered) lexical LD is already present in the same macrostem HD. Although grammatical L aligns differently than lexical L, it does display fusion properties akin to lexical H fusion. Finally, we will see that lexical depression can be inserted even where not required by onset voicing properties (inherent breathiness); such
insertion is sensitive to the sonority hierarchy: optimal depressor-inducing segments are sonorants (vowels, followed by glides, liquids and nasals). In Section §7.9, I wrap up the construction of pitch anchors in the form of register domains (begun in Chapter 5 §5.5), in the light of the additional patterns we have now seen from the depressor data. A conclusion to the examination of tone/voice interaction is provided in Section §7.10.
7.1. Review: Tone and Voice

‘Breathy voicing’ is considered here to be audible perturbation in phonation quality during vowel (and possibly consonant) production: breathy segments have a heavy, slightly gravelly quality to them. Breathy voicing is also considered here to be terminologically coextensive with murmur (Ladefoged (1971a:3), Pandit (1957)) and with the more extreme form of ‘whispery voice phonation’ that Laver (1980; 1994:198-200, 418) equates with breathy voice. Physiologically, breathy voice entails greater glottal aperture, reduced subglottal pressure, a significantly higher volume of transglottal flow resulting in a (remarkably) inefficient use of air: vocal folds ‘flap in the breeze’, as it were (Laver 1994:418). Acoustically, spectrograms (generated under X-Waves™, for this dissertation) reveal that breathy syllables in Phuthi are characterised by the typical cluster of breathy voice acoustic cues found in the literature (Ladefoged & Maddieson 1996:317): a comparatively large amount of energy in the fundamental frequency for F1 and F2; more random energy (higher noise component) in the higher frequencies; delayed voice onset time and delayed onset of F2, approximately as in Hindi (Davis 1994).

Phonologically, breathy phonation (or at least a contrast which is a function of breathy-like voice quality) is used by a set of languages in parts of Africa and Asia (Ladefoged 1971a) to characterise a contrastive (non-modal) subset of the voiced consonant inventory; these languages include Shona, Tsonga, Ndebele, Zulu (Niger-Congo, specifically south-eastern Bantu; discussion follows in §7.1); !Xóõ (San) and !Xū or Zhul’hoãsi (Khoe), presented in Traill (1973, 1985), Miller-Ockhuizen (2001); Hindi, Sindhi, Marathi, Bengali, Assamese, Gujarati, Bihari (or Bhojpuri)—all Indo-European, specifically Indo-Aryan; also a variety of Dravidian, Tibeto-Burman and Afro-Asiatic languages (Ladefoged & Maddieson 1996:58). Breathy voicing has also played a significant role in historical hypotheses concerning the emergence of the Proto-Indo-European consonant system, cf. Stuart-Smith (1995), Fallon (2001), for broad coverage of the issues.

Tone ‘depression’ has sometimes been used interchangeably with ‘breathy voice’ nomenclature in the southeastern Bantu linguistics literature, that is, with reference to a set of tone/voice phenomena primarily typifying Nguni languages. ‘Depression’, however, strictly indicates a pitch lowering effect alone, and has nothing necessarily to say about phonation type.
In this chapter, I will only rarely\(^1\) need to distinguish between breathy phonation and tone depression; although tone depression is considered to be the phonetic lowering of pitch register, or phonological lowering of tone category often (but not necessarily) triggered by breathy voice, I will simply classify the set of ‘breathy’ consonants (§7.2) as depressor consonants. What the precise nature of the phonetic depression might be is of secondary interest, and must be pursued further in work elsewhere.

There is a sizeable body of research into the phonetic properties of non-modal—including breathy—phonation. Much of this laryngeal research examines data from non-Bantu (and often non-African) languages such as Bickley (1982), Gujarati (Fischer-Jørgensen 1970), Hindi (Davis 1994), Jalapa Mazatec (Kirk, Ladefoged & Ladefoged (1993); Blankenship, Kirk, Ladefoged and Silverman (1995), and Otomanguean (Silverman 1997). General phonetic studies of voice and tone include Hombert (1978).


These phonetic tone/voice studies repeatedly make a by now well-known point (which, in turn, is used by the phonological works as the point of departure for establishing the nature of the phonological features involved in phonologised tone/voice processes): ‘voicedness causes lowering of F\(_0\) whereas voicelessness induces increased F\(_0\)’ (Peng 1992: 244).

Peng (1992) is to be noted as a significant theoretical work which examines the phonologised interaction of tone and voice in a variety of languages, focusing on African languages: Ewe, Nupe, Yoruba and Ngizim. Peng attempts to pin down a universal typology of onset-voice and tone effects, within a Grounded Phonology model (Archangeli & Pulleyblank 1986, 1994). Peng’s central questions concern the universal vs. language-particular aspects to the tone-voice interface. He lays out a Prosodic Hypothesis of Tone-Voice (1992:19) that states:

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\(^1\) Section §7.3 considers non-local tone lowering (H > L) depression effects triggered by breathy voicing; Section §7.8.1 considers tone depression triggered grammatically (in the case of the present negative paradigm), not by breathy voice. The distinction is clear between the breathy conjunctive ‘and’-prefix in Chapter 2 §2.2.5, and the froze ‘and’-prefix in lexicalised conjunctives in §2.2.5 (32), footnote 298.
(a) ‘tone and voice must be represented on separate autosegmental planes’; and (b) ‘tone-voice
correlations must be determined by conditions on tone and voice operations’. Whereas ODT is
not a theory that takes an explicit stance on the geometric association of feature planes, it does
make explicit claims about features and feature domains. The approach in this chapter thus
assumes Peng’s first claim, that tone and voice (here: breathy voice, and its tonal manifestation:
breathy voice) are distinct features, parsed by distinct (but interacting) feature domains. While
this dissertation does not assess data from more than one language, I also assume, with Peng’s
part (b) above, that there are conditions on the parsing of tone and voice features, and that the
expression of these features is governed by conditions on tone/voice, namely, grounding
conditions (Peng: ‘path conditions’).

Bradshaw (1999) surveys a wide range of tone languages—African and Asian—where a
particular voice setting either triggers, or is triggered by, a particular tone configuration. She
articulates the tone/voice typology within an autosegmental framework, proposing—contra Peng
and contra the findings in this dissertation—the conflation of the features [voice] and
[Low(tone)] (cf. the discussion in §7.2.3, and foot note 22; Chapter 8 §8.3.8). Downing & Gick
(2001), based on depressor evidence in Ikalanga and Nambya, likewise dispute the conflation of
[voice] and [low] features.

A sizeable literature has emerged on the phonology of Bantu tone per se (largely over the
thirty years since Goldsmith 1976), most of which by far handles tone phenomena that are
demonstrably independent of voice quality. There is, however, only an incipient literature on the
intersection of phonological tone and (breathy) voice (henceforth: ‘tone/voice’) phenomena in
Bantu languages where non-modal phonation occurs (or, at least, where segmental modal voicing
has prosodic phonological effects). A variety of authors have written on tone/voice interactions in
Southeastern Bantu—identified as Zone S in Guthrie (1967-1971)—which is the linguistic area
and subfamily in which most documented African tone/voice interactions have been found, most
commonly in the Nguni languages (Xhosa, Zulu, Ndebele, Swati).

Some early work (Beach 1924, Doke 1926) begins to attempt to tease apart the phonetic
and phonological properties of tone and voice in Nguni, while most phonetic and phonological
studies on this language grouping have emerged in the four decades since Lanham (1960). Beach
(1924:80) divides Xhosa ‘consonant initials’ into a high and a low class ‘according to their
tonetic affinities’, where depressors fall into the low class; Doke (1926:224). Neither Beach nor Doke correctly identify that voice and tone do not cross-classify: they observe merely that a subset of the consonants (here: ‘depressors’) in Zulu and Xhosa has a marked (local) pitch-lowering effect. Neither identifies the phonologised tone shift (depressor shift) and tone block phenomena so salient in Nguni, and so robustly attested in Phuthi (examined here in §7.4).


Most of the Bantu work just cited has not involved instrumental acoustic assessment of tone/voice patterns, but rather has relied on the notes (usually detailed notes) taken by scholars working with native speakers of these languages. Notable exceptions to this are Traill, Khumalo and Fridjhon (1987), Traill (1990), Silverman (2000), Downing & Gick (2001). Traill et al. (1987) and Traill (1990) provide detailed instrumental phonetic examination of voice properties in Zulu and tone properties in Swati (but not voice and tone in either). In the 1987 paper, the authors show that while there may be a separate class of consonants in Zulu that have a depressing effect (both on the analyst and the F0 pitch of the following vowels), these consonants do not, in fact, condition breathy voicing. Rather, the consonants are voiceless, and are followed by ‘extreme lowering of F0’ as the ‘primary and only reliable manifestation of depression in Zulu’ (1987:271).

Nevertheless, Zulu has maintained the three categories of consonant as distinct (traditionally termed: voiceless ejected, voiceless aspirated, and breathy voiced). One can infer
from Traill et al. that there may have been transfer of the phonological voice contrast between two subsystems: broadly, voiceless aspirated consonants have remained as they are, but what are typically considered to be ‘breathy voiced’ consonants are now voiceless, and voiceless ejectives with much shorter voice onset time may yet be reinterpreted as voiced. The phonology of Zulu retains the three-way release contrast, but crucially requires the pitch quality at consonant release to implement this contrast. Specifically, pitch depression (and not voice quality) distinguishes ‘breathy voiced’ consonants from the other two series.

Traill (1990) also lies firmly in the small but meticulous tradition of instrumental phonetic work on southern African languages; he examines tonal depression effects in Swati (the Nguni language most closely related to Phuthi), where the phonation quality is not always triggered by the consonantal onset, but also by a phonological property of certain morphological paradigms (e.g. the copulative) and of particular vowels in certain (relatively rare) lexical items in that language. This unusual separation of voice quality from consonant onset—termed ‘depression without depressor consonants’ in Rycroft (1980:10)—will be seen to occur in Phuthi as well (§7.3, §7.8), as it also occurs in Ikalanga and Nambya (Downing & Gick). While Traill shows that the degree of tonal depression in Swati varies phonetically according to the source of depression (inherent to phonological consonant type vs. morphologically imposed vs. lexically imposed), there is no evidence to claim that the phonology treats these Swati depression types distinctly.

Arising from the works cited, and from the present study, a general, phonological tone/voice interaction in Nguni can be stated as follows: in every Nguni language, a subset of the consonant inventory, the so called ‘depressor consonants’, interferes with the implementation of not only phonetically high pitch targets but also phonological high tone targets. Specifically, it has been observed that vowels almost always fail to display H tones when they are depressed (perhaps: when they are breathy voiced, but cf the claim in Traill et al. (1987) that Zulu depressors are not breathy voiced). If this was the full extent of tone/voice interactions, the phenomenon could be said to be entirely phonetic. But quite independent of the phonetics of breathy voicing, scholars have identified a set of analytic phonological problems which emerge

\[\text{2 We will see in §7.8.1 that Phuthi, however, reveals patterns that distinguish phonologically between lexical and grammatical depression, that is, that two distinct L features are motivated in the grammar.}\]
from the Nguni tone/voice interactions, commonest of which has been called ‘tonal
displacement’ (Cope (1966), Khumalo (1981, 1982)), ‘tone shift’, or ‘spillover’ (Lieber 1987), or
‘depressor induced H tone shift’ (Cassimjee (1998), C&K (1998)). Together with tone block, this
tone/voice mismatch phenomenon will form the focus of §7.3-§7.4, and is the backdrop to the
analytic sections that follow.

The present dissertation does not, however, provide an exhaustive examination of the
phonetics of tone in Phuthi. Rather, I focus the discussion on the widest possible set of
phonological tone/voice interactions displayed in the language. Bradshaw (1999) has aptly
pointed to the phonetics/phonology mismatch for tone/voice phenomena, that is, that the
phonetics of voice and (low) tone may ‘contribute to our understanding of phonological
phenomena, but it does not drive them’ (Bradshaw 1999:3). Accordingly, the focus in this
chapter is on the phonological interaction of voice and tone in Phuthi. The discussion would not
necessarily be clarified or enhanced, at this point, by a fuller phonetic examination.

Phuthi fulfills all empirical expectations of tone/voice phenomena that would be
anticipated in any Nguni language, based on comparable data from related Nguni languages (e.g.
Cassimjee (1998) for Xhosa, Rycroft (1980b) for Swati); more than that, Phuthi goes on to
display what is surely the widest range of tone/voice interactions documented for any Bantu
language, in terms of the triggering properties underlying tone movement (and non-movement),
and the non-local effects of tone/voice interaction.
7. 2. Phonology of Tonal Depression

From here on, ‘depressor’ and ‘breathy voicing’ are considered to be coterminous and to refer to a coextensive class of sounds, unless otherwise indicated (the usage here defaults to ‘depressor’ or ‘depressed’).

Below, in §7.2.1, I provide the inventory of contrastively depressed consonants in Phuthi, and then proceed in §7.3 to examine and analyse the general effects these consonants have on the tonal contours we have already established in Chapters 4 to 6.

7. 2. 1. Inventory

Phuthi is characterised by the presence of depressor phonation, as a basic parameter in its consonant system. The most linguistically fundamental property we can identify is that depressor

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3 In this chapter, I will use the IPA convention of subscript diacresis to indicate breathy voiced consonants (that is, lexically depressed, but not grammatically depressed consonants, cf. §7.8-7.9, for the distinction). Some diacresis sequences overlap, due to varying letter width but fixed width diacresis: simply, wherever there are diacreses, this reflects (lexical) depression. After the IPA-rendered inventory given in (1), all data will be given in near-orthography, including digraphs for certain depressor consonants (cf. Chapter 2 §2.1.1 (4-5)). As hybrid as this may seem, the digraph symbols serve as useful reminders that depression is sponsored at these positions (that is, does not arise from some sort of extended harmony domain). Data will be line-spaced wider apart in this chapter than previously, for ease of reading, since there are often two or more diacritics attendant to one basic character.

4 There is a small set of consonants that participate in the grammatical assignment of lexical depression (that is, in the obligatory tonal reflex of breathiness), in the copulative paradigm alone (§7.5), and which are not contrastively breathy (they do not occur anywhere other than this paradigm). These consonants cannot deploy breathiness themselves because they are not sonorant (as most lexical, salience-driven depressor syllables are, cf. §7.9), nor are they even voiced (as all lexical, onset-triggered depressor syllables are, cf. §7.2.1.1 immediately below). These consonants are: [s] for Class 7, [t] for Class 8/10. Contra Ní Chiosáin & Padgett (1997, 2001), I maintain in §7.2.6 below that not all segments in a harmony domain need bear the harmonic feature; here, in the syllable domain [sV], [s] does not necessarily need to bear the breathy voice feature. In addition, [b 3] are not productively depressor-triggering or -bearing, even though voiced, because they occur in only a tiny set of morphologically fused Class 14 nouns (cf. Chapter 2 §2.1.5 (19), §2.2.1.2).

5 It is uncontroversially claimed that Xhosa and Zulu depressor consonants are not historically cognate (as isolation forms vs. in cognate [NÇ] clusters) with any Proto-Bantu consonants; rather, the hypothesis is that they were loaned from neighbouring Khoi or San languages: ‘Quite apart from the clicks, Xhosa S.41 has more extraneous consonants than any other Bantu language, these numbering at least fourteen, a fact which presumably correlates with
consonants are separated out by some phonological principle as a subset of the consonantal segments (in the manner of Homer 1999), which subset is saliently voiced with an auditorily ‘heavy’ voice quality, and which will also be seen below to behave in a phonologically unified fashion. Vowels can display depression (breathiness) too, but they never contrast underlyingly in this respect, in Phuthi (nor in any Bantu language). Importantly, depression is also a prosodic feature separable from the segmental configuration which behaves morphemically; for example, as the copula morpheme (see §7.5).

7.2.1.1. Consonants

Among Phuthi consonants, there is a (limited) four-way type distinction, but the parameters cross-classify release type (aspirated egressive, unaspirated egressive, ingressive), and voice type (voiceless, voiced, breathy voiced/depressed). The depressor consonants in the inventory are given in boldface in (1).

(1) Phuthi consonant inventory

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the known heavy influence of Bushmen languages on this language’ (Guthrie (1967–71:106)); also cf. Herbert (1987), Louw (1986)). Implicitly, this hypothesis extends to the set of depressed (breathy) consonants in Phuthi too, as a Nguni cousin of Xhosa and Zulu.

6 The consonant inventory is exemplified in Chapter 2 §2.1.1 (4).
columns are: (i) bilabial; (ii) alveolar; (iii) alveolar affricated; (iv) alveolar+labial; (v) palatal; (vi) alveolar lateral; (vii) velar; (viii) velar affricated; (ix) glottal; (x) dental click; (xi) alveopalatal click; (xii) alveolar lateral click;

rows are: (1) voiceless ejective stops, and clicks; (2) voiceless aspirated stops, and clicks; (3) voiced implosive; (4) breathy voiced stops, and clicks; (5) voiceless fricatives; (6) breathy voiced fricatives (though /ʃ/ is modal voiced); (7) liquids (trill; lateral approximant); (8) breathy voiced liquids; (9) nasals, and prenasalised clicks; (10) breathy voiced nasals; (11) glides; (12) breathy voiced glides.

Depressor (breathy) consonants are found in row 4 (stops, affricates and clicks); row 6 (fricatives, excluding /ʃ/); row 8 (liquids); row 10 (nasals); row 12 (glides).

The most straightforward correlation of voice and depression in Nguni is usually that voiced fricatives are depressors; in Phuthi, the voiced fricative set is somewhat impoverished, lacking canonical /z/ and /ʣ/. Instead, the most robust correlation appears to be with stops: voiced stops are redundantly depressors. Yet two place series—labial and coronal—manifest a three-way voice contrast (and four-way release type contrast), as repeated in (2a-b). There is also a modal / depression contrast among some sonorants and laterals (2c-e)—although the depressor in each case is relatively rare, distributionally.

---

7 Non-depressing /z/ is transparently a loan phoneme from neighbouring Sotho in almost all words in which it occurs. Possible exceptions, that is, words that are not transparently from Sotho, include kú-jéníša ‘to show’ (⟨j⟩ = [3], or dialectally [ʣ]). Sotho has no depressor consonants, not even depressed fricatives (Sotho really has no phonologically active voice contrast at all). /z/ thus violates the voiced fricative/depression correlation in Phuthi, signalling itself as a loan sound.

8 The absence of /ḍ/ is expected, given the Tekela status of the language (cf. Chapter 1 §1.1.7.3); in fact, there is a small class of /ḍ/-bearing items (Chapter 2 §2.1.1). But the lack of /ってしまいます/ is surprising on comparative Nguni grounds. Pan-Nguni /ḍ/ corresponds to Phuthi affricate /dɯ/.

9 The breathy instance of each nasal, lateral and glide is relatively rare in an underived lexical item; but each is fairly common in paradigms where breathy voicing is productively used with a grammatical function, e.g. copula [mú- /u- yʃ-], cf. Chapter 2 §2.2.1.7, and §7.8.2.3 below; associative prefixes [wá-, yá-].
Voice contrasts

<table>
<thead>
<tr>
<th>voiceless</th>
<th>voiced</th>
<th>depressor</th>
<th>orthography</th>
</tr>
</thead>
<tbody>
<tr>
<td>p’  pʰ...</td>
<td>ũ</td>
<td>ũ</td>
<td>&lt; p, ph, b, bh &gt;</td>
</tr>
<tr>
<td>t’  tʰ...</td>
<td>Ʉ</td>
<td>d, d̥̄</td>
<td>&lt; t, th, l, d, dl &gt;</td>
</tr>
<tr>
<td>—</td>
<td>l</td>
<td>l</td>
<td>&lt; l, lh &gt;</td>
</tr>
<tr>
<td>—</td>
<td>m, n, ŋ</td>
<td>m̄, ŋ̄, ŋ̃</td>
<td>&lt; m, n, ny, mh, nh, nyh &gt;</td>
</tr>
<tr>
<td>—</td>
<td>w, j</td>
<td>w̄, j̄</td>
<td>&lt; w, y, wh, yh &gt;</td>
</tr>
</tbody>
</table>

- (2a) reflects the pan-Nguni presence of a single (lightly) voiced implosive /ɓ/;
- (2b) is a limited set that has arisen ‘by chance’: the voiced—but not breathy, not depressing—[d] occurs as an allophone of /l/ immediately preceding the superclose vowels [i ŋ]. This is precisely the Sotho distribution (Doke & Mofokeng 1957), which Phuthi has incorporated.\(^{10}\)
- Besides ũ and allophonic d, all voiced stops are redundantly depressors (and breathy). Besides ŋ, all voiced fricatives are redundantly depressors. Sonorants (liquids, nasals, glides) are not inherently depressors, but can be, under certain morphological and lexical conditions.

The contrasts in (2) are exemplified in (3).

Examples of Phuthi voicing contrasts\(^ {11}\)

(i) Labial contrasts
a. kú-páataala to pay
b. kú-phabhaána to become confused, crazy
c. kú-baasa to light a fire
d. kú-bhaaatsha to put on a blanket (in order to wear)

(ii) Coronal contrasts
e. kú-táála to become full
f. bú-thááta problem, difficulty

---

\(^{10}\) Nguni (including Phuthi) /ɓ/ is the regular reflex of Proto-Bantu *b. Non-depressing Phuthi /l/ > [d̥̄-l] is the reflex of Proto-Bantu *d. All other voiced stops are depressors, and are ‘extraneous’ to material inherited from Proto-Bantu, as pointed out above in footnote 5.

\(^{11}\) I exemplify these voice contrasts stem-initially in most cases, in a Ca form; all can also occur root/stem-internally, but the initial position is where there are no positional restrictions on consonants in Phuthi. C₂ positions are often in a weak voice-harmonic and aspiration-harmonic relationship with C₁ (cf. Khumalo (1987:22-62) for extensive discussion of a very similar set of stem-internal harmonic consonant relationships in Zulu).
All nine vowel phonemes (cf. Chapter 2 §2.1.1) can occur in both modal and depressor (breathy) states. There is, however, no phonemic contrast between vowel phonation types outside of morphologically induced phonation change (e.g. in the copulative, see §7.5 below). Phuthi vowels are all underlyingly modal (that is, non-contrastive for voice in any way). Depression is sponsored on a vowel only when a morphological condition intrinsic to that paradigm requires a certain syllable (usually the prominent penult position) to be breathy, e.g. the copulative prefix $\sigma$- (unrelated to syllable position, cf. §7.5), quantitative $-\delta hle$ (§7.8.2), present negative penult $-\sigma r_{word}$ (§7.8.1)—though penult depression in the negative is not clearly breathy. I return to examine such grammatical and nonconsonantal lexical depression in §7.5, §7.8.

7. 2. 1. 3. Depression binding in a syllabic domain

It is noted from this point on, through the remainder of this chapter, that depression sponsored on a consonant onset (as we have seen in §7.2.1.1) extends off the consonant release burst (for oral or nasal stops), or off the phonological node to which depression is attached during the production of a continuant (fricative, liquid, glide), into the vowel (or other syllabic
nucleus) body within a tautosyllabic domain, as in (4a,d) below. I term this articulatory process of automatic depression extension ‘depression binding’\(^{12}\), since the depression feature—however it is computed, as some combination of slack voice / aperture / glottal air flow / subglottal air pressure—binds to the vowel (or other syllabic sonorant) occupying the nucleus following the consonant onset where it is underlyingly sponsored. The fact that such binding occurs is unsurprising, given the insight that breathy voicing is most readily audible as a distinguishing characteristic of a stop only during the release of the closure (Ladefoged & Maddieson 1996:57).

Depression binding can be insightfully schematised using the aperture representation innovated in Steriade (1993a-b, 1994): oral stops are bipositional (4b); fricatives and all other continuants are monopositional, as are vowels (but with distinct apertures: narrowed \(A_t\) for fricatives; wider \(A_{\text{max}}\) aperture for the sonorants). We can construe depression/breathy voicing as [dep], without committing to the physiological specifics of the depression gesture(s).\(^{13}\)

It becomes clear from such representation that Phuthi depression attaches to the release portion of a stop \(A_{\text{max}}\), and to the only portion of a continuant \(A_{\text{max}}\). Since the \(A_{\text{max}}\) release portion of a stop is absorbed by the following vowel nucleus when segments are parsed in a continuous string, the depression must (re)attach to the nuclear \(A_{\text{max}}\) position. This is a response to a constraint preventing the surface parsing of depression on a non-release portion of a consonant, that is, preventing Phuthi from parsing [dep] on \(A_0\): *[\(A_0\), [dep]]\(^{14}\).

\(^{12}\) Kingston (1990) has used ‘articulatory binding’ in a distinct way: he proposes ‘a phonetic principle of coordination, which constrains when glottal articulations in consonants occur relevant to oral ones’ (1990:407). The constraints governing such glottal/oral coordination constitute ‘binding’. This relates to a notion of phasing (Silverman 1995), and the possible sequence of the tone/voice features (L, H), to be discussed in §7.2.5.1.

\(^{13}\) Steriade’s (1993a,b, 1994) mono- and bipositional aperture representation is an attempt to significantly constrain the possibilities for nasal and affricate contour segments, which are not of relevance in this tone/voice examination. Suffice to say, Steriade regards a mono- or bipositional configuration as being able to be associated with just one place feature (e.g. [\(\text{LAB}\)]), thus precluding non-homorganic affricates and non-homorganic pre-nasalised stops/affricates. Laryngeal features such as aspiration and glottalisation attach only to the \(A_{\text{max}}\) release portion of a stop/affricate.

\(^{14}\) There is a second alternative: the requisite phonological constraint might only weakly ban [dep] from parsing exclusively on closure \(A_0\) (that is, [dep] must at least parse on \(A_{\text{max}}\) or \(A_0\)). Davis (1994) has shown how Hindi anticipates the increased glottal aperture required for breathy voicing before the oral closure is released. I cannot comment further, because I have no articulatory data on the mechanics of glottal aperture in Phuthi. Further, the exact status of the positional notation as phonetic or phonological is not clear.
(4) **Depressor binding**

a. $\mathcal{C}V > \mathcal{C}V$ breathy depression extends off the onset through the (usually vocalic) nucleus

b. 

| $\mathcal{C}$ | $\mathcal{C}$ | $\mathcal{C}$ |
| $A_0A_{\text{max}}$ | $A_f$ | $A_{\text{max}}$ |
| [dep] | [dep] | [dep] |

depression sponsored by a stop, fricative, sonorant

| $\mathcal{C}$ | $\mathcal{C}$ | $\mathcal{C}$ |
| $A_0A_{\text{max}}$ | $A_f$ | $A_{\text{max}}$ |
| [dep] | [dep] | [dep] |

c. **examples of consonantal depressor sponsors**

| [b] | [y] | [w] |
| $A_0A_{\text{max}}$ | $A_f$ | $A_{\text{max}}$ |
| [LAB][dep] | [LAB][dep] | [LAB][dep] |

d. **grammatically sponsored depression inserted on a consonant, vowel**

| $\mathcal{C}$ | $\mathcal{V}$ |
| $A_0A_{\text{max}}$ | $A_{\text{max}}$ |
| [dep] | [dep] |

e. **depression binding**

\[ (4d) \text{ demonstrates that any consonant parsed in sequence with a following (usually vocalic) nucleus either extends its depression property ([dep]) to all adjacent } A_{\text{max}} \text{ sequences, that is, into the nucleus; or, alternatively, if the parsed CV sequence is considered to conflate adjacent } A_{\text{max}} \text{ nodes (4e), then any contrastive glottal articulation attached to the onset release portion is automatically associated with the nucleus (vowel or other sonorant). Additionally, (lexical)} \]
depression can be grammatically assigned (cf. §7.5), in which case depression is arguably sponsored on the vowel nucleus alone, since the depressability of the consonant onset is not relevant. (4f) indicates that such nucleus depression percolates leftwards to the consonant onset, where such an onset is depressable.

An alternative conceptualisation might posit the percolating up of depression to the syllable level in the prosodic hierarchy, and then being a property of all temporal sequenced material in the scope of the syllable domain. This preparatory step of depression distributing to the smallest surface depression domain (maximally, CV) may be referred to as depression binding.

Such binding happens automatically, with no phonological process that interferes with the distribution, hence, there is the temptation to assume that depression is a segmental property invoked only in the postlexical phonological grammar; evidence in sections §7.4-§7.8 will contraindicate such postlexicality. I will show in §7.3-§7.8 that depression is active in the lexical grammar of Phuthi, hence, that binding must be a highly ranked (in fact, undominated) process in the constraint grammar.

In keeping with the tradition in recent Nguni tone/voice analyses (e.g. Cassimjee 1998), I reflect the tone sponsor only on the sponsoring vowel (e.g. CV), but the depression feature on both consonant sponsor and the (depressor-bound) tautosyllabic vowel carrier (C

There will be no further consideration in this dissertation of the mechanics of local, intrasyllabic depression binding.

7.2.2. Typical patterns

The most general statement about the interaction of depression and tone in Phuthi is articulated in (5), then exemplified in (6) from verb paradigms already seen.

(5) **Depression Pattern 1a: no simultaneous H and depression**

A depressed syllable fails to surface as H when it should be H (either because it is sponsored lexically, or because it is required by the constraint grammar to be H).
The H domain implied in (5) is any HD constructed according to the domain parameters established in Chapters 4, 5 and 6. First, I use the infinitive pattern to exemplify the depressor facts. All items in (6) are intentionally $4\sigma$ (that is, longer than $3\sigma$); short $1\sigma$ and $2\sigma$ stems will be examined in (39-40) below; $3\sigma$ stems will be seen to display the characteristic of depressor shift, dealt with only in §7.4.

(6) **Depressed syllables fail to express as H**

**Toneless stems: 1 H sponsor**

- In these and most following examples in this chapter, the relevant Phuthi items are given twice: without domain structure (on the left), and with domain structure (in the centre). It seems wise to offer the data both in less cluttered (*minimally* analysed) and in *fully* analysed forms.

a. kú-vulélaana [kú-vulé]laana to open for each other
b. kú-dzakáliisa [kú-dzaká]liisa to injure
c. kú-bhacámiisa [kú-bhacá]miisa to help lie on the stomach
d. kú-dålalú:]la [kú-dål alú:]la to fold up (unmake) a bed

- It is assumed, for now, that adjacent HDs fuse by default (in 6e-h), as motivated in Chapter 5 §5.2. Only in §7.8.1.7-§7.8.1.9 (especially in the fusion typology (292)) does it become clear that (6e-h) here would not fuse, because the lexical L would be shared across both tokens of the now fused HD$_{xy}$, diminishing expressability of H in both HDs.

**High stems: 2 H sponsors**

d. kú-víṣísíisa [kú-víṣí]siisa to understand
e. kú-vuṇíṣaana [kú-vuṇí]saana to help each other harvest
f. kú-yḥalíṣaana [kú-yḥalí]saana to refuse each other
g. kú-vusé:]la [kú-vusé:]la to refresh, renew

It will be seen in the course of this chapter that depressed syllables which arise from contrastive consonantal depressors in the underlying representation (as do all examples in §7.2-§7.7) are entirely oblivious to lexical and morphological boundaries or categories in their
domain of application. Sample data from the present indicative long form (7) and the perfective indicative (9) confirms that Depression Pattern 1a is consistent across varying paradigms: the H sponsor in (7) lies further to the left than the examples above in (6); this has no effect on the non-expression of H on depressor syllables. In addition, nothing differs tonally from the lexical H behaviour motivated in Chapter 5 §5.1: the OCP instantiation—*\textsc{Adjacent Edges} (*)—continues to prevent the HD from extending off a H prefix to -\textipa{ya-} in (7e-h), as opposed to the widescope aligning single-sponsor (7a-d) examples.

**Present indicative long form**

(7) \textit{H SP + toneless} stem (4\(\sigma\)): depressed \(\sigma\) = toneless/low

a. bá-yá-vulélaana \quad \text{[bá-yá-vulé]laana} \quad \text{they open for each other}
b. bá-yá-dzakáliisa \quad \text{[bá-yá-dzakál]liisa} \quad \text{they injure}
c. bá-yá-bhacámiisa \quad \text{[bá-yá-bhacá]miisa} \quad \text{they help lie on the stomach}
d. bá-yá-dlalú:lå \quad \text{[bá-yá-dlälú]lå} \quad \text{they fold up (unmake) a bed}

\textit{H SP + High} stem (4\(\sigma\)): depressed \(\sigma\) = toneless/low

e. bá-ya-visísìisa \quad \text{[bá]-ya-[visí]siisa} \quad \text{they understand}
f. bá-ya-vunísåana \quad \text{[bá]-ya-[vuní]såana} \quad \text{they help one another harvest}
g. bá-ya-yhålísåana \quad \text{[bá]-ya-[yhålí]såana} \quad \text{they refuse one another}
h. bá-ya-vusé:lå \quad \text{[bá]-ya-[vusé]lå} \quad \text{they refresh, renew}

This data in (7e-h) is crucial for demonstrating that the surface lowness of depressor syllables is not a function of their being \textit{outside} a HD, but rather of their inability to express H tone properly. HD-M\textsc{in} (that is, tone domain minimality) would (surprisingly) fail to operate in (7e-h) above for the leftmost HD, if the Lf edge of stem \(\sigma 1\) were indeed \textit{not} the Lf edge of the HD, and if the second HD rather began on \(\sigma 2\) of the stem. On the surface, without considering underlying sponsor position and depression effects, (7e-h) appear to be violating HD-M\textsc{in}, as in (8a); but with appropriate domain structure added in (8b), it is clear that there is no HD-M\textsc{in} (nor
OCP, that is, *AE) violation; (8c) offers a suboptimal candidate that appears to satisfy both HD-M\textsubscript{IN} (the first instance) and *AE, where the tone/depression conflict has caused the HD left-edge to be reparsed from stem $\sigma_1$ to $\sigma_2$; (8d) is identical to (8c), except that it appears more optimal, since both instantiations of HD-M\textsubscript{IN} are satisfied. But (8c-d) violate highly ranked BA-L\textsubscript{F} and INCORPORATE constraints.

(8) \textbf{Depression does not shift H domain left-edge}

a. bá-ya-vísíísa

HD-M\textsubscript{IN} appears to be violated by the first H.

b. [bá]-ya-[vísíí]isa

*AE (instantiating the OCP) prevents HD-M\textsubscript{IN} satisfaction.

c. *[bá-yá]-vísíísa

depression causes failure of H expression and reparse of HD left-edge; *AE is satisfied; HD-M\textsubscript{IN} can be satisfied, but only once; configuration violates INCORPORATE.

d. *[bá-yá]-vísísíísa

depression causes failure of H expression and reparse of HD left-edge; *AE is satisfied; HD-M\textsubscript{IN} can be satisfied for both HDs; configuration violates INCORPORATE.

The perfective indicative data in (9a-d) (toneless stems) and (9e-h) (H stems) confirms the infinitive and present indicative patterns just seen.

(9) \textbf{Perfective indicative}

\textbf{H SP + toneless stem}

a. bá-vulísííye

... [bá-vulí]siíye

they have helped open

b. bá-getísííye

... [bá-getí]siíye

they have helped add

c. bá-bhekísííye

... [bá-bhekí]siíye

they have caused to look

d. bá-dlalísííye

... [bá-dlalí]siíye

they have helped unroll (a bed)

\textbf{H SP + High stem}

e. bá-dlalísííye

... [bá-dlalí]siíye

they have helped play

f. bá-yúnísííye

... [bá-yúni]siíye

they have helped harvest
7. 2. 2. 1. Locality violated? ‘No gapping’ is not an issue

In the data (6-7, 9), we have seen that every depressor syllable is surface-low; in each case, there has been one depressed syllable per word. The lexical category of the stem is irrelevant. In (10a-b, 11a-b), there are two depressors; in (10c-d; 11c-d), there are three depressors; in every case, all the depressor syllables are low, even if there are multiple adjacent depressor syllables.

(10) **H prefix + toneless stem: 2 depressors**

a. kú-gudzi sélaana [kú-gudzi sé]laana to help shear for each other

b. kú-bhebhi sélaana [kú-bhebhi sé]laana to help carry on the back for each other

3 depressors

c. kú-gudzgelániisa [kú-gudzgelá]niisa to cause to shear indiscriminately for e.o.

d. kú-bhebhagi sélaana [kú-bhebhagi sé]laana to help carry on the back indiscriminately for e.o.

H stems (11) equally fail to express H on all depressed syllables.

---

15 These examples with the verb extension, -ag-, named the ‘extensive’ (Guma 1971:150) in its Sotho incarnation, or ‘dispersive’, are difficult to elicit, and occur only under somewhat strained pragmatic assumptions (most of the stems exemplified here are not typically associated with indiscriminate or violent modes of action, which modes typically correspond to the extensive). But these examples are all grammatically and phonologically well-formed, despite the slightly (or even significantly) unusual semantic end product.
(11)  H prefix + H stem  
2 depressors  

a. kú-gadzisélaana [kú-gadzisé]laana to help stamp for e.o.  
b. kú-gadzél]laana [kú-gadzé]laana to stamp together with e.o.  

3 depressors  

c. kú-gadzagí]laana [kú-gadzagí]laana to help stamp indiscriminately for e.o.  
d. kú-gadzage]laana [kú-gadzage]laana to stamp together with e.o. indiscriminately

(12) below confirms the observation emerging from (6-7; 9-11), that any number of syllables may be depressed within a HD, given the right configuration of adjacent depressed syllables. It turns out that very few non-stem morphemes contain depressors. The preceding data sets contain two and three depressors, always strictly syllable-adjacent, always stem-internal, always surface-low syllables.

(12) **Depression Pattern 1b: serial depression has no upper limit**  
All depressor-bearing syllables inside a single H span are low toned on the surface.

In all the depressor data thus far, whether there is one H-sponsor, or two or three, the surface-H syllables surface in two disjoint phonetic spans: preceding (but excluding) the depressed syllable, and following the depressor syllable. These disjoint spans appear to indicate gapped configurations, which are explicitly identified as banned phonological structures because they are unparsable. Archangeli & Pulleyblank (1994:38) have pointed out that gapped configurations violate a principle of precedence, as schematised in (13): a single entity, α, cannot

16 The same stem, -gadza, is used twice in these examples, as I recorded only two H stems with depressors in σ1 and σ2; the other, -bhubhydla, ‘blow (of the wind)’, is not easy to use in a semantically productive fashion.

17 Although this aspect of the primary observation about tone/voice clash is descriptively adequate at this point, it will become clear in §7.2.6 that very short (monosyllabic) HDs containing depression have to resolve the clash in a ‘compacted’ way, apparently violating (12) since the ultima is domained as [Ọ́].
both precede and follow another entity, $\mu_i$, which is what the diagram implies by the linking to both $\mu_i$ and $\mu_k$.

(13) No gapped configurations

\[ \ast \, \mu_i \, \mu_j \, \mu_k \]

\[ \alpha \]

The ban on gapping is simply one instantiation of a general ban in phonology (and in all language structure, more broadly) on non-local relations, that is, on configurations or processes that are required to ‘see’ between elements that are not immediately adjacent. Such non-locality would necessitate that the grammar can count, which property grammars are typically strongly argued not to possess.

Yet the data in this chapter thus far suggests just such a locality-violating configuration: a depressed syllable (or series of syllables) inside a HD fails to express H, yet the H span continues (where possible) on both sides of that depressed syllable, apparently violating locality. The Phuthi data will be shown in §7.2.3 to be fully respectful of locality, via the distinction that ODT draws between parsed domain structure and surface expression of that structure.

I now provide examples where there are non-depressor syllables inside the HD (here: the antepenult and preceding) which follow the depression locus, irrespective of the number of depressors inside the HD—one (14), two (15), or more—and irrespective of the number of post-depressor syllables: the HD resumes its H-ness on all post-depressor syllables inside the HD.

(14) Infinitives: post-depressor HD-internal syllables are H

H prefix + toneless (low) stem: 1 depressor (+ 2 post-depressor syllables)

a. kú-~yulé]lana [kú-~yulé]lana to open for each other

b. kú-getfísaana [kú-getfí]saana to add together intensively

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H prefix + H stem: 1 depressor (+ 2 post-depressor syllables)

c. kú-vusélÍ[saana] [kú-vusélÍ]laana to refresh e.o.
d. kú-yhalísísÍ[saana] [kú-yhalísísí]laana to refuse e.o. intensively

(15) Infinitives: post-depressor HD-internal syllables are H
H prefix + toneless (low) stem: 2 depressors (+ 2 post-depressor syllables)

a. kú-gudzi sísélÍ[saana] [kú-gudzi sísé]laana to shear carefully for e.o.
b. kú-bhébhi sísélÍ[saana] [kú-bhébhi sísé]laana to carry carefully on the back for e.o.

H prefix + H stem: 2 depressors (+ 2 post-depressor syllables)

c. kú-gadzísísí[saana] [kú-gadzi sísé]laana to stamp thoroughly for e.o.
d. kú-gadzísí[saana] [kú-gadzi sí]laana to help stamp together with e.o.

(16) Infinitives: post-depressor HD-internal syllables are H
H prefix + toneless (low) stem: 1 depressor (+ 3 post-depressor syllables)

a. kú-vulé]Íísaana [kú-vulé]Í[saana to help open for one another
b. kú-getísísí[saana] [kú-getísí]saana to help add together intensively

H prefix + H stem: 1 depressor (+ 3 post-depressor syllables)

c. kú-vusélÍ]Ísaana [kú-vusélÍ]Í[saana to help refresh e.o.
d. kú-yhalísísísÍ[saana] [kú-yhalísísí]saana to help refuse e.o. intensively

(17) Infinitives: post-depressor HD-internal syllables are H
H prefix + toneless (low) stem: 2 depressors (+ 3 post-depressor syllables)

a. kú-gudzi sísélÍ[saana] [kú-gudzi sísé]laana to help shear carefully for e.o.
b. kú-bhébhi sísélíniisa [kú-bhébhi sísélá]niisa to help carry carefully on the back for e.o.
H prefix + H stem: 2 depressors (+ 3 post-depressor syllables)

c. kú-gadzi sísélániisa [kú-gadzi sísélá]niisa to help stamp thoroughly for e.o.
d. kú-gadzi sélániisa [kú-gadzi sélá]niisa to cause to help stamp together with e.o.

The aspect of the primary tone/voice pattern captured in (14-17) is described by (18).

(18) Depression Pattern 1c: post-depressor HD syllables return to H
Syllables following a depressor syllable, but still internal to a H domain, surface as H.

A fourth aspect of the basic depression pattern can be observed from the data in (19-20), where the single H stem-sponsor is not realised until the right edge of the HD: there is nothing so crucial about the left edge of a HD that it needs surface expression at the cost of violating the tone/voice antagonism. In other words, Phuthi tolerates significant unfaithfulness to where the left edge of a H feature would otherwise be parsed by basic alignment\textsuperscript{18}, due to the highly valued underexpression of H in order to satisfy the parsing / expression\textsuperscript{19} requirements on depression.

(19) Present indicative long form
Toneless prefix + H stem: 2 depressors

a. si-ya-gadzi séláana si-ya-[gadzi sél]áana we help stamp for e.o.
b. si-ya-gadzeÍláana si-ya-[gadzeÍ]láana we stamp together with e.o.

\textsuperscript{18} In fact, one may argue that the left edge of the HD is still marked by the left edge of the depression feature (below: the Low Domain), since the pitch on -ga- in (19-20) is lowered a little at that point below the non-High pitch of the previous two syllables.

\textsuperscript{19} Parsing vs. expression of tone depression is not yet clearly distinguished. See §7.3 for a proposal that these two aspects of the tone domain feature implementation are certainly distinct from each other.
Toneless prefix + H stem: 3 depressors

c. si-ya-gadzagi sélaana
si-ya-[gadzagi sè]laana
we help stamp
indiscriminately for e.o.

d. si-ya-gadzageí laana
si-ya-[gadzageí] laana
we stamp together with e.o.

(20) Perfective indicative long form

Toneless prefixes + H stem: 2 depressors

a. si-gadzi séleene
si-[gadzi sé]leene
we helped stamp for e.o.

b. si-gadzelísiiye
si-[gadzelí]siiye
we caused to stamp for

Toneless prefixes + H stem: 3 depressors

c. si-gadzagi séleene
si-[gadzagi sè]leene
we helped stamp
indiscriminately for e.o.

d. si-gadzagalísiiye
si-[gadzagalí]siiye
we caused to stamp
indiscriminately for

A HD left-edge, then, can be phonologically opaque at the surface (despite possible lowlevel phonetic pitch cues), but continues to coherently mark the left edge of the HD, as the *AE (or OCP) effect in (21a-c) demonstrates\(^{20}\): the data in column \(i\) appears to be in violation of HD-MIN, and also to violate WSA-R\(T\) more than even in (8) above; it becomes clear in column \(ii\), however, that the proposed abstract domain structure accurately reflects the inability of the H on \(bá-\) to realign rightwards (thus, both *AE and WSA-R\(T\) are satisfied), contra the HD-built-around-depressors configuration in column \(iii\) (where the surface-H locus is incorrectly predicted).

(21) HD left-edge is opaquely present

\(\text{column } i\) \hspace{1cm} \(\text{column } ii\) \hspace{1cm} \(\text{column } iii\)

a. bá-ya-gadzi sélaana
[bá]-ya-[gadzi sè]laana
*[bá-yá]-gadzi [sè]laana

b. bá-ya-gadzagi sélaana
[bá]-ya-[gadzagi sè]laana
*[bá-yá]-gadzagi [sè]laana

c. bá-ya-gadzi sísélaana
[bá]-ya-[gadzi sísé]laana
*[bá-yá]-gadzi [sísé]laana

\(^{20}\) Glosses for this data are: (21a) ‘they help stamp for each other’; (21b) ‘they help stamp indiscriminately for each other’; (21c) ‘they stamp intensively for each other’.
This aspect of potential left-edge opacity of a depressed HD is captured in (22).

(22) **Depression Pattern 1d: HD Lf-edge not necessarily expressed H**
The left edge of a HD is not obligatorily surface expressed as H.

A final aspect to the general observation concerning unexpressability of depressor syllables inside a HD concerns the status of depressors outside a HD, which simply do not affect the phonological parsing of a H tone at all (23).

(23) **Depression Pattern 1e: extra-HD depressors irrelevant**
Only HD-*internal* depressors interfere with the surface expression of H.

So, for example, in a word which does have HDs and depressors, but where the depressors precede the left edge of the HD (vacuously, in 24a-b, actually, in 24c-d), or lie beyond the right edge of the HD (25a-f), their presence does not affect the expressing of a HD as H.

(24) **Pre-HD depressors are irrelevant**
Short present indicative, toneless (low) stem: depressed SP

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>gi^-lima...</td>
</tr>
<tr>
<td>b.</td>
<td>gi^-limisa...</td>
</tr>
</tbody>
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Short present indicative, H stem: depressed SP

<p>| | |</p>
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</thead>
<tbody>
<tr>
<td>c.</td>
<td>gi^-[bó]na...</td>
</tr>
<tr>
<td>d.</td>
<td>gi^-[bóní]sa...</td>
</tr>
</tbody>
</table>

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21 A depressor consonant resets the pitch register for all successive toneless syllables. Effectively, all successive toneless syllables are tonally depressed too (though not breathy). LD (L domain) structure could be amended to reflect such effective LD-extension, but nothing follows from this analytically.
(25) Post-HD depressors are irrelevant

Infinitive toneless (low) stem: depressed ultima
a. [kú]-laadza to fetch
b. [kú]-maabha to hold

Infinitive High stem: depressed ultima
c. [kú]-[tsháá]dza to love
d. [kú]-[kháá]bha to go, walk

Infinitive toneless (low) stems: depressed penult

e. [kú-lá]dzeela to follow
f. [kú-má]bheela to forgive

Even though (25c-d) have two H-sponsors each, neither sponsor coincides with the depressed ultima. (25e-f) are toneless stems; given the HD-MIN effect demonstrated in Chapter 4 §4.2, I omit examples of 3σ H stems with depressed penults (since the second syllable of the minimal HD coincides with the depressor syllable), such as [kú-tshegií]sa. This is treated separately in §7.2.5 and §7.4.

I discuss the behaviour of pre-depressor HD stem syllables in §7.3 below.

7. 2. 3. Clash Analysis

The evidence produced so far indicates a single constraint articulating the antagonism between H tone and depression (breathy voice) phonation, which accounts for all the patterns and data presented in (5-25) above. I observe, as have others, that tone depression (thus far, coextensive with segmental breathiness) and H tone typically invoke intrinsically antagonistic configurations of the larynx, and of the articulatory system that implements tone. This is played out in the phonology of Phuthi as an (amply demonstrated) local anti-express condition, formalised below. I now briefly consider the motivation in the literature for considering the antagonism of these tone/voice settings in languages generally.

There is a substantial literature on the mechanics of high tone vs. low tone, and the connection to breathy voicing (for example, in Ladefoged (1971a-b), Halle and Stevens (1971),
summarised in Laver (1994); also Silverman (1995:133-149), and references therein). There is a
general inclination to try to identify a single salient articulatory setting as the central correlation
for tone height, the ‘Single Source Hypothesis’ (Peng 1992: 262). But the literature cannot
resolve what such a source is. On the contrary, it has become clear from the literature cited above
that, generally, high pitch involves some *combination* of (a) greater horizontal tension of the
vocal folds; (b) greater vertical tension of the vocal folds (and greater elasticity); (c) higher
subglottal pressure; (d) higher airflow across the glottis; (e) greater glottal aperture. Silverman
(1995:139-140) suggests that implementation of high pitch/tone primarily involves properties
(a-b): vocal fold tension; for him, the other settings are merely enhancements of that fold tension.

Breathy voicing can be considered a likely cluster of extensions of the physiological
settings for voicedness, that is, entailing the laryngeal settings required for voicing, and then
exaggerating them: the volume of air (Catford 1977:99), and the diameter of the glottal aperture
(Davis 1994; Ladefoged & Maddieson 1996:317) both increase significantly over voicelessness
and even over modal voicing. Voice onset timing (VOT) is not only shorter than for regular
voicing (vs. the delay in VOT if a consonant preceding a vowel is voiceless), but may have
negative settings (Davis 1994, Ladefoged & Maddieson 1996). Thus, breathiness as a
linguistic laryngeal setting (or cluster of settings) subsumes at least the settings for regular
voicing. And if consonant voicing triggers pitch lowering (pitch depression) on an adjacent
vowel, as the literature frequently demonstrates, then we can expect at the very least an equal
pitch-depressing effect—if not a more systematically marked pitch-depression—resulting from
breathy voicing.

For voicing, Peng eloquently examines a wide range of sources for factors that affect the
implementation of $F_0$, either raising or lowering the pitch (see also Silverman (1995) for
wide-ranging data and discussion from American and Asian languages). Peng correctly reveals
that phoneticians cannot agree on whether any one of the multiple factors is indispensable, nor
what the directionality of the tone-voice relationship is: does tone predominantly influence voice,
or does voice predominantly influence tone? In addition, although there is a tendency for voicing
(here: breathy) and high pitch to involve conflicting articulatory settings, the relationship is not a
straightforwardly automatic phonetic (let alone phonological) one. Important data from Tamil
(Kingston 1986), for example, shows that there are no significant differences in $F_0$ for vowels that follow voiceless vs. voiced consonants in that language.

The phonetic correlation between breathy voicing and pitch depression has to be established, both universally and language-particularly. If it can been shown that breathy voicing is an extension of the settings for voicing, and if voicing inherently means lowness of pitch, then the correlation ‘breathy voice implies depressed pitch’ is uncontroversial phonetically, and (possibly) by extension, phonologically. Peng observes that low $F_0$ entails, generally, less vertical and horizontal tension of the folds (and lower elasticity), lower subglottal pressure, lower volume of air passing through the folds, reduced glottal aperture. While some of these settings (primarily lower tension of the folds) accord with settings for breathiness, seeming to support the ‘breathy-implies-depression’ correlation, others do not (lower subglottal pressure, lower volume of airflow).

Thus, while one may rightly anticipate a potential pitch/voice relationship, in general, and may anticipate that this pitch/voice relationship be phonologised, such a relationship is not automatically guaranteed in any sense. The phonology does not emerge from the phonetics in a straightforwardly predictable fashion.

Phuthi is a language which has phonologised the relationship, and where, as has been shown in the data thus far in this chapter, the predictive direction is from voice setting to tone setting: breathy voice phonation causes tonal depression, interpreted here as an extra-Low tone setting. What remains to be seen is whether tonal depression can exist without breathiness (I will argue from data in §7.8 that under certain circumstances tonal depression can be triggered independently of breathy voicing, cf. present negatives §7.8.1; and other assorted items §7.8.2).

The antagonism between high pitch and consonant\textsuperscript{22} voicing is thus clear, likewise between high pitch and consonant-triggered breathy voicing, likewise between high and low

\textsuperscript{22} Clearly, [voice] for consonants and [voice] for vowels does not behave in the same way; high pitch, and H tone, is always manifested contrastively on syllable nuclei—almost always vowels, except for much rarer sonorant nuclei, in Phuthi: [m n ñ l], and even more rarely on non-sonorant nuclei, in Phuthi: [ɔ ə ʌ], cf. Chapter 2 §2.1.5—which are invariably voiced (barring the very small set of cases where languages employ contextually voiceless vowels). But all things being equal, [voice] on vowels does not deter pitch, or tone, from being High in any way. There is a strong case for permanent underspecification of vowels with respect to [voice] (assuming feature privativity), that emerges from this non-constraint on vowel voice/pitch distribution. I do not pursue the case for or against underspecification here, but the detailed unpacking of
(depressed) pitch; in the phonologised form of this relationship, we can expect H and L tone—in the present case of depressed, that is, extra-low/lowered tone—to conflict. In grounding terms (Archangeli & Pulleyblank 1994), this antagonism reflects an ungrounded feature configuration.

Peng (1992:202) considers just such grounding conditions (‘path conditions’) on tone and voice. Using the feature set \{±hi, ±lo, ±voiced\}, he proposes a set of 16 logically possible grounding conditions and 16 corollaries. Peng (1992:239) considers 16 of the 32 to be phonetically motivated (the other 16 are not phonetically grounded). Of these 16, four are relevant for Phuthi, as (26).

(26) Peng’s (1992:239) grounded TONE/VOICE paths
   a. VOICED/HI condition: if +voiced, then -H [tone];
   b. VOICED/HI corollary: if +voiced, then not +H [tone];
   c. VOICED/LO condition: if +voiced, then +L [tone];
   d. VOICED/LO condition: if +voiced, then not -L [tone].

If Phuthi reflected the conditions in (26a-b), then we would expect voiced consonants (perhaps breathy or modal) simply to ‘remove’ (or unpars) H tone settings from syllables inside a H domain. Phuthi enforces only a subset of these conditions (26c-d), however, which need modifying only in respect of depression (that is, typically, breathy voicing): depressed onsets trigger the explicit presence of Low-ness; and they actively contraindicate the presence of a H tone (in fact, of anything non-L).

In addition, if tonal lowness / depression is to be represented by a Low (L) feature, as I will suggest in the following section, then the Phuthi feature grammar also needs to contain the Peng-esque tone path condition—quite independent of voicing—in (27).²³

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²³I am recasting the Peng-esque condition as involving only privative features. It is my view that non-monovalent features are deeply problematic (cf. previous footnote, and Steriade 1995), even though the antagonism of H and L is less transparent than it might be if the features were +H and −H. In fact, the present analysis could be recast as a ±H or ±L contrast, if the grammar supported the permanent phonological underspecification of toneless syllables.
(27) Ungrounded L/H path
If \([L]\), then not \([H]\)

This implicational condition is analogous to \([+\text{high}] \Rightarrow *[+\text{low}] \) with respect to vowel height. There is a basic logical requirement that the system not (try to) perform two conflicting gestures simultaneously\(^{24}\), if we believe that the tone/voice grounding configuration translates readily into a phonological feature cooccurrence condition.

We can conclude from (26-27) that any syllable with a breathy/depressed onset not expressed as surface-Low (even inside a H domain) is unexpected and undesirable, because it is necessarily ungrounded: it is L by nature (even in the nested context of a HD). In Optimal Domains Theory, an ungrounded configuration fails to properly express some aspect of the ill-formed configuration, whatever the status of the domain in which that configuration finds itself. Domain-parsing (that is, featural faithfulness) itself may, or may not, be affected by the grounding conditions, but the unfaithfulness is expected at least to be manifest through partial expression failure of the relevant domain-parsing features.

In ODT, ungroundedness is articulated by CLASH constraints, which prevent the proper expression of a feature, for a phonetically grounded reason\(^{25}\). A first pass at this for breathy/depressed syllables is (28), though it is not immediately clear from such a configuration (without the kind of would-be explanation supplied above) why H and breathiness per se would be antagonistic.

(28) CLASH H/L
\(*H \\
*(H, [\text{voice, s.g.}]) = \emptyset \\
H \text{ tone and breathy phonation (interpreted as ‘voiced spread glottis’) cannot coincide.}

\(^{24}\) We will see in §7.2.6 below that, under exceptional circumstances, H and L can be phonologically parsed and even expressed over the same syllable (even though phonetically the tone features are always sequenced to some extent).

\(^{25}\) CLASH has already been seen in the form of *EXPRESS\_OP and *EXPRESS\_ULTIMA, but the precise nature of the groundedness of these particular CLASH instantiations is not yet fully clear: the potential cross-paradigm Low requirements on OPs (see discussion in §7.6), and intonation-motivated final lowering in the form of Register Domains for ultima anti-expression suggest that L-ness is much more phonetically finessed than merely the presence of a phonological L domain.
We will see in §7.3 under ‘anticipated depression’ that stating this constraint at the phonation level is unnecessarily (and ultimately erroneously) overprecise; the anti-expression of H will refer more broadly to a set of depressed syllables larger than just those containing breathy onset syllables. I propose (29) as a more satisfactory, more transparently functional account of the unexpressability of H on breathy/depressed syllables. Clearly, the constraint in this format presupposes that breathy/depressed syllables redundantly deploy the feature Low (L).

(29)  \[ \text{CLASH H/L} \]
\[ *(H, L_x) \]
\[ \dddot{H}_x \]
\[ X \]
\[ L_x \]

A phonological segment X cannot be both H and L simultaneously.

The constraint in (29) must be accompanied by the ranking \( \text{CLASH-H/L} \gg \text{EXPRESS}_H \), in order to allow H not to be expressed where there is a clash with a breathy/depressed (Low) syllable (but in §7.2.4 below, I will argue that \( \text{CLASH-H/L} \) must be replaced by an express ranking).

There is a small step translating from the grounding conditions in (26b) to what I am proposing for Phuthi in (29). If indeed breathy voiced consonants trigger an abstract state we have been calling tonal depression, or (targeted) Lowness—as opposed to non-H-ness, or tonelessness—then there must be a step where a Low feature is inserted via the grounding requirement in (26c).

The nature of this Low feature is in question: can it simply be a phonetic instruction to express breathy/depressed syllables inside a HD as low, once the clash has been identified, or need it be the insertion of a distinct phonological feature, L, which will be parsed with its own set of domain alignment constraints, as the representation in (29) suggests? Economy of representation suggests the former, inasmuch as economy remains a principle of representations or processes in phonology at all (in light of Optimality Theory and the general retreat from underspecification, despite Archangeli 1988). I argue here, however, that the second strategy is
the only analytic route we can insightfully pursue\textsuperscript{26}: depressor-induced lowness in Phuthi is constituted by a L domain. The reasons for this will become clearer in §7.3-7.5, where realignment requirements on both edges of this L domain will truly confirm the need for a separately alignable feature domain independent of H.

Meantime, we can consider the evidence for analysing depression as being represented by a ‘real’ L tone feature, as opposed to a diacritic that exists simply to parse (contrastive) non-H-ness: (30a-b) provide phonetic motivation; (30c-e) provide phonological motivation.

(30) Motivation for positing distinct Low Domains
a. depressed syllables are always expressed phonetically lower than comparable non-H, toneless syllables;
b. depressed L syllables appear to have an active low target: intonation patterns sharply register the lowering of F\textsubscript{0} at any point where a depression (L) domain begins.
c. all breathy syllables are tonally low in most cases (or try to be low), i.e. depressed;
d. some tonally depressed (low) syllables are not triggered by breathy consonants, but are anticipated (§7.3), included into a low (but not breathy voiced) sequence by extension (§7.4), or are assigned Low status in a particular paradigm (§7.6, §7.8);
e. both the left and right edges of a LD will be seen to be extendable beyond the sponsor location, in certain morphological and grammatical configurations (§7.3, §7.4, §7.5).

For these reasons, I consider active L to be a well-motivated feature. This choice of feature—L, not breathiness—reflects that Phuthi must have reanalysed its breathy syllables as possessing the primary auditory / acoustic cue of low (or: lowered) pitch. Since this tone feature can sometimes occur on its own without laryngeal breathiness (§7.8), it seems clear that the implicational grounding constraint in (31a) holds—in both forms—while the converse (31b) is not true (in either form), although one could imagine such a constraint holding in a language where tone quality (or depression) influences phonation type\textsuperscript{27}.

\textsuperscript{26} I admit gladly to the influence of Mary Bradshaw’s (1999) analysis of Swati tone/voice. After attending several of Bradshaw’s conference presentations and having several arguments with her, I reluctantly conceded that H and toneless alone were insufficient to capture the full range of tone/voice interactions as manifest in Phuthi, and as they appear in this chapter. I now find Bradshaw’s tone-insertion solution to be insightful and analytically crucial, even though typologically troubling (no southern Bantu language has been argued to possess three active tones: H, L, toneless). Chapter 8 §8.3.8 will consider the implications of the tone inventory here.

\textsuperscript{27} There is data laid out in §7.6 and §7.8 of the present chapter that may be relevant to this tone-implies-voice relationship: toneless/low stems invoke depression (and possibly breathiness) in the present negative (§7.8.1), remote past (§7.6.2) and past subjunctive paradigms (§7.6.3).
(31) Implicational redundancy constraints
  a. [breathy voice] \(\Rightarrow\) [Low] obtains in Phuthi
     [depressor consonant] \(\Rightarrow\) [Low] obtains in Phuthi
  b. [Low] \(\Rightarrow\) [breathy voice] not in Phuthi
     [Low] \(\Rightarrow\) [depressor consonant] not in Phuthi

Peng (1992)’s grounding conditions (26c = 32a; 26d=32c) require at least the modification in (32b,d), as suggested by the Phuthi patterns already seen; these, in turn, are rewritten in bold under (32b,d), to reflect the depression patterns (some of which will be seen in §7.8 to be potentially independent of breathiness per se) and to reflect the identity of the privative features, L (Low), and H (High), to replace [+lo] and [-lo], respectively.

(32) Grounded tone / voice configurations
  a. If [+voice], then [+lo] LO/VOICING condition (Peng 1992:202)
  b. If [+breathy voice], then [+lo] Phuthi Low/voicing
     If [+depression], then L Phuthi Low/voicing [final version]
  c. If [+voice], then not [-lo] LO/VOICING condition: corollary (Peng 1992:202)
  d. If [+breathy voice], then not H Phuthi Low/voicing condition: corollary
     If [+depression], then not H Phuthi Low/voicing condition: corollary

From here on, the contents of the breathy/depressed—that is, actively not H—syllables, will be referred to as ‘L(ow)’.

7.2.4 Parsing and Expressing Low

As a feature, L can be expected to adhere to narrow scope alignment unless otherwise demonstrated. The basic alignment constraints relevant to the LD parsed in situ by a L feature are given in (33).

(33) Basic Alignment (Low)\(^{28}\)
  a. Align (L, Lf, \(\sigma\), Lf) = BA-Lf (L)
  b. Align (L, Rt, \(\sigma\), Rt) = BA-Rt (L)

\(^{28}\) Here, and in all constraints that follow where L is proposed to be treated by a set of
As a well-formed feature domain, LD requires faithful expression (via Express_L). But Clash H/L can and must now be recast as the competition between L expression (34) and H expression: L expression must dominate H expression (35), as reflected in the feature cooccurrence constraint in (23) above, banning H and L from simultaneous expression, since H/L always resolves in favor of L.

(34) Express_L
Express LD, L
Express all the tone-bearing units (here: moras) in a L domain as surface-L.

(35) Phuthi Clash ranking
Express_L >> Express_H

(35) opens the door to an important theoretical idea that OT and ODT allow, and even encourage: surface phonological ‘facts’ are not necessarily the work of a single constraint, but may fall out of a set of ranked constraints. Thus, Clash-H/L, motivated in (27) as a grounding statement, then in (29) as a path condition, has now been recast in (35) as an expression constraint interaction. The L/H antagonism in Phuthi is straightforwardly expressable through Express competition. This recasting will prove critical to the analysis of depressor shift in §7.4, where the abstract notion, HEAD, will be constructed from a set of ranked constraints (§7.4.3.2).

A sample of the data set from Depression Pattern 1a-e is provided in (36) with both L domain ‘{...}’ and H domain ‘[…]’ structure indicated, respecting basic alignment for L (33), and both BA-Lf for H and WSA-Rt for H (with the standard antialign effects on HDs of AvoidProm and NonFin, as argued and demonstrated in Chapters 4 §4.1-§4.5).

(36) Primary depression pattern, including ‘aspects’ A to E: HD and (nested) LD structure

a. [ků-{vụ}lé]laana to open for e.o. = 6a
b. [bág-yá-{vụ}lé]laana they open for e.o. = 7a
c. [ků-{bhɛ} {bhì}sé]laana to help carry on the back for each other = 10b

constraints parallel to H, the presence of a constraint such as BA-Lf (L) implies renaming the earlier constraint from BA-Lf (Chapter 4 §4.1.3) to BA-Lf (H).
d. [kú-{ga}{dzi}sé]laana to help stamp for e.o. = 11a

e. [kú-{bhé}{bhí}sísélá]niisa to help carry carefully on the back for e.o. = 17b

f. si-ya-[{ga}{dza}{gi}sé]laana we help stamp indiscriminately for e.o. = 19c

g. [kú-má]{bhe}la to forgive = 25f

The L feature will receive even stronger support as an active feature in its own right, after the shift and block data in §7.4 has been considered.

7.2.5. \((H, L)\) TOLERATED EXCEPTIONALLY

The ungrounded, ill-formed path in (27), formalised as \textsc{clash} H/L in (29), is constrained in ODT by (37), a particular instantiation\footnote{Other instantiations of \textsc{contrast} are imaginable (though non-default), such as discontinuous parsing of a feature in distinct expression spans (but necessarily violating the fundamental domain construction constraints, \textsc{incorporate} and \textsc{unique}—cf. earlier discussion of these principles in Chapter §5.2.2).} of the more general \textsc{contrast} (repeated as (38)), introduced in Chapter 5 §5.4 as a general principle constraining feature parsing.

\begin{equation}
\begin{aligned}
*\text{Masking} &\ (=\ \textsc{contrast}_L) \\
*|LD|=|HD| \\
\text{The} \ Lf \ \text{and} \ \text{Rt edges of a LowDomain and of a HighDomain cannot both coincide. That is, the length in prosodic timing units of LD and HD cannot be phonologically identical.}
\end{aligned}
\end{equation}

\begin{equation}
\begin{aligned}
\text{\textsc{contrast}_F} \\
\text{Contrast (F, -F) or Contrast (F, \varnothing)} \\
\text{Keep F and -F (or F and \varnothing) distinct throughout the grammar.}
\end{aligned}
\end{equation}

In §5.4, \textsc{contrast} was invoked as the underlying principled that prevented the HD on an object prefix with 1σ stem from being completely masked by the anti-expression requirement on the OP prefix domain; the potentially neutralised feature, H, then surfaced exceptionally as H in the OP, in order to avoid masking (and, thus, loss of contrast). The present instantiation of contrast (38) can be simply termed \textsc{contrast}_L: that is, the L contrast cannot be completely obscured.

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Thus, Depressor Pattern 1a-1e, interacting with the general \textit{Max-H} and \textit{Express\_H} constraints, must allow CLASH-H/L to be overridden in cases where a depressed H syllable is not able to resolve a CLASH configuration by (fully) expressing as L, for reasons of violating \textit{Contrast\_L} (*\textit{Masking}). If a H sponsor is in penult or ultima position, and the same penult or ultima position is sponsored as L (depressed) by virtue of being lexically depressed, then the expected HD is one mora long, as is the LD, both parsed on their sponsor syllable, but sequenced, in different ways. There is a crucial difference between the two edge positions, however. In the case of the phrasal penult in (39) below, because it is the head of the WAP foot, it is prominent, that is, it consists of two moras. Hence, the LD and HD can be and are sequenced\textsuperscript{30} across the two available tone-bearing units (39). This depression-tone sequencing pays no attention to word category: (39a-b) are verbs; (39c) is a non-focus (post-negative) noun; (39d) is an adverb (= Class 17 demonstrative pronoun); (39e) is a relative (adjectival stem, built off a noun).

I return to the discussion of depression-tone phasing and L-H phasing in §7.2.5.1 below.

(39) \textit{L and H are sequenced across a penult sponsor}

a. si-ya-\textit{vuúna} \quad \textit{si-ya-\{\textit{vuú}\}n}a we harvest

b. si-ya-\textit{dlaála} \quad \textit{si-ya-\{dlaá\}la} we play

c. ...\textit{mu-bhí\j\n}i \quad ...\textit{mu-\{bhí\j\n}i} singer

d. \textit{lhá\kha} \quad \textit{lh[\{a\}á]kha} here

e. -\textit{mhaá\ti} \quad -\textit{mh[\{a\}á]ti} wet

In monosyllabic (phrase-final) stems, however, the two feature domains (H, L) are perfectly phonologically aligned (40), since the non-prominence of the ultima syllable means that

\textsuperscript{30} I take a certain liberty in representing the rising H across a depressed penult syllable as breathiness/depression on only the first mora of the penult, and H only on the second. The duration of the breathiness/tonal depression is not entirely clear: impressionistically, it lasts throughout the penult syllable, perhaps more weakly towards the end of the long nucleus, as it reaches the maximum excursion of (depressed) high. But the observation that a depressed H penult or ultima is perceived as rising H is widely reported for Nguni languages, cf. Lanham (1960), Rycroft (1980b), Claughton (1992), Cassimjee (1998).
it is never more than one mora long. Hence, if either the H or L feature should fully express across the syllable, the other feature would be fully masked, and either H or L feature identity would be phonologically lost at the surface. But since Phuthi does not typically tolerate underparsing (or completely underexpressing) either the H or the L tone feature, both H and L must be parsed and expressed on the short depressed ultima sponsor syllable in situ (40). What appears to be the ill-formed simultaneity ruled out in the *MASKING (36) or CONTRAST _L (37) constraints above is allowable in this single instance because it is phonetically finessed: the ultima mora is implemented as a rapidly rising tone.

Again, word class is irrelevant: in (40), the examples are verb (a-b), a non-focus noun (c), a conjunction (d), and a demonstrative pronoun (e)—all have been introduced in Chapter 2.

(40) L and H are both parsed on an ultima sponsor

a. si-yaa-dlā  
   si-yaa-[dlā]  
   we eat

b. si-yaa-vā  
   si-yaa-[vā]  
   we hear

c. ...tii-jhā  
   ...tii-[jhā]  
   ...dogs

d. ...lā  
   [lā]  
   when

e. ...lō  
   [lō]  
   this (Class 1 / 1a / 3)

Importantly, the H depressed penult and the H depressed ultima in Phuthi behave in the same way, differing only according to timing patterns: the L-H voice/tone sequence across the penult has an opportunity to spread itself out over two moras; the same voice/tone conflict is also sequenced across the ultima, but within the confines of a single mora. (A gestural approach to phonology might unify these two prosodic landing sites).

7. 2. 5. 1. Phasing of depression (breathiness) and voice: L-H

We can assume that L and H domains are sequenced across the long penult in (39), but we need to assume that the two sets of domain edges coincide in monosyllabic stems (40), as indicated by the accompanying domain structure in the central columns above (39-40), reproduced schematically in (41), if the smallest parsable prosodic tone-bearing unit is the mora.
What the monosyllable domain representation in (41b) fails to adequately capture is that, even here, L and H tones are phased *at the surface*, that is, are not truly coextensive. The surface tone shape is sharply rising, not level H *and* breathy (or level H *and* merely downstepped). This makes significant sense, both phonetically and phonologically, in terms of production and perception: Silverman (1995:45) has argued compellingly that languages seek to avoid truly parallel production of competing contrastive features, since this leads to phonetic and phonological unrecoverability if one or the other feature is completely masked (absolute neutralisation). Rather, languages satisfy the competing demands on the production and perception system of phonological simultaneity by providing phased cues, so that laryngeal features such as breathy voicing (or depression) are recoverable despite partial masking by the competing high pitch gesture(s).

Silverman (1995) goes on to argue convincingly that where breathy voicing and H tone compete, the cross-linguistically optimal sequence of (high) tone and nonmodal phonation is a sequence of low/breathy followed by high/non-breathy. Silverman makes use of a threshold of ‘sufficient acoustic discriminability’ that leads languages not to excessively mask non-modal phonation (breathiness, creak) and high pitch. This is supported by experimental evidence showing that ‘listeners are less adept at discriminating pitch values during Jalapa Mazatec breathy phonation than during Jalapa Mazatec modal phonation’ (1995:137).

Silverman (1995:195) does point out, however, that there is an apparently inverse relation between strength of non-modal phonation and the tendency to be sequenced: non-modal (e.g. breathy) phonation, which is weaker, may extend its duration throughout the nucleus (vowel), without making concomitant tone unrecoverable, because of the weakness of the non-modal phonation.
By extension, in the absence of further detailed phonetic examination of Phuthi, it seems likely that here, too, the language phases breathiness and high pitch to satisfy ‘sufficient acoustic discriminability’. The phonological sequencing of L-H across two adjacent tautosyllabic moras in (39) and the phonetic sequencing of low and high in the rising tone on the ultima in (40) suggest that this principle of discriminability underpins these tone/voice phenomena too. It may yet turn out that Phuthi breathiness endures weakly through out a penult or ultima vowel, if the phonation cues are weak enough not to interfere with recoverability of H tone.

Phonologically, in the depressed ultimas in (40) above, we have to assume that HD and LD are coextensive, because ODT requires that domain edges be parsed around identified tone-bearing units; in this case, the smallest available entity is the mora (coextensive with the syllable in almost all cases but on the phrasal penult)31.

For Phuthi, then, we need to assume that the phasing between H and depressed L gestures in the case of monosyllables—that is, where the two gestures must be executed on the same mora—is not articulated by the domain structure, nor (straightforwardly) by the EXPRESS implementation of the parsing feature, but rather by some form of phonetic spellout that appeals to universal articulatory and perceptual constraints as (partially) articulated in Silverman (1995).

Now, we can distinguish the onset of the H depressor penult in (39a,b) and the H depressor ultima in (40a,b) from a level H penult or ultima in the following ways: for the depressed syllables, (a) onset pitch is substantially lower than that of a non-breathy H penult/ultima; (b) the H tone rises across the full length of the penult, or across the short ultima; (c) the H never reaches the same height (pitch frequency) as a non-breathy H penult / ultima would. If we accept that the rising tones in (39) and (40) are both phased as L-H, then we accept that this rising tone is the prosodic resolution of parsing H and L across a coextensive domain (penult or ultima), confirming the observation in Depression Pattern 1f (42).

(42) **Depression Pattern 1f: (depression + H) is parsable**
Depressed H syllables at the right edge of a HD are parsed *in situ* as rising tones.

31 We can note that under a pre-ODT autosegmental approach, both L and H could simply link to the ultima TBU; even three tones might link to one prosodic unit, if necessary (e.g. rising-falling, modelled as LHL), as argued by Leben (1973) for tone data from Mende, where many-to-one relations between tones and tone-bearing units are sometimes invoked (in both directions).
The observation in (42) will be seen to be true for a (lexically) depressed H syllable at any right-edge position (after the effects of depressor shift have been factored in, cf. §7.4.1). Commonly, this will be at the penult or ultima position. But it will also be seen that a depressed H syllable can occur earlier a word, as a result of depression block (§7.4.2), for example, on a depressed 1ps SP or OP (§7.6.1). It will be seen in §7.8.1 that grammatically depressed H syllables do not reflect these rising properties.

The pattern in (42) characterises depressed (breathy) H syllables in other southern Bantu languages, too, leading other researchers also to propose that a rising H (breathy) syllable is parsing both L and H tone on the same syllable, but sequenced. It is a striking fact of Phuthi that depression pattern 1f is never violated for lexical depression (ct. grammatical depression, cf. §7.8.1), under any conditions.

Silverman (1995) has provided a global conceptualisation for the phasing of these supposed-to-be-simultaneous tone/laryngeal features: phasing allows for recoverability of the underlying phonation and tone contrast, that is, both laryngeal gestures—tone, and non-modal (breathy/depressed) phonation—can achieve salience (Silverman 1995:111). Silverman argues that in a vowel which also has distinctive tone the non-modal phonatory gestures are phased early, based on data from Jalapa Mazatec, Comaltepec Chinantec, and Copala Trique (1995:152). Similarly, in Phuthi, the two tones are phased as L-H across the penult or ultima (when those are the prosodic HD right edges), despite their apparent ill-formed simultaneity ruled out in the *Masking (32) or Contrast constraint. That is, the non-modal (breathy) gesture occurs early in the vowel. Assuming, as I have, that breathiness is reinterpreted as depression (that is, tonal lowness), there must be some functional principal being satisfied by the L-H sequence in that particular order, even on the short ultima; further research on ease of articulation or ease of

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32 Hyman and Mathangwane (1998) for Ikalanga; Cope (1966, 1970), Lieber (1987), Khumalo (1981, 1987) for Zulu. Cassimjee (1998:52-53) is not explicit about how depression and H are parsed in Xhosa. Since the analysis is not autosegmental, and since she does not make use of L tone domains in ODT, Cassimjee indicates merely that H and depression are both tolerated on penult and ultima. She indicates that both moras of the long penult are H in Xhosa, though I would differ by analysing the first mora as low, since the Xhosa depressor phonetics is very similar (if not essentially identical) to Phuthi.

33 We have to assume that further acoustic or articulatory instrumental work universally, and specifically in Phuthi, would reveal why the laryngeal sequence is L-H and not H-L: the set of breathy (depressor) properties seems to be favoured to be expressed first in the sequence.
perception may reveal such a principle, such that implementing lowness before highness has cognitive appeal. However, Phuthi provides a more transparent reason to invoke L before H in the data seen so far\textsuperscript{34}: the trigger for depression is the consonant onset; depression binding is a local operation on adjacent constituents. Parsing the sequence as HL would violate adjacency and locality, given that the depressor trigger lies at the left edge of the CV sequence, that is (L)LH, not *(L)HL.

Now, for all of the data in the first part of this chapter illustrating Depression Pattern 1 (1a-1e) where the depressed syllables do not surface as H \textit{at all}\textsuperscript{35}, the only gesture that expresses for each depressed syllable where there is a L/H clash is the L (non-modal) portion. In Silverman’s sense of optimal recovery, all the (non-penult, non-ultima) depressed syllables are suboptimal, in that they do not express both the competing tone gestures (*L-H, rather only L), because there is insufficient acoustic discriminability: the hearer cannot recover \textit{both} gestures on any pre-antepenult syllable in a domain where the antepenult is the rightmost HD syllable (that is, the head). Instead, the phasing is stretched out as far as possible, completed only when the rightmost edge of the HD recovers its H-ness, after the L feature has been properly expressed. Although the completion of phasing is delayed (seemingly suboptimal), the phasing allows for ‘cleaner’ expression of the two gestures: L stretches out faithfully for as far as it sponsored, H then recovers on the non-L mora or syllable (or syllables). (43a-c) shows the optimal and suboptimal phasing across short and long domains. (43d) offers a pattern unattested in Phuthi, where the L/H clash would be resolved by a process of tone fission, splitting up a single H domain into multiple sequences of LH. Although unavailable as a solution in Phuthi, this strategy \textit{is} selected in the tonology of the Mijikenda language, Digo (Kisseberth & Wood (1980), Kisseberth (1981, 1984)). Ikalanga, too, splits up an expanded (‘spread’) H domain into two or more discontinuous groups of H syllables (Hyman & Mathangwane 1998:206, 214).

The fission resolution of phasing would be strongly dispreferred by any form of tonal paradigm uniformity constraint (compared to other tone paradigms where there is no interruption of the expressed feature). Such multiple fission could be construed as massively violating

\textsuperscript{34} When we see depression without depressor consonants in §7.5, §7.8, this adjacency (or locality) argument would need recasting (as being suggested here), with some of kind of appeal to cognitive/articulatory/perceptual salience.

\textsuperscript{35} This excludes exceptional Depression Pattern 1f above, where H and L \textit{do} both express.
locality. I do not explore fission problems further here (but cf. §7.7.2 for an instance of apparent H tone fission; and cf. the discussion of strict vs. relativised locality in §7.2.6 below).

(43) Phasing in short and long domains

a. short domains I: \( [[\mu] \mu] \sigma \) \( _{\text{PWD}} \) phasing satisfied across penult

b. short domains II: \( [[\sigma]] \) \( _{\text{PWD}} \) phasing satisfied (through phonetic spellout) across ultima

c. long domains I: \( [[\sigma] [\sigma] [\sigma]] \sigma \sigma \) \( _{\text{PWD}} \) delayed phasing: resolved on antepenult\(^{36}\)

d. long domains II: \( [[\sigma] [\sigma] [\sigma] [\sigma]] \sigma \sigma \) \( _{\text{PWD}} \) fission: phasing optimised on every syllable, but uniformity violated (unattested in Phuthi)

The minimal HD/LD union on the ultima in (41b=43b) or the HD/LD sequence across the two penult moras (41a=43a) comes at a typological price: Phuthi must now tolerate rising tones, as the Depression Pattern 1f has expressed (42). Yet (non-depressed) rising tones were explicitly argued against in Chapter 5 § 5.3.1.2, with a constraint \(*_{\text{RISE}}\), repeated here as (44), which would avoid rising tones (and unsurprisingly so, since they are typologically highly marked).

(44) \(*_{\text{RISE}}\)

A sequence of toneless and H—i.e. low and high—cannot occur within a single syllable.

Clearly, the need to parse and express both H and L must override this anti-contour constraint (44). Technically, only the rising penult violates (44); even though the short rising

\(^{36}\) (43c) is equivalent to a single L autosegment linked to a sequence of three fused LDs.
ultima actually violates *Rise, we have no straightforward domain-based way of evaluating such violation (given the coextensiveness of LD and HD in such forms), unless parsing *Rise operates at the level of phonological gestures. Nevertheless, tone parsing always outweighs generating marked postlexical tone shapes (45).

(45)  **Obligatory tone parsing**
   a. Max-H, Max-L >> *Rise
   b. Express_H, Express_L >> *Rise

   Express_H has already been argued to involve two distinct constraints (Chapter 5 §5.3.1.2): Express_H(σ) and Express_H(µ). Express_L must address every mora inside a LD.

   An additional observation we need to make is that the domain construction principle of Incorporation applies also to the L feature: the sponsor feature must be incorporated inside its own LD. Considering that a depressor consonant *onset* is the trigger for L-ness, and then extends to the syllabic nucleus by means of depressor binding, the LD must begin at the left edge of the onset or nucleus. Failure to incorporate in this fashion would mean a violation of locality if the L domain began only after the implementation of the H feature, e.g. C[HL].

   The interplay of the constraints and rankings in this section (45, with earlier 35, 37) give rise to an adequate accounting for the depressor tone conflict (Tableau 1), as it has been revealed to this point, for both longer (46a-d) and shorter (46e-j, k-o) forms.

   [turn to the next page for (46) ‘Tableau 1: Local expression failure’]
Tableau 1: Local expression failure

kúbhebhísélaana  ‘to carry intensively (on the back) for each other’

<table>
<thead>
<tr>
<th>/ ku- + -bhebhisé-els-an-a /</th>
<th>Incorp L</th>
<th>Incorp H</th>
<th>Max-H</th>
<th>Max-L</th>
<th>Express L</th>
<th>Express H (σ)</th>
<th>*Rise</th>
<th>Non Fin</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [kú-{bhe} {bhí }sisé]laana</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>(b) [kú-{bhe} {bhí }sisé]laana</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td>**</td>
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<tr>
<td>(c) [kú-{bhé} {bhí }sisé]laana</td>
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<td>!*</td>
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<tr>
<td>(d) [kú-bhébhísé]laana</td>
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<tr>
<td>(e) ku-{bhe} {bhí }siselaana</td>
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<tr>
<td>(f) ku-{bhe} {bhí }siselaana</td>
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<tr>
<td>(g) [kú-bhébhísé]laana</td>
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</table>

- In all optimal candidates EXPRESS_H(σ) must be violated only sufficiently to allow EXPRESS_L never to be violated: (a) is sufficient, (b) is excessive, (c) is insufficient, (d) vacuously fails to violate EXPRESS_L, because the LD structure is not parsed at all; (e) is where a lexical H tone is underparsed—never tenable; (f) and (g) offer candidates that would side-step the express clashes by misaligning the surface domain with the sponsor position.

si-ya-vuina  ‘we harvest’

<table>
<thead>
<tr>
<th>/ si- + -ya- + vuna /</th>
<th>Incorp L</th>
<th>Incorp H</th>
<th>Max-H</th>
<th>Max-L</th>
<th>Express L</th>
<th>Express H (σ)</th>
<th>*Rise</th>
<th>Non Fin</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h) si-ya-{vũ}ũ]na</td>
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<tr>
<td>(i) si-ya-{vũ}ũ]na</td>
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<td>!*</td>
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<tr>
<td>(j) si-ya-{vũũ}ũ]na</td>
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<tr>
<td>(k) si-ya-{vũũ}ũ]na</td>
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<tr>
<td>(l) si-ya-{vũũ}ũ]na</td>
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<tr>
<td>(m) si-ya-{vũũ}ũ]na</td>
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</table>

- (h) violates *Rise, but expresses at least one mora of the penult as H; (i) realigns the HD to the ultima to satisfy phasing, without violating *Rise; but the penult now fails to express even one mora as H; (j) and (k) are notational variants, failing to properly express the LD, or even to parse L; (l) fails to parse H; (m) gets around violating *Rise by creating a falling
tone in the output, but the misphasing of L and H violates the basic ODT domain construction principle, INCORPORATE.

\[ si\text{-}ya\text{-}a\text{-}dlā \] [siyaadlā] ‘we eat’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -dl a /</th>
<th>Incorp L</th>
<th>Incorp H</th>
<th>Max-H</th>
<th>Max-L</th>
<th>Express L</th>
<th>Express H (σ)</th>
<th>*Rise</th>
<th>Non Fin</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n) si-yaa-[(dl ā)]</td>
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<tr>
<td>(o) si-yaa-[(dl a)]</td>
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<tr>
<td>(p) si-yaa-[(dl ā)]</td>
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<td>(q) si-yaa-[(dl ā)]</td>
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<tr>
<td>(r) si-yaa-[(dl a)]</td>
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</table>

- (n) does not technically violate *Rise if *Rise is defined across a sequence of tone-bearing units; but it does violate this principle phonetically on the ultima (hence the parenthetical asterisk); (o) and (p) each fail because they underexpress either of the tone features; likewise, neither (q) nor (r) are well-formed because both underparse one of the tones.

One could imagine yet another output form for the monosyllable stem candidates (46n-r), such as \( si\text{-}[yáá]\text{-}[dl a] \), where the CLASH-H/L problem would be removed by realigning the HD leftwards. But Phuthi never realigns HDs leftwards—contra Bantu languages such as Rwanda (field notes, 1993; Adisasmito & Donnelly 1993a,b), which do misalign leftwards for short stems whose HD otherwise conflicts with word-(right)edge anti-align constraints.

### 7.2.6. Locality and Transparency: Strictness is Untenable

The insight from words such as \( kú\text{-}bhhebhi\text{-}sísélaana \) in (46) is that Phuthi tolerates configurations which on the surface appear to contain unconstrained gaps; the single underlying H tone in this word shows up in two disconnected portions: \( kú\text{-} \) and -sísé-. Such configurations appear to dramatically violate locality (as construed in Kiparsky (1981), Levergood (1984),

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37 We will see in §7.3, however, that Phuthi does tolerate leftwards realignment of the typically phonationally triggered L tone.
Steriade (1987), Archangeli & Pulleyblank (1994)). The position in this dissertation is that (relativised) locality is maintained through undominated domain alignment constraints.

Locality, as it emerges from the authors above, is a key principle driving the construction and elaboration of metrical and autosegmental representations. While the theory of representations has, for many researchers, become much less constrained in the post-generative theories of phonology, locality is still assumed crucially to obtain. This notion of locality crucially depends on a (sub)theory of legitimate targets (Ní Chiosáin & Padgett 2001:118). Legitimate targets constitute all and only the harmonic feature-bearing units inside a harmony domain; typically, vowels in vowel harmony; consonants in consonant harmony; tone-bearing units (mora or syllable) in a tone domain.

I argue from the Phuthi tone/voice data presented in this chapter that locality is not violated at the level of domain structure: the H tone domain, for example, is properly formed as a single, continuous span of potentially H-expressing syllables. Similarly, the L domain parsing a single L feature is never interrupted; INCORPORATION is unviolated. Rather, the Phuthi facts fall out of the failure of the ‘surfacy’ feature realisation apparatus in ODT: expression. Specifically, in the data presented in this chapter, the surface tone expression is negotiated through the interaction of the two competing feature expression constraints that vie for optimal faithfulness to their parsing domains.

The Phuthi H domain is never structurally discontinuous; indeed, it is internally transparent to the antagonistic L feature domain (47), never fissioned into distinct domains parsing the same tone feature (e.g. \( H_\alpha \)) more than once.

(47) Phuthi tone domains are continuous
   a. \([H_\alpha \sigma \sigma ... [L_\beta \sigma \sigma ...]_{L_\beta} ... \sigma \sigma]_{H_\alpha}\)
   b. \(*[H_\alpha \sigma \sigma ...]_{H_\alpha} (L_\beta \sigma \sigma ...)_{L_\beta} [H_\alpha ... \sigma \sigma]_{H_\alpha}\)

As schematised in Chapter 3 §3.3.2, transparency in ODT is achieved through a ranking where domain faithfulness—reflecting faithfulness to underlying features, and the basic alignment domains which parse these features—outranks conflicting domain expression (effectively, CLASH-H/L). This is the case with the H/L competition in Phuthi. Opacity would be achieved by the reverse ranking, where conflicting domain expression (CLASH) outranks domain
construction, resulting in (47b) if the H trigger feature is at the left edge (that is, H cannot reach rightwards past the intervening L domain). Phuthi does not display tonal opacity, in that the domain construction parameters are not dependent on the location of depression, that is, on the location of L domains.

Phuthi does not violate what I have called general locality (cf. §3.3.2.1), that is, locality as generally construed, here as read off optimal domain edges. This is despite the fact that one or more ‘legitimate targets’ (Ní Chiosáin & Padgett (1997, 2001)) can surface while not bearing the harmonic feature (H) of the larger domain (HD) they occur in; such targets are, of course, inside a L domain that is nested inside the larger HD. That is because the notion of legitimate targets must be redefined in Phuthi as the smallest F-domain in which the feature-bearing units can display F. In the case of Phuthi, the LD is always the smaller of the two tone domains. Thus, the LD legitimate targets are legitimate only for L, not for H.

‘Strict locality’ is a second line of analytic attack that needs addressing. Ní Chiosáin & Padgett (1997, 2001) claim that locality can be coherent only in its strict sense: locality is respected in a harmony domain only when all segments in that domain (consonants or vowels) bear the harmonic feature(s). Other works pursuing this alternative view of locality include Ní Chiosáin & Padgett (1993), Itô, Mester & Padgett (1995), Gafos (1996). The earlier, standard reading of locality, according to this view, is rather of ‘relativised locality’, that is, where only a subset of the segments in a domain can bear the harmonic feature (e.g. the vowels, but not the consonants).

In strict locality, consonants in a vowel harmony domain bear the harmonic gesture too, leading to a much larger set of non-contrastive, but harmonic consonant segments. Ní Chiosáin & Padgett support this view with articulatory evidence that C gestures are superimposed on adjacent (and simultaneous) V gestures in CV sequences (Browman & Goldstein (1986, 1989, 1990)); in fact, V gestures are literally adjacent in harmony domains. Consonant (place) harmony is explained away: if there is C harmony, it is only tongue tip, in which case the intervening vowels bear it too, in a non-contrastive micro-adjusted fashion; place harmony involving consonantal major place gestures does not exist, in this view.

Ní Chiosáin & Padgett (1997, 2001) pay little attention to tone. They do suggest there is no reason that obstruents, too, cannot bear intrinsic tone or harmonic tone, e.g. $k_H$ where $k$ is
intrinsically H (which tone setting voiceless consonants often correlate with), or where \( k \) is inside a H tone domain, even though the closure phase of obstruents inhibits realising tone features. Ní Chiosáin & Padgett invoke Nupe tone/voice data, where tone on vowels is triggered by or blocked by tone on consonants. What these researchers fail to consider is segmental data (such as found in Phuthi) where two distinct, conflicting pitch gestures are attempting implementation at the same time, on the same prosodic tone-bearing unit. Ní Chiosáin & Padgett conclude that consonants are in the worst case only mildly antagonistic to tonal specifications (1997:48).

It should be clear from the Phuthi data already seen that strict locality with respect to H tone is analytically incoherent at the level of feature expression (which is implicitly where Ní Chiosáin & Padgett are measuring locality). If H and L articulations conflict in every way—physiologically, phonetically (in both production and perception), phonologically—then every syllable which has membership in both HD and LD should, by the Ní Chiosáin & Padgett account, execute both L and H; that is, \( X_{L,H} \) should be a meaningful (albeit non-contrastive) surface consonant or vowel segment, as schematised below (48). Whereas the syllables inside a LD in Phuthi do have dual class membership (as both L and H), it is difficult to imagine a situation under which such a syllable could surface with both features realised: this appears to be incoherent under any linguistic construal.

\[
\text{(48) } \text{Incoherent strictly local tone domains}
\]

\[
* \left[ \sigma_H \sigma_H \ldots \left[ \sigma_{L,H} \ldots \sigma_{L,H} \right]_{LD} \ldots \right]_{HD}
\]

While the work of Ní Chiosáin & Padgett is important in establishing how vowel gestures may be strictly adjacent in harmony systems, and how vowel harmony is asymmetrical to so-called consonant harmony, the Phuthi data here demonstrates that such a narrow reading of locality is untenable in the tonal phonology more broadly. Strict locality with respect to tone cannot obtain for Phuthi, and must be rejected as theoretically coherent.

Chapter 8 will review theoretical issues arising from the Phuthi tone/voice data (§8.2.3), including locality (§8.3.5).

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38 To be fair to the researchers whose analysis I am rejecting here, I am not aware of any comparable tone data in any language other than Phuthi, where an \( \alpha \)Tone domain (here: L) is saliently nested inside a -\( \alpha \)Tone domain (here: H).
7.2.7. Single-Constraint Analysis Fails

Instead of unpacking \textsc{Clash-H/L} as the ‘derived’ underexpression of a depressed (penult or ultima) syllable through the constraint interaction \textsc{Express}\_L >> \textsc{Express}\_H, an alternative pursued elsewhere has been simply to use \textsc{Clash-H/L} to force the rejection of simultaneous H and L, but without indicating the direction of the resolution in favour of H or L. That is, a ban on simultaneous H and L is declared; the resolution must fall out of other, existing constraints. I note simply that this approach is untenable (even for the data already presented, let alone for the shift and block data to come); the uncontroversial rankings (49a-c) lead transitively to an ordering paradox (49d), for ultima parsing of a H/L syllable, e.g. \textit{si-yaa-dlā ‘we eat’}; similarly, the parse and express rankings in (50a-b) lead to the paradox in (50c), for depressed penults, e.g. \textit{si-ya-\text{n}uá ‘we harvest’}.

(49) \textbf{Clash and NonFin paradox rankings}

\begin{itemize}
  \item[a.] Max-H >> Clash-H/L \quad H cannot be deleted to prevent a H/L CLASH configuration
  \item[b.] NonFin >> Clash-H/L \quad a H can still parse on a depressed (L) ultima
  \item[c.] Max-H >> NonFin \quad \text{from Chapter 4 §4.1: ultima H always parses}
  \item[d.] NonFin >> Max-H >> Clash-H/L >> NonFin ??
\end{itemize}

(50) \textbf{Clash and Express\_H paradox rankings}

\begin{itemize}
  \item[a.] Clash-H/L >> Express\_H \quad \text{better to fail to express H if it coincides with L}
  \item[b.] NonFin >> Clash-H/L \quad \text{Clash cannot be resolved on the penult by extending a HD to the ultima}
  \item[c.] Express\_H >> NonFin \quad \text{an H is still expressable even when on the ultima}
  \item[d.] NonFin >> Clash-H/L >> Express\_H >> NonFin ??
\end{itemize}

These two paradoxes provide compelling evidence that the H/L clash in Phuthi is not resolvable with a single constraint pointing only to the structural conflict without also indicating the direction of resolution. Rather, the approach I have pursued here which crucially invokes an express ranking (L >> H) appears to be correct.
7.2.8. **Conclusion**

After considering the breathy voiced consonant subset of the full consonant inventory (§7.2.1), and the way in which depressed consonants and vowels are ‘bound’ together (§7.2.1.3), we saw the basic depression pattern in §7.2.2 (then decomposed into five related aspects of depression: 1a-1e): fundamentally, a syllable cannot simultaneously be both depressed—theorised as tonally low (L)—and high (H). This clashed (ungrounded) configuration (§7.2.3) must be resolved, in the direction of successful L expression (at the expense of H), except in the case of short (2-σ, 1-σ) stems (§7.2.5), which exceptionally allow phased realisation of L and H on a single syllable.

Importantly, this section demonstrates that strict locality is untenable as a general theoretical construct in phonology for harmony systems (§7.2.6), and further that a single-constraint ‘clash’ analysis of the H/L conflict is inadequate for explaining the range of surface tone/voice patterns (§7.2.7).

7.2.9. **Constraint Summary**

I summarise the tone/voice constraint set up to this point (51), and I sketch the tone/voice rankings in (52).

(51) **Constraint set (tone/voice), version 1: new rankings**

- Resolving Clash
  - a. Clash H/L >> Express_H(σ) (from 29) [replaced by 51d here]
  - b. *Masking (=Contrast_L) >> Express_L [replaced by 51d here]
  - c. BA-Lf (L), BA-Rt (L) (from 33)
  - d. Express_L >> Express_H (from 35)
  - e. Max-H, Max-L >> *Rise (from 45)
  - f. Express_H, Express_L >> *Rise (from 45)

(52) **Constraint rankings (tone/voice), version 1: dominance orderings**

```
*Masking (Contrast_L)
 | Express_L
 | Express_H    Max-H, Max-L
    | *Rise
```

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7. 3. Depression Anticipation: Extended L Domains

In §7.2, the depressor facts involved local antagonism between a depressor syllable (breathy) and H tone, resolved by failing to express the H on the surface. In this section, I present a range of data containing depressed syllables not triggered locally by consonant breathy voicing.

7. 3. 1. Depression Anticipation

In the data presented thus far, no examples contained non-depressor (modal) syllables inside a stem H domain but preceding the depressor syllable(s). Whenever pre-depressor stem H syllables do occur, they are realised on the surface as L, despite their membership of the HD, and even though they are not breathy voiced (that is, they do not intrinsically trigger depression themselves). This occurs on all stem syllables preceding the depressor site. In (53) the depressor site is \( \sigma_2 \); in (54), \( \sigma_3 \); in (55), \( \sigma_4 \); in (56), \( \sigma_5 \). I exemplify here with data from the infinitive, but the patterns hold equally of the present indicative long form, present indicative long form reduplicative, long perfective, and so on (all represented in Appendix A). Depressor syllables are [..]; non-depressor L syllables are not marked as [..], but simply have no H tone marking ['].

(53) \[ \text{stem } \sigma_2 = \text{depressor} \]

\[ \text{Toneless (low) stems} \]

a. \([kú-\text{lazl}i]\text{saana}\) to cause to follow each other

b. \([kú-\text{mahbet}é]\text{laana}\) to delay each other

c. \([kú-\text{hlagani}]\text{saana}\) to cause each other to meet

d. \([kú-\text{lugis}é]\text{:la}\) to prepare

\[ \text{High stems} \]

e. \([kú-\text{khabhe}]\text{laana}\) to visit each other

f. \([kú-\text{lagat}é]\text{:la}\) to wish for

g. \([kú-rúdji}\text{seela}\) to teach intensively for

h. \([kú-\text{fubhatsh}i]\text{siisa}\) to hold tightly in the fist

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There are very few lexical items with a depressor as deep into the stem as σ3, though (54c-d) is one. But the productive (though semantically awkward) extensive verb extension, -ag-, can be suffixed to almost any root, as in (54a-b, 55a-d), in order to introduce a depressor deeper in the stem (as noted and commented on in §7.2.2.1, footnote 15).

(54) stem σ3 = depressor
    Toneless (low) stems
    a. [kú-limagélá]niisa to help cultivate indiscriminately for each other
    b. [kú-hlabagélá]niisa to help stab indiscriminately for each other

    High stems
    c. [kú-bulugélá]niisa to cause to keep for each other
    d. [kú-butaganí]siisa to ask each other thoroughly and indiscriminately

(55) stem σ4 = depressor
    Toneless (low) stems
    a. [kú-patalagélá]niisa to help pay indiscriminately for each other
    b. [kú-libalagélá]niisa to cause to forget indiscriminately for each other

    High stems
    c. [kú-bulalagélá]niisa to cause to kill indiscriminately for each other
    d. [kú-sebetagélá]niisa to cause to work indiscriminately for each other

Usefully, a verb with a depressor in σ3 can be reduplicated (adding the meaning ‘now and then’), to produce a depressor in σ5. Reduplicated forms of (54) are given in (56), to confirm that the anticipation pattern is consistent independent of the depression site.
(56) \[ \sigma^5 = \text{depressor} \]
Toneless (low) stems
a. [kú-limalimagelá]niisa to help cultivate indiscriminately now and then for e.o.
b. [kú-hlabahlabagélá]niisa to help to stab indiscriminately now and then for e.o.

High stems
c. [kú-bulubulugélá]niisa to cause to keep for each other now and then
d. [kú-butabutaganí]siisa to ask e.o. thoroughly and indiscriminately now and then

Though it is theoretically possible to produce stems with depressed (breathy) syllables in any position, it becomes operationally very difficult beyond the depth of \( \sigma^5 \).

These syllables (pre-depressor, HD-internal, in the stem) which fail to express H are tonally depressed but not perceptibly breathy at all; yet they are intonationally as low as the truly breathy syllable in each stem. Thus, the low pitch of the breathy syllable is being anticipated at the prefix+stem boundary, indicated, as usual, by ‘-’ in (53-56). Depression Pattern 2 (57) formalises this observation.

(57) **Depression Pattern 2: pre-depressors are L**
Pre-depressor stem syllables inside a HD also fail to express H, and are tonally depressed, even though these syllables are not breathy.

### 7.3.2. Low Tone Realignment

Up to this point, intonational lowering on depressed syllables has been a by-product of being breathy. Now, for the first time, Phuthi displays evidence of L tone (lower than toneless) extended leftwards from a breathy depressor trigger, but not phonationally breathy. What appeared to be marginally more insightful in §7.2 is now indispensable: non-H-ness cannot be

---

39 The difficulty of providing items with a depressor consonant further into the stem than \( \sigma^5 \) is because Phuthi verb stems—as in most Bantu languages—are canonically two or three syllables long (only occasionally four syllables or longer). Anything longer is usually a reduplicate, as in (54).

40 There is a little variation here: the pitch of pre-depressor lowered syllables may drift down over one or two syllables before reaching the lowness of the truly breathy syllable.
merely (a) tonelessness, or (b) breathiness. The L tone has a fully active role to play, given the widescope realignment leftwards in the data above. Contrary to section §7.2 where a single constraint, Clash-H/L, might have been able to cope for the full range of clash effects revealed thus far (were it not for two constraint ranking paradoxes in (49-50)), in the present section there is no single constraint that could achieve the depressedness of the relevant pre-depressor stem syllables, without being very heavily specified, such as *Express_Hₜ (σ_HDₓ, > stem, _/ₜ), where the constraint algebra translates into ‘do not express a syllable as H if (i) it is in a H domain, and (ii) it is inside a stem domain, and (iii) it precedes a depressed (breathy) syllable’. Such a heavily specified constraint would obscure several significant generalisations.

Depression anticipation (Depression Pattern 2) can now be incorporated into the analysis with a widescope alignment constraint operative on L tones (58). WSA-Lf (L) targets the prosodic word (PWord) left edge. It seeks to realign L as far leftwards as possible, and to be blocked from doing so plausibly by Crisp(L) (59), which prevents a stem boundary from occurring in the middle of a LD. Just as CrispEdges (Itô, Mester & Padgett 1995, 1999) and CrispSTEM (from Chapter 4 §4.3.2.2) prevent a prosodic constituent from straddling two morphological domains with a morphological boundary anywhere inside the prosodic constituent, so too Crisp(L) forbids interrupting a L domain with a morphological stem edge.

(58) Widescope Alignment (Low) (WSA-Lf (L))
Align (L, Lf, PWord, Lf)

41 The Phuthi left-realignment of L constrasts nicely with the related Nguni language, Zimbabwean Ndebele (Rycroft 1983), where all HD syllables are expressed as H up to the depressor trigger; however, post-depressor syllables are Low, save the rightmost edge of the HD, which is H as expected, e.g. ūkúbálándešiša ‘to send after them’ (1983:94), ézi khwamányaneeni ‘in tiny bags’ vs. ésikhwámányaneeni, ‘in a tiny bag’ (1983:132). In other words, it appears that Zimbabwean Ndebele realigns a L domain rightwards towards the right word-edge, using the mirror image widescope constraint to Phuthi: WSA-Rr, e.g. [ūkúbálan{de}l]išisa, [ézi khwama]nyá]neeni vs. [ésikhwámányá]neeni. (The OP -ba- is lexically H, but the fusion properties of SP and OP HDs in Swati are distinct from Phuthi).

42 I specify stem edge, because we will see in §7.5.1 that a LD can minimally extend rightwards across a non-stem edge morpheme boundary, e.g. [gu-mu]-tfwáana ‘it is a child’, in order to fulfill minimality requirements.
(59) **CrispStem (Low)** (Crisp(L))

*A[...+...]*_{LowDomain}

A morphological stem boundary cannot occur within a Low Domain.

Crisp(L) applies to the long present indicative (as introduced above), repeated here with domain structure (60).

(60) **Long present indicative: effect of Crisp(L)**

a. [bá-yá-{limage}lániisa] they help cultivate indiscriminately for e.o

b. [bá-yá-{limalimage}lániisa] they help cultivate indiscriminately now and then for e.o.

Unlike CrispStem (Chapter 4 §4.3), which operates conjointly with AVOIDPROM at the antepenult-penult boundary to prevent implementation of HD-MIN (but where CrispStem is otherwise widely violated by WSA-Rt (H)), Crisp(L) is (generally) inviolable; it is ranked in (61a), preventing expansion leftwards beyond the stem Lf-edge. Lf-edge widescope of LD is indicated in (61b), clearly overriding basic left alignment of the L domain. At the Rt-edge, no widescope realignment of L is possible; hence the optimal narrowsscope of the L feature in (61c). Interestingly, the narrowsscope and widescope parameters of a LD are the opposite of a HD.

(61) **L domain rankings**

a. Crisp(L) >> WSA-Lf (L)

b. WSA-Lf (L) >> BA-Lf (L)

c. BA-Rt (L) >> WSA-Rt (L)

The left edge of a LD could realign directly with the left edge of the morphological stem, instead of with the left edge of the word, and then could be brought up short by the crisp effect. However, there is at least one paradigm (present potential, cf. Appendix A, paradigm Q) where the (fused) LD Lf edge does reach leftwards of the stem boundary. In addition, OP data from the present relative appears to require left-alignment of the LD to the OP left-edge (cf. Appendix A, paradigm H, footnotes 55, 56). Given these facts, if WSA-Lf (L) did not target the PWord left-
edge, an additional widescope constraint would have to be added to the inventory, to reach even further leftwards. I assume that word edge-alignment (58) is the least specified widescope target.43

As in §7.2, the successful parsing of L (versus H) is achieved by faithful domain alignment, but unfaithful H expression, that is by EXPRESS_L >> EXPRESS_H. Tableau 2 (62) displays the depression anticipation interactions (realignment of LD left-edge).

**Tableau 2: Depression anticipation**

`kúlimagelániisa` ‘to help cultivate indiscriminately for each other’

<table>
<thead>
<tr>
<th>/ ku- + -lim-ag-el-an-is-a /</th>
<th>BA-Rt (L)</th>
<th>Crisp(L)</th>
<th>WSA-Lf (L)</th>
<th>Express L</th>
<th>Express H (σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [kú+[limage]lániisa</td>
<td>*</td>
<td>*</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [kú+[limage]la]niisa</td>
<td>*</td>
<td>*</td>
<td>***!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [kú+[límage]lániisa</td>
<td>*</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [kú+líf{mage}lániisa</td>
<td>*/!</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [kú+límá{ge}lániisa</td>
<td>*/!</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [kú+{limage}lániisa</td>
<td>*/!</td>
<td>****</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) [kú+{limagela{ niisa</td>
<td>*/!</td>
<td>*</td>
<td>****</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- (a) fails EXPRESS_H several times, but all expression failure instances are ‘approved’ by EXPRESS_L; (b) fails by excessive violation of EXPRESS_H: no non-LD-internal H syllables can fail to express H; (c) fails to properly express the contents of LD as L; (d-e) fail to realign the Lf edge of a LD to its widest point where crispness is maintained; (f) fatally realigns the Lf-edge of a LD too far left, violating C\textsubscript{RISP}(L), even though it appears to better satisfy WSA-L\textsubscript{F}(L); (g) extends the LD rightwards where it should not, violating highly ranked BA-Rt(L).

43 There is a configuration not considered here: the non-realignment of a LD left-edge if that LD commences to the right of a HD, that is, on the penult or ultima in a word where the HD reaches only as far as the antepenult. This configuration is resolved in §7.4.3.3, where violation of *\textsc{Overlap} is rejected using a distinct instantiation of L/H clash, motivated as: *L-IN-H. Tableau 10 (124j-m \textit{vs. n-p}) demonstrates the interactions. That is, in words such as `[kú+límaa{ga}]` and `[kú+límá{gi}i]sa`, the LD cannot realign leftwards into the HD.
7.3.3. ODT vs. Autosegmental Representations

It has been shown in the previous section that Phuthi tolerates a L domain nested inside a H domain. While this can be insightfully represented in the LD and HD configurations in (62) above, it is even more notable that this nested tone domain configuration has no equivalent in autosegmental representation, if locality and sequentiality (or, NO_OVERLAP, in the form of the NO_CROSSING_CONSTRAINT) are to be maintained. That is, the Phuthi anticipation data could either be represented as (63a), where a single H sponsor is fissioned into two instantiations (sponsor H and discontinuous H), if locality is to be maintained, or as (63b), where the single H is linked to the two discontinuous portions, but locality is significantly violated. Neither representation is satisfactory, since a major tenet of phonological theory would need to be suspended in either case: in (63a), uniqueness (a single UR tone source no longer correlates to a single, unified surface tone feature); in (63b), locality (the single surface tone feature is non-locally linked).

(63) Autosegmental accounts of depression anticipation

a. \[ \text{kú+limagélánisa} \]

H \hspace{1cm} H

b. \[ \text{kú+limagélánisa} \]

H

(63) confirms that ODT has a wider expressive scope than autosegmental theory. ODT demonstrates that locality can be maintained if domain structure is separated out from domain expression. On the other hand, one may be concerned that ODT is too powerful; the range of possible tone representations achievable through nested domain structure may be wider than what is attested in any human language. As with all Optimality Theory architecture, and, by extension Optimal Domains Theory, the theory (or framework) is the substantive constraints: it remains a (partially) open question what phonological properties, units and parameters output candidates may reflect. Up to this point in the life of the framework, the separability of domain structure and expression is a critical strength of ODT, whereas the conflation of domain parameters and
surface realisation in autosegmental representations in (63) means that fundamental tone configurations in a language like Phuthi would be without adequate representation.

### 7.3.4. Conclusion

In this section we have seen very robust evidence (§7.3.1) for the necessary separation of phonational breathiness from tonal depression (both tonal behaviours interpreted as lowness): the entire syllable string is bounded at the left edge by a morphological boundary (stem left-edge), requiring L realignment leftwards (§7.3.2), and is bounded on the right by the (breathy) depression trigger syllable—anywhere up to, and including, the ‘head’ syllable (until now, ‘head’ = antepenult). Through the demonstrated necessary separation of domain parsing and domain expression of the L feature in Phuthi, ODT has been shown to be an architecture theoretically superior to conflated domain/expression characterisation that is necessary in a domain-less framework (such as autosegmental phonology). The Phuthi facts, quite simply, cannot be accounted for in a framework that does not make domains explicit, and does not allow for the separation of parsing and expression.

### 7.3.5. Constraint Summary

I summarise the new rankings (64), and the entire tone/voice constraint set up to this point (65), with the dominance relations visually sketched in (66).

1. **Constraint set (tone/voice), version 2: new rankings**
   - **Anticipating L**
     a. Crisp(L) >> WSA-Lf (L)  (from 61)
     b. WSA-Lf (L) >> BA-Lf (L)  (from 61)
     c. BA-Rt (L) >> WSA-Rt (L)   (from 61)

2. **Total constraint summary (tone/voice, partial): version 2**
   - **Resolving Clash**
     a. BA-Lf (L), BA-Rt (L)
     b. Express_L >> Express_H
     c. Max-H, Max-L >> Express_L >> Express_H >> *Rise
- **Anticipating L**
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)

(66) **Constraint rankings (tone/voice), version 2: dominance orderings**

<table>
<thead>
<tr>
<th><em>Masking (Contrast_L)</em></th>
<th>Crisp(L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Express_L</td>
<td>WSA-Lf (L)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Express_H</td>
<td>Max-H, Max-L</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>*Rise</td>
<td></td>
</tr>
</tbody>
</table>
7. 4. Depressor Shift and Block

Up to this point I have avoided considering any representations where the rightmost syllable in a HD (whose sponsor lies leftwards of the antepenult) is depressed, in other words, where a HD would normally extend, say, to the antepenult, but the antepenult itself is ineligible for expressing H, given its depressed state. Such a clash configuration can have two possible outcomes: (a) the HD extends one mora further to the right (depressor shift), e.g. *[bá-yá-yúl]ísa

*[bá-yá-yúl]ísa ‘they help open’; or (b) the H is parsed in situ on the penult, if the penult is also depressed (depressor block), e.g. *[bá-yá-yú]giísa *[bá-yá-yúgí]ísa ‘they cause to agree’.

In fact, the depressor shift/block phenomenon is not limited to antepenult/penult interactions: any rightmost syllable in a HD which syllable is also depressed will attempt to shift one mora further rightwards. Summarising the patterns that are detailed in the data sets that follow (71-85) ahead, Tableau 3 (67) plots possible HD right edges, and their shifted forms, and compares this to non-shifting data where the H ends at the same prosodic position (but where that position is not depressed). Rows (b) and (g) are nearly identical: only the phrase-final vs. phrase-medial property changes (the shift properties remain identical).

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44 The phrase-final form of the present indicative (62a) contains a heavy (long = bimoraic) penult, as expected. A depressed antepenult shifts its H onto the first of the two moras in the long penult (for a discussion of the representation of falling and rising penults as bimoraic, see Chapter 5 §5.3). Hence, I have phrased shift here in terms of moras (even though in all other (non-phrase-final-penult) environments, shift simply moves a tone into the following syllable).
The shift data (column 4) and non-shift data (column 6) from (67) is provided here (68) with full domain structure (to be demonstrated further in the data sets that follow).

---

The present negative, used here in examples (67b,e,g) will be examined in full only in §7.8.1. I have selected this grammatical tone paradigm to exemplify the shift pattern at this point, because the OP is unambiguously in its own $\sigma$ domain, as opposed to the present indicative where the OP fuses with the tone in the H stem; and in the toneless (Low) paradigm (exemplified here), the OP would fail to express H on itself, but would extend the HD to the antepenult (first syllable of the toneless/Low stem). As such, in the case of depressor shift, the H would shift onto an already H syllable, slightly obscuring the shift phenomenon. The antepenult (here, stem $\sigma_1$) in the present negative is unambiguously toneless since this is a $\sigma_2$ grammatical paradigm, and the OCP (*AE) prevents the short OP HD from even satisfying minimality by extending to the toneless first stem syllable. Because the OP fails to extend rightwards in the non-shift form, it surfaces as H -bá- to satisfy CONTRAST. If it surfaced as toneless, as we expect it to from lexical paradigms (Chapter 5 §5.4), then the OP H tone would be completely neutralised.

I have selected a 3-$\sigma$ toneless stem for the present negative data in (67b,g; 68b,g), and below in (69b,g, 70b,g) to avoid having to discuss at this point the grammatical L tone I argue in (cf. §7.8.1.2ff) is parsed on the penult of all non-depressor-bearing toneless/low stems. Cf. footnote 46.

---

Tableau 3: Depressor shift (vs. non-shift) HD right edges

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>rightmost HD $\sigma$ (depressed)</th>
<th>Shifted right edge</th>
<th>shift (&amp; depressor) example</th>
<th>gloss</th>
<th>non-shift non-depressor example</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>phrase-final</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) lexical: present indicative</td>
<td>antepenult</td>
<td>penult</td>
<td>kū-vuléla</td>
<td>to open</td>
<td>kū-líbaala</td>
<td>to remember</td>
</tr>
<tr>
<td>(b) other pre-antepenult $\sigma_x$: (= pre-stem), e.g. OP45</td>
<td>$\sigma_x$</td>
<td>$\sigma_{x+1}$</td>
<td>akā-gi-líbááli</td>
<td>s/he doesn’t forget me</td>
<td>akā-bá-libááli</td>
<td>s/he doesn’t forget them</td>
</tr>
<tr>
<td><strong>phrase-medial</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) lexical: present participial</td>
<td>antepenult</td>
<td>penult</td>
<td>kā-vulêla</td>
<td>him/her opening for...</td>
<td>kā-libala...</td>
<td>him/her forgetting...</td>
</tr>
<tr>
<td>(d) lexical: present indicative</td>
<td>penult</td>
<td>ultima</td>
<td>kū-vulá...</td>
<td>to open...</td>
<td>kū-líma...</td>
<td>to cultivate...</td>
</tr>
<tr>
<td>(e) grammatical, $\sigma_2$-to- penult: short perfective...</td>
<td>penult</td>
<td>ultima</td>
<td>akā-vulí...</td>
<td>s/he does not open...</td>
<td>akā-lími...</td>
<td>s/he doesn’t cultivate...</td>
</tr>
<tr>
<td>(f) grammatical, $\sigma_2$-to- ultima: imperative...</td>
<td>ultima</td>
<td>initial</td>
<td>ladža mákooti</td>
<td>fetch the bride!</td>
<td>khokhá mákooti</td>
<td>take out the bride!</td>
</tr>
<tr>
<td>(g) other pre-antepenult $\sigma_x$: (=pre-stem) e.g. OP</td>
<td>$\sigma_x$</td>
<td>$\sigma_{x+1}$</td>
<td>akā-gi-líbááli</td>
<td>s/he doesn’t forget me</td>
<td>akā-bá-libááli</td>
<td>s/he doesn’t forget them</td>
</tr>
</tbody>
</table>

---

45 The present negative, used here in examples (67b,e,g) will be examined in full only in §7.8.1. I have selected this grammatical tone paradigm to exemplify the shift pattern at this point, because the OP is unambiguously in its own $\sigma$ domain, as opposed to the present indicative where the OP fuses with the tone in the H stem; and in the toneless (Low) paradigm (exemplified here), the OP would fail to express H on itself, but would extend the HD to the antepenult (first syllable of the toneless/Low stem). As such, in the case of depressor shift, the H would shift onto an already H syllable, slightly obscuring the shift phenomenon. The antepenult (here, stem $\sigma_1$) in the present negative is unambiguously toneless since this is a $\sigma_2$ grammatical paradigm, and the OCP (*AE) prevents the short OP HD from even satisfying minimality by extending to the toneless first stem syllable. Because the OP fails to extend rightwards in the non-shift form, it surfaces as H -bá- to satisfy CONTRAST. If it surfaced as toneless, as we expect it to from lexical paradigms (Chapter 5 §5.4), then the OP H tone would be completely neutralised.

I have selected a 3-$\sigma$ toneless stem for the present negative data in (67b,g; 68b,g), and below in (69b,g, 70b,g) to avoid having to discuss at this point the grammatical L tone I argue in (cf. §7.8.1.2ff) is parsed on the penult of all non-depressor-bearing toneless/low stems. Cf. footnote 46.
Similarly, Tableau 4 (69) summarises the depressor block patterns, which contrary to expectations based on tone shift arising from depression reveal that a H in the rightmost HD position does not move rightwards, if it is trapped between two depressor syllables (that is, ‘on’ the first, and before the second). The block data, thus, looks identical to the non-shift (here: non-block) data from (67) above (repeated in 69).

46 In §7.8.1, it will be proposed that the penult of toneless/low stems in the present negative contains a grammatical L tone domain, crucially triggering downstep. This domain is not reflected in this data set (67b,g=68b,g). It will also be seen, from §7.8.1.6, that the grammatical L tone is not inserted on H stems, nor on toneless/low stems already containing a LD; hence such a L tone does not require reflection in the block data that follows here, either (69b,g=70b,g).
(69) **Tableau 4:** Depressor block (vs. non-depressor) HD right edges

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>rightmost HD σ (depressed, &amp; followed by depressed)</th>
<th>block (2 depressors) example</th>
<th>non-block (no depressors) example</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>phrase-final</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) lexical: present indicative</td>
<td>antepenult</td>
<td>kú-bhébbhi is a</td>
<td>to help carry on the back</td>
<td>kú-líbaala</td>
</tr>
<tr>
<td>(b) other pre-antepenult (= pre-stem) σ; e.g. OP</td>
<td>σ</td>
<td>aká-gí-vu’lééli</td>
<td>s/he doesn’t open for me</td>
<td>aká-bá-libááli</td>
</tr>
<tr>
<td>phrase-medial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) lexical: present participial</td>
<td>antepenult</td>
<td>ká-bhébbhi iisa</td>
<td>him/her helping carry on the back</td>
<td>ká-líbala...</td>
</tr>
<tr>
<td>(d) lexical: present indicative</td>
<td>penult</td>
<td>kú-bhébbha...</td>
<td>to carry on the back...</td>
<td>kú-líma...</td>
</tr>
<tr>
<td>(e) grammatical, σ2-to-penult: short perfective...</td>
<td>penult</td>
<td>aká-bhébbhi...</td>
<td>s/he does not carry on the back...</td>
<td>aká-lími...</td>
</tr>
<tr>
<td>(f) grammatical, σ2-to-ultima: imperative...</td>
<td>ultima</td>
<td>ladzág bhii li</td>
<td>fetch first!</td>
<td>khokáh makootí</td>
</tr>
<tr>
<td>(g) other pre-antepenult σ; e.g. OP</td>
<td>σ</td>
<td>aká-gí-vu’lééli</td>
<td>s/he doesn’t open for me...</td>
<td>aká-bá-libááli...</td>
</tr>
</tbody>
</table>

The block data (column 3) from (69) is provided here (70) with full domain structure (to be demonstrated further in the data sets that follow).

(70) **Domain structure for right edge block data**

a. [kú-{bhé}]{bhii}sa

b. a[ká]-{gí} {-vu}{lééli}

c. [ká-{bhé}]{bhii}sa...

d. [kú-{bhé}]{bhii}sa...

e. a[ká]-{bhé} {bhii}...

f. la{dzá} {bhii}li

---

47 The negative paradigm examples given here (69b,e,g) are only examined in detail in §7.8.1. See comments in preceding footnotes 45, 46.
I first consider the shift/block data in data sets illustrating all three shifts (antepenult to penult in §7.4.1.1, penult to ultima in §7.4.1.2, ultima to initial in §7.4.1.3), then all three blocking environments (antepenult blocked from penult in §7.4.2.1, penult blocked from ultima in §7.4.2.2, ultima blocked from initial in §7.4.2.3). I then present the analysis of both effects (§7.4.3), hingeing on a pivotal theoretical construct: the ‘derived’ prosodic position, \( \text{HEAD} \). All three prosodic shifts rightwards are accounted for in the same fashion, via reference to the ‘derived’ \( \text{HEAD} \). I note an alternative analysis by Cassimjee (1998), in §7.4.3.1, involving meta-domains, which I will show not to be a well motivated departure from the basic principles of ODT, which departure offers the architecture massive and possibly incoherent generating power.

7.4.1. **Depressor Shift Data**

The data following in (71-89) is arranged in order of depressor-shifted right-edge HD-target, as in Tableau 3 above (67). Depressors deeper into stems than \( \sigma_1 \) trigger depression anticipation (stem-edge-to-depressor LD), as expected. Cf. Appendix A for even fuller data sets.

7.4.1.1. Antepenult target: shift to penult

**Lexical paradigms**

We examine first words from lexical paradigms, where depressor consonants are found within the stem domain. In all of what follows, I indicate the penult length of all surface forms by spelling out both moras; in this way, falling tones (occurring only on the penult) are transparently a sequence of high and toneless moras: -\( \text{-µ\text{-}} \). Data is from the long present indicative (71-72), long perfective (73-74) and long infinitive (75-76).

**Long present indicative**

(71) \[ \begin{align*}
\text{depressor} &= \sigma_1 \\
\text{Toneless (low) stems (H prefix + toneless stem)}
\end{align*} \]

a. \( \text{bá-yá-yulíṣa} \) \( \text{[bá-yá-{v}ui]}\text{liṣa} \) they help open
b. bás-yá-dzakáala [bá-yá-{dza}ká]ala they become injured
c. bás-yá-bhacáama [bá-yá-{bha}cá]ama they lie down on their stomachs

- There are no H stems are relevant for the antepenult-penult shift where the depressor is in \( \sigma1 \) position, since in H stems, the minimality effect (HD-MIN) requires alignment onto the penult, obscuring the shift effect.

(72) depressor = \( \sigma2 \)
Toneless (low) stems (H prefix + toneless stem)

a. bás-yá-ladzeláana [bá-yá-{ladz}e]lana they follow each other
b. bás-yá-mabhetéela [bá-yá-{mabhe}té]ela they delay
c. bás-yá-lugisáana [bá-yá-{lug}i]sá]ana they help each other repair

High stems (toneless prefix + H stem)
d. si-ya-tshegeláana si-ya-{
shege}lá]ana we buy for each other
e. si-ya-khabheláana si-ya-{
khabhe}lá]ana we visit each other
f. si-ya-tshadzisísa si-ya-{
tshadz}í]sí]sa we love intensively

Long perfective

(73) depressor = \( \sigma1 \)
Toneless (low) stems (H prefix + toneless stem)

a. bás-vulíiye [bá-{yu}lí]iye they have opened
b. bás-dzakéele [bá-{dza}ké]ele they have become injured
c. bás-bhacéeme [bá-{bha}cé]eme they are\(^{48}\) lying down on their stomachs

(74) depressor = \( \sigma2 \)
Toneless (low) stems (H prefix + toneless stem)

a. bás-ladzeléene [bá-{ladze}lé]ene they have followed e.o.

\(^{48}\) Stative/inchoative verbs (cf. Chapter 2 §2.2.4.7 (118)) such as -báhacama convey meaning of a present state: present (non-perfective) ‘they lie down’ > perfective ‘they have come into a state of lying down’, that is, ‘they are lying down’. This perfective is also imbricated (§2.2.4.8).
b. bá-mabhetéele [bá-{mabhe}té]ele they have delayed

c. bá-lugísíye [bá-{lugi}sí]ye they have fixed

High stems

d. si-tshegeléene si-[(tshege)lé]ene we have bought for e.o.
e. si-khabheléle si-[(khabhe]lé]le we have visited each other

f. si-tshadzi síiye si-[(tshadzi)sí]ye we have caused to love

Long infinitive

(75) depressor = \(\sigma_1\)

Toneless (low) stems (H prefix + toneless stem)

a. kú-vülíisa [kú-{vu}lí]isa to help open

b. kú-dza-káala [kú-{dza}ká]ala to become injured

c. kú-bhacáama [kú-{bha}cá]ama to lie down on one’s stomach

(76) depressor = \(\sigma_2\)

Toneless (low) stems (H prefix + toneless stem)

a. kú-ladzeláana [kú-{ladze}lá]ana to follow each other

b. kú-mabhetéela [kú-{mabhe}té]ela to delay

c. kú-lugi sáana [kú-{lugi}sá]ana to help each other fix

High stems (H prefix + High stem)\(^{49}\)

d. kú-tshegeláana [kú-{tshege}lá]ana to buy for each other

e. kú-khabheláana [kú-{khabhe}lá]ana to visit one another

f. kú-tshadzi síisa [kú-{tshadzi}sí]isa to love intensely

\(^{49}\) The domained representations here reflect fusion of adjacent HDs: infinitive H \(\text{kú-}\) and lexical stem H fuse, as motivated in Chapter 5 §5.2.
Grammatical paradigms

Grammatical paradigms which target the antepenult display identical shift properties to the lexical stems above, whether there is a separate ultima H tone (present relative, present subjunctive) or not (present participial, present potential).

Data is provided from the present subjunctive (77), where contrastive stem tone is irrelevant—and therefore lexical sponsors are not indicated, as *MAX-H_{LEX} (Chapter 6 §6.2.2.1-§6.2.2.2) prohibits the stem lexical H from appearing.

Present subjunctive

(77)  
\text{depressor} = \sigma_1 \\
\text{Toneless (low) stems (H prefix + de-toned stem)}

a. bá-ụụlisé  
   \[bá-{yụ}lijisé\]  
   they should help open

b. bá-ḥačáamé  
   \[á-{bḥa}cá[a]mē\]  
   they should lie on their stomachs

\text{High stems (H prefix + de-toned stem)}

c. bá-ụnísé  
   \[bá-{yụ}ni[jisé\]  
   they should help harvest

d. bá-genísé  
   \[bá-{ge}ni[jisé\]  
   they should help enter

7. 4. 1. 2. Penult target: shift to ultima

Lexical paradigm

Short present indicative

Data comes from two lexical paradigms, the short present indicative (78) and short infinitive (79).

(78)  
\text{depressor} = \sigma_1 \\
\text{Toneless (low) stems: 1 H prefix sponsor}

a. bá-ụulá...  
   \[bá-{yụ}lá...\]  
   they open...

b. bá-getá...  
   \[bá-{ge}tá...\]  
   they add...
High stems: 1 H stem sponsor

c. si-vuná... si-[vuná]... we harvest...
d. si-gená... si-[gená]... we enter...

A depressor in σ2—that is, stem-final—position would not be relevant for two-syllable stems, since minimality does not override the lexical H sponsor target for short penult stems; a σ2 depressor on the ultima would have no effect on HD parsing since it falls beyond the right edge of the HD.

Short infinitive

(79) depressor = σ1

Toneless (low) stems: 1 H prefix sponsor

a. kú-vulá... [kú-{vulá}... to open...
b. kú-getá... [kú-{getá}... to add...

High stems: 2 H sponsors (prefix + stem)

c. kú-vuná... [kú-{vuná}... to harvest...
d. kú-gená... [kú-{gená}... to enter...

Grammatical paradigms

Data is provided from the short perfective alone (80-81), although it is paralleled by depressor shift in the present negative (§7.8.1) and other penult paradigms (Chapter 6 §6.3.1 for penult paradigm properties, of the short perfective in particular; cf. Appendix A, paradigm J).
**σ2-to-penult: short perfective**

(80)  
**depressor = σ1**  
**Toneless (low) stems**  

Note: no examples were found of a 1-σ toneless stem with initial depressor consonant.  
**High stems: 1 H stem sponsor**

a. si-dliyé...  si-[(dli)yé]...  we have eaten...

b. si-viylé...  si-[(vi]yé]...  we have heard...

(81)  
**depressor = σ2**  
**Toneless (low) stems**

a. si-ladziyé...  si-{la[dzi]yé}...  we have fetched...

b. si-mabhîyé...  si-{ma[bhi]yé}...  we are holding...

**High stems: 1 H stem sponsor**

c. si-tshadziyé...  si-{[tshadzi]yé}...  we have loved...

d. si-khabhiyé...  si-{[khabhi]yé}...  we have gone...

7. 4. 1. 3. Ultima target: shift to initial of next word

A H tone which targets the depressed ultima of a PWord shifts onto the initial syllable of the following word. Besides the few instances of lexical H sponsored on the ultima (82) or extended to the ultima to satisfy minimality (HD-MIN) (83), it is only certain grammatical paradigms that routinely target the ultima (84-87).

---

50 Even though this is a σ2-to-penult paradigm, the reader will recall from Chapter 6 §6.3.1 that the short bisyllabic stem (monosyllabic root) does bear the grammatical H tone on its single available TBU (the ultima is unavailable); I have argued in §6.3.1.4 that the tone which surfaces is $H_{\text{GRAM}}$, not $H_{\text{LEX}}$. Thus, the examples here do support depressor shift.
Lexical paradigms

Present indicative

(82)  depressor = σ1

Toneless (low) stems

Note: no examples were found of a 1-σ stem with initial depressor consonant.

High stems: 1 H stem sponsor

a. si-dla hláang  si-[{dla} hlá]ang  we eat nearby
b. si-ya ká’kgúulú  si-[{ya} ká][kgúulú]  we hear a lot

(83)  depressor = σ2

High stems: 1 H stem sponsor

a. si-khabha hláang  si-[{khabha} hlá]ang  we walk nearby
b. si-tshadza ká’kgúulú  si-[{tshadza} ká][kgúulú]  we love a lot

Grammatical paradigms

Data is provided from the imperative (84-86) and the perfective negative (87-89); the other ultima-targeting paradigms mimic these patterns—remote past (cf. Appendix A, paradigm L); subjunctive with OP (Appendix A, paradigm I). The LD left-edge aligns vacuously with the left edge of the stem edge; the first stem syllable does not support a H in toneless stems.

σ2-to-ultima: imperative

(84)  depressor = σ1

Toneless (low) stems

Note: no examples were found of a 1-σ stem with initial depressor consonant.

High stems

a. idla hláang  [{idla} hlá]ang  eat nearby!
b. iva ká’kgúulú  [{iva} ká][kgúulú]  hear a lot!

51 The adverb hlaang is bisyllabic (both syllables toneless); <ng> is syllabic [ŋ].

546
depressor = $\sigma_2$

Toneless (low) stems

a. ladža mákootí  {la[dža] má[koo[tí]} fetch the bride!

b. mabha ká’kgúulú  {ma[bha] ká[kgúulú]} hold tightly!

High stems

c. tshadža mákootí  [{tshadža} má[koo[tí]} love the bride!

d. khabha ká’kgúulú  [{khabha} ká[kgúulú]} walk a lot!

depressor = $\sigma_3$

Toneless (low) stems

a. limaga ká’kgúulú  {li[maga] ká[kgúulú]} cultivate indiscriminately a lot!

b. basaga ká’kgúulú  {ba[saga] ká[kgúulú]} light fires indiscriminately a lot!

High stems

c. butaga ká’kgúulú  [{butaga} ká[kgúulú]} ask indiscriminately a lot!

d. buluga ká’kgúulú  [{buluga} ká[kgúulú]} keep a lot!

$\sigma_2$-to-ultima: perfective negative

depressor = $\sigma_1$ (1-$\sigma$ stems)

Toneless (low) stems

Note: no examples were found of a 1-$\sigma$ stem with initial depressor consonant.

High stems

a. asf-ta-dlí ká’kgúulú  a[sf]-ta-{dlí} ká[kgúulú]} we have not eaten a lot

b. asf-ta-vi ká’kgúulú  a[sf]-ta-{vi} ká[kgúulú]} we have not heard a lot
(88)  depressor = σ\(2\) (2-σ stems)
Toneless (low) stems

a. así-ta-ladži ká’kgúulú   a[sí]-ta-{la[dži] ká][kgúulú]  we have not fetched a lot\(^{52}\)
b. así-ta-mabhį ká’kgúulú   a[sí]-ta-{ma[bhi] ká][kgúulú]  we are not holding a lot

High stems

c. así-ta-tshadži ká’kgúulú   a[sí]-ta-{tshadzi ká][kgúulú]  we have not loved a lot

d. así-ta-khabhi ká’kgúulú   a[sí]-ta-{kha{bhi] ká][kgúulú]  we have not walked a lot

(89)  depressor = σ\(3\) (3-σ stems)
Toneless (low) stems

a. así-ta-limagį ká’kgúulú   a[sí]-ta-{li[magį] ká][kgúulú]  we have not cultivated indiscriminately a lot

b. así-ta-basagį ká’kgúulú   a[sí]-ta-{ba[sagį] ká][kgúulú]  we have not indiscriminately lit fires a lot

H stems

c. así-ta-bulugį ká’kgúulú   a[sí]-ta-{bulugį ká][kgúulú]  we have not kept a lot

d. así-ta-butagį ká’kgúulú   a[sí]-ta-{butagį ká][kgúulú]  we have not asked indiscriminately a lot

The preceding data sets (71-89) make it clear that a third depression pattern can be stated as follows (90). Analysis follows in §7.4.3 below.

(90)  **Depression Pattern 3: depressor shift**
If the rightmost syllable in what would be the regular HD is depressed, then the HD is extended rightwards to include the following mora.

---
\(^{52}\) The reader is reminded that -ta- fails to become H even where it should (it should, because the following syllable is not H, thus avoiding any OCP (*AE) blocking effect). That is, WSA-Rₜ (H) is violated *more* than it should be, because the SP-ta boundary is uncrossable, perhaps as an instantiation of CrispEDGE; this issue was raised in Chapter 6 §6.3.3.2.
7. 4. 2. **Depressor Blocking: Anti-Shift**

The data in (91) to (107) exemplifies depressor blocking, illustrating the patterns already laid out in Tableau 4 (69). Low domains surround the depressor syllables, and the widescope extended LDs. The examples make it clear how, in these cases, the de-clashing of the depressed rightmost HD syllable cannot be achieved by expanding a HD one mora (or even one whole syllable) rightwards, since the post-rightmost syllable is also depressed.

The lexical paradigm data is drawn from the long present indicative (91-92), long present indicative (93-94), long perfective (95-96).

7. 4. 2. 1. Antepenult target: no shift to penult

**Lexical paradigms**

**Long present indicative**

(91) depressors = σI & σ2

Toneless (low) stems: 1 H prefix sponsor

a. bá-yá-vúgiis a [bá-yá-{vú}]{gi}s a they cause to agree

b. bá-yá-bhébbhiis a [bá-yá-{bé}]{bhi}is a they help carry on the back

c. bá-yá-gúdzíj is a [bá-yá-{gú}]{dzi}is a they help shear

- no relevant H stems.

(92) depressors = σ2 & σ3

Toneless (low) stems: 1 H prefix sponsor

a. bá-yá-ladzágiis a [bá-yá-{ladzá}]{gi}s a they help fetch indiscriminately

b. bá-yá-mabhágíi s a [bá-yá-{mabhá}]{gi}is a they help hold indiscriminately

---

53 H stems are irrelevant here, because the minimality effect (HD-Mn) extends a H off σ1 onto σ2, and therefore onto the penult, e.g. *si-ya-гадзиса* = *si-ya-{gа}дзиса*; the minimality effect takes precedence over the depressor blocking effect.

54 The reader is reminded that -аг- is the extensive suffix, glossed as ‘indiscriminately’; cf. comments made in §7.2.2.1 (footnote 15).
c. bá-yá-yadzágiisa [bá-yá-{yadzá}][gii]sa they help extend indiscriminately

High stems: 1 H stem sponsor

d. si-ya-tshegágiisa si-ya-[(tshegá)]{gii}sa we cause to buy indiscriminately

e. si-ya-tfoqágiisa si-ya-[(tfoqá)]{gii}sa we cause to insult indiscriminately

f. si-ya-qedzágiisa si-ya-[(qedzá)]{gii}sa we cause to finish indiscriminately

Long perfective

(93) depressors = σ1 & σ2

Toneless (low) stems: 1 H-sponsor

a. bá-vúgiyiye [bá-{vú}][gii]ye they have agreed

b. bá-bhébbiysiye [bá-{bhé}][bhii]ye they have carried on the back

c. bá-gúdziyiye [bá-{gú}][dz]i]ye they have sheared

(94) depressors = σ2 & σ3

Toneless (low) stems: 1 H prefix sponsor

a. bá-ladzágiyiye [bá-{ladzá}][gii]ye they have fetched indiscriminately

b. bá-mabhágiyiye [bá-{mabhá}][gii]ye they are holding indiscriminately

c. bá-yadzágiyiye [bá-{yadzá}][gii]ye they have extended indiscriminately

55 -mabha is another stative/inchoative stem; -mabh-ag-iiye glosses as ‘(have come into the state of) holding indiscriminately’. Cf. comments about statives in footnote 48.
High stems: 1 H stem sponsor

d. si-tshégágiyi ye
   si-[si-tshégá]{gii}ye

we have bought
indiscriminately

e. si-tfogágiyi ye
   si-[si-tfogá]{gii}ye

we have insulted
indiscriminately

f. si-qedzágiyi ye
   si-[si-qedzá]{gii}ye

we have finished
indiscriminately

Long infinitive

(95)  depressors = σ1 & σ2

Toneless (low) stems: 1 H prefix sponsor

a. kú-vúgiisa
   [kú-vú]{gii}sa

to cause to agree

b. kú-bhébhiisa
   [kú-bhé]{bhii}sa

to help carry on the back

c. kú-gúdzi ira
   [kú-gú]{dzii}ra

to help shear

(96)  depressors = σ2 & σ3

Toneless (low) stems: 1 H prefix sponsor

a. kú-ladzágiisa
   [kú-ladzá]{gii}sa

to help fetch
indiscriminately

b. kú-mabhágiisa
   [kú-mabhá]{gii}sa

to help hold
indiscriminately

c. kú-yadzágiisa
   [kú-yadzá]{gii}sa

to help extend
indiscriminately

High stems: 2 H sponsors (prefix + stem)

d. kú-tshégágiisa
   kú-[kú-tshégá]{gii}sa

to cause to buy
indiscriminately

e. kú-tfogágiisa
   kú-[kú-tfogá]{gii}sa

to cause to insult
indiscriminately

f. kú-qedzágiisa
   kú-[kú-qedzá]{gii}sa

to cause to finish
indiscriminately
Grammatical paradigms

Grammatical paradigms which target the antepenult display identical shift properties to the lexical stems above, whether there is a separate ultima H tone (present relative, present subjunctive) or not (present participial, present potential).

Data is provided from the present subjunctive (97). Stem tone is irrelevant; therefore, lexical sponsors are not indicated, since *Max-H_lex π (Chapter 6 §6.2.2.1-§6.2.2.2) prohibits the stem lexical H from appearing in this paradigm.

Present subjunctive

(97) depressors = σ1 & σ2

Toneless (low) stems (H prefix + ‘de-toned’ stem)

a. bá-vúgiisé  [bá-{vú}][gíi][sé]  they should cause to agree

b. bá-bhébhiisé  [bá-{bhé}][bhíi][sé]  they should help carry on the back

c. bá-gúdzi já sé  [bá-{gú}][dzi já][sé]  they should help shear

High stems (H prefix + de-toned stem)

d. bá-gádzi i sé  [bá-{gá}][dzi i][sé]  they should help stamp

e. bá-gádzeelé  [bá-{gá}][dzeelé]  they should stamp for

7. 4. 2. 2. Penult target: no shift to ultima

A H tone which targets the penult fails to shift to a depressed ultima. All data in this section (lexical and grammatical) is in the ‘short’ form, that is, phrase-medial. If there were phrase-final forms which target the penult, there would never be evidence of shift or block, because phrase-final forms do not tolerate shift off the penult into the ultima; ‘block’ (in fact, simply, non-shift) is the default, in that case. But short (phrase-medial) forms typically target the penult, and do allow shift to the word ultima. Hence, the non-shift data below actively indicates depressor block at work.
Lexical paradigms

Short present indicative

Data comes from two lexical paradigms, the short present indicative (98) and the short infinitive (99).

(98)  depressors = $\sigma_1$ & $\sigma_2$

Toneless (low) stems (H prefix + toneless stem)

a. bá-vúga... [bá-{vú}]{ga}... they agree...

b. bá-bhébha... [bá-{bhé}]{bha}... they carry on the back...

c. bá-gúdza... [bá-{gú}]{dza}... they shear...

High stems (toneless prefix + H stem)$^{56}$

d. si-gúdza... si-[{gá}]{dza}... we stamp...

A depressor in $\sigma_2$—that is, stem-final—position would not be relevant for two-syllable stems, since minimality does not override the lexical H sponsor target for short penult stems; a $\sigma_2$ depressor on the ultima would have no effect on HD parsing since it falls beyond the right edge of the HD.

Short infinitive

(99)  depressors = $\sigma_1$ & $\sigma_2$

Toneless (low) stems (H prefix + toneless stem)

a. kú-vúga... [kú-{vú}]{ga}... to agree...

b. kú-bhébha... [kú-{bhé}]{bha}... to carry on the back...

c. kú-gúdza... [kú-{gú}]{dza}... to shear

$^{56}$ In my Phuthi lexical corpus (cf. Appendix D), I have only this one example of a H tone 2-$\sigma$ verb stem with depressors in both first and second syllables.
High stems (H prefix + H stem)

d. kú-gáda...  kú-{gá}{dza}... to stamp...

Grammatical paradigms

No data can be provided from the short perfective since it always ends with the perfective suffix -iye which cannot be depressed; this ensures that shift from the penult (= right-edge target for short perfective grammatical H domain) to the ultima -ye can never be prevented (blocked); thus, block cannot be demonstrated.

But the present negative (see also §7.8.1), in (100-101)—and other penult paradigms such as the present inclusive (cf. Appendix A, paradigm V)—can display block effects. The present negative is a σ2-to-penult paradigm; in its short (phrase-medial) form, shift onto the ultima would be expected when all else is equal, but is indeed not found when the environment for depression block is correct (that is, depression on both penult and ultima).

σ2-to-ultima: short present negative

(100) depressors = σ1 & σ2

Toneless stems: H\textsubscript{gram} on σ1 (=penult)

a. aká-vúgi... a[ká]-[{vú}]{gi}... s/he doesn’t agree...

b. aká-bhébhi... a[ká]-[{bhé}]{bhi}... s/he doesn’t carry on the back...

c. aká-gúdzi... a[ká]-[{gú}]{dzi}... s/he doesn’t shear...

H stems: H\textsubscript{gram} on σ1 (= penult)

d. aká-gádzi... a[ká]-[{gá}]{dzi}... s/he doesn’t stamp...

(101) depressors = σ2 & σ3

Toneless stems: H\textsubscript{gram} on σ2 (= penult)

a. aká-ladzági... a[ká]-{la[dzá]}{gi}... s/he doesn’t fetch indiscriminately...
b. aká-mbhági... a[ká]-{ma[bhá]}{gi}... s/he doesn’t hold indiscriminately...

c. aká-yadzági... a[ká]-{ya[dzá]}{gi}... s/he doesn’t extend indiscriminately...

H stems: $H_{\text{lex}}$ on $\sigma_1$; $H_{\text{gram}}$ on $\sigma_2$ (= penult)

d. aká-tshegági... a[ká]-{tshe[ɡá]}{gi}... she doesn’t buy indiscriminately...

e. aká-tfogági si... a[ká]-{tfogá}{gi}... s/he doesn’t insult indiscriminately...

f. aká-qedzági si... a[ká]-{qedzá}{gi}... s/he doesn’t finish indiscriminately...

7. 4. 2. 3. Ultima target: no shift to initial

A H tone which targets the depressed ultima of a PWord fails to shift onto the initial syllable of the following word, when that following initial syllable is depressed too. Besides the few instances of lexical H which is sponsored on the ultima (102) or extends to the ultima to satisfy minimality (HD-MIN) (103), only a small number of grammatical paradigms target the ultima as a rule: the imperative (104-106), and the short perfective negative (107-109).

Lexical paradigms

Present indicative

(102) depressors = $\sigma_1$, depressed initial syllable

High stems

a. si-dlá bhi ili si-[[dlá]] {bhi i}li we eat first

b. si-vá bhi ili si-[[vá]} {bhi i}li we hear first

(103) depressors = $\sigma_2$, depressed initial syllable

High stems

a. si-khabá bhi ili si-[[khabá} {bhi i}li we walk first

b. si-tshadzá bhi ili si-[[tshadzá} {bhi i}li we love first
Grammatical paradigms

Data is provided here from the (short) imperative (104-106), and the (short) perfective negative (107-109); it will be seen later that the other ultima-targeting paradigms—remote past (§7.6.2), subjunctive with OP (cf. Appendix A, paradigm I)—mimic the patterns in this data.

The LD in the data that follows appears to left-align vacuously with the left edge of the imperative stem (the first stem syllable does not support a H in any of the stems, and the intonation is no higher on that stem $\sigma$-1 than on $\sigma$-2).

$\sigma^{2}$-to-ultima: imperative

(104) depressors = $\sigma^{1}$, depressed initial syllable
Toneless (low) stems

Note: no examples were found of a 1-$\sigma$ stem with initial depressor consonant.

High stems

a. idlá bhi ili
   [{idlá}] {bhi ili} eat first!

b. ivá bhi ili
   [{ivá}] {bhi ili} hear first!

(105) depressors = $\sigma^{2}$, depressed initial syllable
Toneless (low) stems

a. ladzá bhi ili
   {la[dzá]} {bhi ili} fetch first!

b. mabhá bhi ili
   {ma[bhá]} {bhi ili} hold first!

High stems

c. tshadzá bhi ili
   [{tshadzá}] {bhi ili} love first!

d. khabhá bhi ili
   [{khabhá}] {bhi ili} walk first!

(106) depressors = $\sigma^{3}$, depressed initial syllable
Toneless (low) stems

a. limagá bhi ili
   {li[magá]} {bhi ili} cultivate indiscriminately first!

b. basagá bhi ili
   {ba[sagá]} {bhi ili} light fires indiscriminately first!
High stems

c. butagá bhi ili  \[\{\{\text{butagá}\}\}\{\{\text{bhi}\}li\}\] ask indiscriminately first!
d. bulugá bhi ili  \[\{\{\text{bulugá}\}\}\{\{\text{bhi}\}li\}\] keep first!

**σ2-to-ultima: perfective negative**

(107) depressors = σ1 (1-σ stems), depressed initial syllable

Toneless (low) stems

Note: no examples were found of a 1-σ stem with initial depressor consonant.

High stems

a. asf-ta-dlí bhi ili  \[a[\{s\}\{-\{d\}\}]{\{\{\text{bhi}\}\}li}\]\] we have not eaten first
b. asf-ta-ví bhi ili  \[a[\{s\}\{-\{v\}\}]{\{\{\text{bhi}\}\}li}\]\] we have not heard first

(108) depressors = σ2 (2-σ stems), depressed initial syllable

Toneless (low) stems

a. asf-ta-ladží bhi ili  \[a[\{s\}\{-\{l\}\}]{\{\{\text{bhi}\}\}li}\]\] we have not fetched first
b. asf-ta-mabhí bhi ili  \[a[\{s\}\{-\{m\}\}]{\{\{\text{bhi}\}\}li}\]\] we are not holding first

High stems

c. asf-ta-tshadží bhi ili  \[a[\{s\}\{-\{t\}\}]{\{\{\text{bhi}\}\}li}\]\] we have not loved first
d. asf-ta-khabhí bhi ili  \[a[\{s\}\{-\{k\}\}]{\{\{\text{bhi}\}\}li}\]\] we have not walked first

(109) depressor = σ3 (3-σ stems) & depressed initial syllable

Toneless (low) stems

a. asf-ta-limagí bhi ili  \[a[\{s\}\{-\{l\}\}]{\{\{\text{magí}\}\}li}\]\] we have not cultivated indiscriminately first

---

These examples reflect the somewhat surprising property of apparently violating HD-MIN without reason: the first HD is not minimally extended rightwards onto the toneless prefix -\textit{ta}- (ct. the expected non-extension minimally with the H stems that follow immediately in (108c,d), where the first stem syllable is lexically H, and therefore, by the OCP, where we do not expect -\textit{ta}- to become H). The apparent opacity of the -\textit{ta}- prefix boundary has been analysed in Chapter 6 §6.3.3.2 as falling out of paradigmatised CRISPEDGE requirements.
b. asį-ta-basagi bhi li  a[si]-ta-{ba[sagí]} ] {bhi i}li  \\
we have not indiscriminately 
H stems

c. asį-ta-bulugí bhi li  a[si]-ta-{[bulugí]} ] {bhi i}li  \\
we have not kept first

d. asį-ta-butagí bhi li  a[si]-ta-{[butagí]} ] {bhi i}li  \\
we have not indiscriminately 
asked first

In all Nguni languages where depressor shift is active, depressor blocking is found too. 
We can summarise the behaviour of blocking as the overriding of the otherwise predicted tone 
shift, as in (110).

(110) **Depression Pattern 4: depressor block**
Depressor shift does not take place from a depressed syllable into an immediately 
following depressed syllable.

**7. 4. 3. Depression Analyses: Shift and Block**

We have seen the full range of depressor shift and block phenomena illustrated and 
described in §7.4.1 and §7.4.2. I turn now to an analysis of these patterns.

**7. 4. 3. 1. Derivationality**

The shift and block patterns are considerably problematic for declarative architectures 
such as OT or ODT, because they appear at first to entail unavoidable derivationality, something 
which is fundamentally alien to both non-derivational frameworks. The apparent derivationality 
arises from a casting of the shift/block phenomenon as follows: ‘only if a particular 
configuration (in this case, the depressed right edge of a HD) arises, then fix it with this 
particular response (extension further rightwards)’. In other words the input to depressor shift is 
the output of another set of constraints, namely the constraints that build the right edge of a H 
domain. This sequence of steps seems to require more than just the two levels (deep and surface) 
that an ODT grammar makes available (cf. Chapter 3 §3.2.2.1). If this is really the case, then the
Phuthi data—and other comparable Nguni data—poses a serious challenge\(^{58}\) to an OT-type framework.

Depressor shift involves two crucial parameters (111).

(111) **Phuthi depressor shift parameters**
   
   a. source syllable from which tone shifts;
   
   b. direction of shift.

Firstly, as we have seen repeatedly from the data in the previous sections, the syllable from which depressor shift occurs is the rightmost in a HD: typically, the antepenult, penult or ultima (or depressed H *prefix*, where there is a second H to the right). (112a) illustrates (in italics) the derived rightmost syllable (here: antepenult), which is in a clash configuration with depression. Notably, the leftmost syllable in the HD—the sponsor (here, the 3rd person plural prefix *ba-*)—is of no relevance. Shift/block makes no reference to this H-sponsor.

The shift trigger syllable is thus a position which cannot be specified without reference to the (derived) right edge of the normal HD, that is, where the HD *would* end if there were no depression in this rightmost syllable.

Secondly, the direction of resolution is crucial: depressor shift must *expand* (and not shrink) the HD (112b). As in the case of HD-MIN (minimality), depressor shift minimally expands a HD, in this example onto the penult, violating one mora of AVOIDPROM (unlike HD-MIN, which consumes both penult moras). In its desire for an extra tone-bearing unit, depressor shift can even violate NONFIN (extending to the ultima), or the PWord boundary (extending to the initial syllable of the following word), if the word bearing the depressed penult or ultima (in these cases) is phrase-medial. That is, shift to the *right* (112c) is the only option (domain expansion), never to the left (domain shrinking), even though that would also seem to resolve the CLASH-H/L configuration (112d).

---

\(^{58}\) This challenge is so serious that Cassimjee (1998:51-87) concludes that depressor shift/block in Xhosa is not explicable without reference to a processual aspect, where two levels of domain are built off a single sponsor; her approach (to be rejected in the present work) is examined in §7.4.3.4.
(12) **Shift parameters:** ‘they help open’

a. (*) [bá-yá-ucción]liisa rightmost syllable in ‘normal’ HD identified

b. bá-yá-{vucción}liisa H/L clash resolved: ‘normal’ rightmost syllable is ‘source’ of shift

c. [bá-yá-ucción]liisa final scope of HD is the conflation of (a) and (b)

d. (*) [bá-yá-ucción]liisa H/L clash cannot be resolved by shrinking a HD.

However, the constraint set as I have been arguing for it has no means to force a HD to expand, rather than shrink. Tableau 5, using the extant constraint set, shows how the shrunk candidate (113a) is wrongly predicted to be optimal, instead of the expanded (113c) which violates one mora of the penult. The wrong prediction for antepenult-to-penult in (113) extends to the other right-edge prosodic positions too; in every case, the shrunk candidate should be optimal, yet is not.

(13) **Tableau 5: Wrongly predicted shrunk HD**

- we are counting moras (not syllables) in evaluating violations of WSA-Rt

* báyáucciónliisa ‘they help open’

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -ucción-is-a /</th>
<th>Express_L</th>
<th>Express_H</th>
<th>AvoidProm</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá-yá-ucción]liisa</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>(b) [bá-yá-ucción]liisa</td>
<td>!</td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(c) [bá-yá-ucción]liisa</td>
<td>!</td>
<td></td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>(d) [bá-yá-ucción]liisa</td>
<td>!</td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

Depressor block appears equally reliant on derivation, and also on hypothetical shift: it requires reference to the shift that would have happened, but now must not, given the location of a second depressor in the syllable successive to the would-be shift site.

Something more highly ranked than Express_L or Express_H must force the expansion (in the case of shift), and must force the failure to expand (in the case of depressor block). In the following section I propose a non-derivational account for shift, and for block.
7. 4. 3. 2. Heads and edges: no derivations for depressor shift

The shift analysis I propose contains three parts: (a) a non-derivational constraint conjunction to locate the rightmost (head) position for any HD; (b) a stipulation that the head position be incorporated into the H domain which the head is part of; (c) a requirement that the right edge of every HD be expressed (even if misaligned).

First, I propose to encode ‘rightmost syllable in non-depressor-bearing HD’, using a subset of the constraint set, which derives a prosodic position I call ‘head’ (114).

(114) **Head-HD**: (Head)

\[
\text{Head} = (*AE >> \text{NonFin}(\pi) >> \text{HD-Min} >> \text{AvoidProm}(\pi) >> \text{WSA-Rt} >> \text{BA-Rt})
\]

The (right edge of the) Head of domain X is the position selected by the interaction of these six constraints, subject to paradigm \(\pi\)-specific ranking of a right-edge subset.

For any H tone—say, \(H\)—the rightmost position of the well-formed HD that parses \(H\) is defined by the subset of domain-edge alignment constraints in (114), that is: the rightmost position is the one which is most widely right-aligned (WSA-R\(T\)), but not violating the penult (\(\text{AVOIDPROM}\)), or—even worse!—the ultima (\(\text{NONFIN}\)), and which is minimally two syllables in length (\(\text{HD-MIN}\)), but where that minimality does not entail a configuration with adjacent HD edges (*AE), nor entails extending onto the ultima. The instantiations of each HD\(x\) constraint that aligns the parsed feature \(H_x\) together form a set of constraints that ‘derive’ the Head position for HD\(x\), but in a non-derivationally ranked way.

The subscript \(\pi\) reflects that some paradigms rerank \(\text{NONFIN}, \text{AVOIDPROM}, \text{and WSA-Rt}\), so that the right edge (and, therefore, head) becomes the penult, as in Chapter 4 §4.5 for phrase-medial lexical tone and in Chapter 6 §6.3.1, or even the ultima, as in Chapter 6 §6.3.2. The Head\(x\) constraint rankings in (114) are always identical to the rankings that exist for the morphological paradigm \(\pi\) containing the HD in which the Head finds itself.

The range of possible heads arising from sponsors in pre-antepenult, antepenult, penult and ultima positions is given for (phrase-final, lexical tone paradigms) in Tableau 6 (115), with one or two non-optimal (incorrect) assessments of head position for all but the last form (f), which is too short to have any alternative head site. Max-H is not included in this constraint conjunction, because the assumption is that Head cannot be evaluated at all without the
successful parsing of the H feature. If $\text{MAX-H}$ fails, then $\text{HEAD}_x$ vacuously fails too. (115d) only targets the penult if there is no stem boundary intervening between antepenult and penult, as demonstrated in Chapter 4 §4.3.

(115) **Tableau 6: Head evaluations**
- the $\text{HEAD}$ is indicated in ( ), the H sponsor in [ ].

<table>
<thead>
<tr>
<th>sponsor position</th>
<th>sponsor, $[\sigma]$</th>
<th>domain head, $\sigma$</th>
<th>*$\text{AE}_x$</th>
<th>NonFin$_x$</th>
<th>HD-Min$_x$</th>
<th>Avoid Prom$_x$</th>
<th>WSA-Rtx</th>
<th>BA-Rtx</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) pre-antepenult</td>
<td>$[\sigma]\sigma\sigma\sigma\ # \quad \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \ #</td>
<td>$** \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) pre-antepenult</td>
<td>$[\sigma]\sigma\sigma\sigma\sigma\ # \quad \sigma \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ #</td>
<td>$** \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) pre-antepenult (+another HD)</td>
<td>$[\sigma]\sigma(\sigma)\sigma\ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ # \quad \tilde{\sigma} \sigma(\sigma)\sigma \ #</td>
<td>$* \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) antepenult</td>
<td>$[\sigma]\sigma\ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ #</td>
<td>$* \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) penult</td>
<td>$[\sigma]\sigma\ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ #</td>
<td>$* \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) ultima</td>
<td>$[\sigma] \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ # \quad \tilde{\sigma} \sigma \sigma \sigma \sigma \ #</td>
<td>$* \ * \ * \ *$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is clear that the $\text{HEAD}_x$ constraint recapitulates what the (same) set of right-alignment constraints do in the process of establishing the right edge of a $\text{HD}_x$ (as argued for in Chapter 4 §4.1-4.2, also in Chapter 5 §5.1-5.2, and §5.6 where the HD parameters of nouns vs. verbs are clarified). But it has been shown above that this $\text{HEAD}$ position is the ‘at-least’ right edge, that is, the position up to which the HD must at least extend, and that reference must be made to this wide-aligned position for shift to be properly achieved; the constraint conjunction is thus well motivated.

Technically, $\text{HEAD}$-$\text{HD}_x$ only constructs the right-edge boundary of Head$_x$ for $H_x$. The head position is always only one TBU in length, and can bounded locally on its left side by a left-edge constraint. This default left-edge local domain bounding has no bearing on the analysis.

---

59 In fact, we should include under the $\text{HEAD}_x$ constraints all the constraints that address the rightwards expansion of a HD, including the $\text{CRISPEDGE} \_ \_ \_ \_ \text{AVOIDPROM}$ conjoined constraint that conditions the application of HD-Min (§4.3), and the constraints relevant to the quirks of reduplication in 1-$\sigma$ and 2-$\sigma$ stems (§4.4). We can only assume that this is the case, and that we do not need to enumerate these constraints with the limited data set here.
Next, the ODT grammar for Phuthi requires that such a Head position be structurally inside its own HD (116), thus encoding a condition of ‘at-leastness’ (‘at least the Head must be \( \in \) HD’).

(116) **HEA\textsc{D-\textsc{in-HD}}** (Head\textsc{\_H})

\[
\text{Head-}H \in \text{HD}_x
\]

The Head of every HD must be included in the HD of which it is the Head.

Finally, the rightmost edge of every HD must be expressed, without exception (117). It is this constraint which outranks \textsc{Express\textsc{\_L}}, and which therefore forces the HD to be expressed at the right edge without fail. This will allow depressor shift to happen, as long as the right edge of the HD is expressed. The status of \textsc{Express\textsc{\_Edge}} is similar to \textsc{End\textsc{\_Low}}: its functional nature is both tonological and intonation phonological (that is, there is a phonological requirement that pitch be implemented within a right edge 2-\( \sigma \) window—either on the head, or realigned one mora rightwards).

(117) **Express\textsc{\_Right\textsc{\_Edge}}** (Express\textsc{\_Edge})

\[
\text{Express (HD}_{\text{Right\textsc{\_Edge}}}, H)
\]

The right edge of a H domain must be surface expressed as H (that is, there \textit{must} be a contrastive pitch excrescence marking the rightmost tone-bearing unit in the HD).

These three constraints are ranked with the express ranking that resolves a H/L clash configuration (118a = A); this set of expression constraints in turn outranks all the Head-aligning constraints from (114), as in (118b = B).

(118) **Depressor shift rankings (A>>B)**

A. Express\textsc{\_Edge} >> Head\textsc{\_H} >> Express\textsc{\_L} >> Express\textsc{\_H}

B. \^{}AE\textsc{\_x} >> NonFin\textsc{\_x} >> HD-Min\textsc{\_x} >> AvoidProm\textsc{\_x} >> WSA-Rt\textsc{\_x} >> BA-Rt\textsc{\_x}

Tableau 7 demonstrates how a shifted HD (119e) falls out of these rankings, with no further architecture; this can be contrasted with (119a), which is the optimal candidate where the antepenult Head is not depressed. The HD head is given inside regular parentheses.
**Table 7: Depressor shift**

*báyálímiisa* ‘they help cultivate’

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -lim-is-a /</th>
<th>Express Edge</th>
<th>Head_H (antepenult)</th>
<th>Express L</th>
<th>Max-L</th>
<th>Express H (σ)</th>
<th>NonF</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá-yá-(lí)]miisa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(b) [bá-yá-(lí)mí]isa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(c) [bá-yá-(lí)míí]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>!   *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [bá-yá-(lí)]miisa</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*<em>!</em></td>
</tr>
</tbody>
</table>

*báyávuliisa* ‘they help open’

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -vl-is-a /</th>
<th>Express Edge</th>
<th>Head_H (antepenult)</th>
<th>Express L</th>
<th>Max-L</th>
<th>Express H (σ)</th>
<th>NonF</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e) [bá-yá-{(vu)}lí]isa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(f) [bá-yá-{(vu)}lí]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>!   *</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(g) [bá-yá-{(vu)}]liisa</td>
<td></td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(h) [bá-yá-{(vú)}]liisa</td>
<td></td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(i) [bá-yá-{(vu)}]liisa</td>
<td>!</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>(j) [bá-yá-{(vu)}]liisa</td>
<td>!</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

- **Notes:** for the non-depressed candidates, in (b) the HD is overlong, (c) even worse so, in (d) the HD is too short, not reaching the Head syllable (here, HEAD = antepenult); for the depressor-bearing candidates, (e) acceptably fails to express H on the head (antepenult), as the HEAD_H constraint requires only that the head syllable be structurally included in the HD, not that it be expressed as H; (e) also minimally violates one mora of the anti-align constraint keeping the HD off the WAP head (penult); (f) overviolates AVOID PROM; L—and LD—is never underparsed, contra (g); (h) parses L, but fails to express the L feature; (i) fails to include the antepenult head; (j) fails to express the right edge of the HD as H.

With the same rankings, it is clear in Tableau 8 (120) why there is no shift with short stems where the sponsor is on the penult (120a-c) nor where it is on the ultima (120d-f).
Tableau 8: Depressor shift failure

\textit{siyaaðlæ} ‘we close’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -\text{yal-a} /</th>
<th>Express Edge</th>
<th>Head_H (penult)</th>
<th>Express L</th>
<th>Max-L</th>
<th>Express H (σ)</th>
<th>Non Fin</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) si-ya-[{(v\text{a})\text{á}}]la</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) si-ya-[{(vaa)}l\text{á}]</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) si-[y\text{á}]-{(vaa)]la</td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textit{siyaadlæ} ‘we eat’

<table>
<thead>
<tr>
<th>/ si- + -ya- + -\text{dlå} /</th>
<th>Express Edge</th>
<th>Head_H (ultima)</th>
<th>Express L</th>
<th>Max-L</th>
<th>Express H (σ)</th>
<th>Non Fin</th>
<th>Avoid Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) si-yaa-[(d\text{lá})]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) si-yaa-[(d\text{lá})]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) si-[y\text{á}]-{(dla)}</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) si-yaa-[(dla)]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Notes: (120a) wins because it underparses only part of the penult; the other part successfully expresses as H; (120b) contains pseudo-shift to the ultima, but since this is not a phrase-medial form (where the penult would be short, and thus would express L, and would shift its H onto the ultima), (b) fails on the complete underexpression of the penult as H; (c) is a misaligned HD, and the head is not illegitimately not included in the output form.

- (120d) wins because both \textit{EXPRESS\_L} and \textit{EXPRESS\_H} can be satisfied (though this is phonetically phased as low-high; cf. discussion in §7.2); (e) fails to parse the L domain; (f) removes the clash, but at the expense of properly locating the Head syllable; (g) fails to express H, even though the Head position is located correctly.

I observe that this approach (114-118) is successful in that it requires no special additional assumptions about O(D)T architecture; on the contrary, constraint conjunction has been argued for elsewhere in this dissertation, invoked in Chapter 4 §4.4 (and cf. Chapter 8 §8.1.2, §8.2.3). Furthermore, the direction of the realignment of the HD right edge still falls out of a non-processual constraint set: no constraint is required that specifically instructs the tone
grammar to expand rightwards rather than shrink leftwards. This is significant, given the impasse that other scholars have reached with reference to depressor shift and block (e.g. Cassimjee (1998:52-57); and cf. below in §7.4.3.4).

We do not need to refer to any absolute prosodic position (e.g. antepenult) as the Rt edge of the HD which needs to be shifted. This is appealing, since that Head edge does not exist ‘after’ the shift has taken place; the constraint subset in (118a) will uniquely target the correct position regardless of sponsor location.

We also do not need to do anything like invoke an output-output constraint forcing \[ bá-yá-yúlí \] \textit{isa} to partially correspond in its tone pattern to non-depressed verbs of the same morphological shape and tonal profile, or to correspond to ‘at least’ a certain part of the prosodic shape that all other similar tone-words have, that is, a HD extending up to the antepenult (in the case of 112). Thus, we do not need to invoke any form of Sympathy Theory (McCarthy 1998)\textsuperscript{60}.

7.4.3.3. Heads and edges: no derivations for depressor blocking (anti-shift)

We saw in (71-89) that a HD always extends at least as far as the head position, even if that involves ‘crossing’ any number of depressor consonants to get to that position; but if that head position itself is depressed, the HD will attempt to expand by one mora (shift); we then saw in (91-109) that if the post-head syllable is also depressed, then the depressed H is trapped (that is, blocked from shifting).

The constraint set at this point cannot yet properly account for depressor block since it predicts in Tableau 9 (121a) that an overexpanded HD should be the optimal resolution to a sequence of two depressed Hs; the overexpanded candidate seems preferable to the optimal one (112b) where the head syllable violates the proper expression of the L feature.

\textsuperscript{60} It may seem tempting to appeal to some notion of Sympathy Theory (McCarthy 1998): a depressor shifted form seems to be being weakly faithful to a class of words whose HD extends at least to the penult (that is, the non-depressor-bearing words such as 119a-d), rather than to the antepenult. But the notion of Sympathy is so unconstrained that it is not clear it has a role to play anywhere in a phonological grammar, given that it makes no predictions at all.
Tableau 9: Depressor blocking: wrong prediction

*báyávigiisa* ‘they cause to agree’

<table>
<thead>
<tr>
<th>/ bâyá- + -ya- + -yug-is-a /</th>
<th>Express Edge</th>
<th>Head_H (antepenult)</th>
<th>Max-L</th>
<th>Express_L</th>
<th>Express_H (σ)</th>
<th>NonFin</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá-yá-(vu)]{giì}sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>***</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>(b) [bá-yá-{(vu)}][giì]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [bá-yá-{(vu)}][giì]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>(d) [bá-yá-{vú}][gií]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>(e) [bá-yá-vú][gií]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [bá-yá]-{vu}[giì]sa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) [bá-yá- {vu}][giì]sa</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

(121a) seems ill-formed because of a type of NonFin effect which should prevent the HD from extending to the ultima, but NonFin is too lowly ranked to have any effect (similar to how WSA-Rt was ranked too low in (114) to have any effect in extending a shift domain rightwards); since both depressed syllables are realised as low in the pseudo-optimal candidate (121a), there are no Express_L violations, which will always make such a candidate more optimal than the actually optimal (121b), where Express_L is violated on the head syllable (here: antepenult)\(^61\).

Similarly, (121c) must be rejected in favour of (121b), even though both candidates equally violated Express_L. Thus, a constraint is required which explicitly bans the presence of any LDs inside HDs, that is, which militates against the interruption of a HD by the presence of a parsed L feature. Such an antagonism was first identified with Clash-H/L—then replaced by the

\(^61\) Importantly for a consistent interpretation, in the correct surface form (121b), the head (yú), is regarded as violating Express_L, even though the surface implementation of that tone is somewhat rising, since the choice for evaluation of Express_L is binary: either a syllable obeys the constraint—in which case the surface realisation is low, as in the case of anticipated depression (§7.3)—or a syllable violates the constraint—in which case the surface realisation is not low, that is, is high. This contrasts with an ultima rising H syllable, where both L and H are satisfied, exceptionally.
EXPRESS_L >> EXPRESS_H interaction—to capture the local repelling of H from L. But this higher order effect of repelling L structure from anywhere inside a HD has not been articulated up to this point in the grammar. Yet, given the range of grounded H/L conflicts adduced in §7.2, it is quite uncontroversial that we motivate (122) to serve to minimise the structural interruption of a HD with parsed L features.

(122) \*

| \*
| ![image](https://via.placeholder.com/150)

Do not parse a Low Domain within the scope of a High Domain.

An equivalent observation has been made, to the same end, by Cassimjee (1998:56, 126) as ‘(...)Depressed Syllable...)_{HD}’ [sic], clearly intended as ‘*(...)Depressed Syllable...)_{HD}, that is: ‘no depressed syllable inside a H domain’. This constraint is presented for Xhosa as a revision of the more specific (1998:53) ‘*(Depressed Syllable, H)’, which corresponds here to EXPRESS_L >> EXPRESS_H.

The rankings necessary to implement successful barring of LD from within HD, but still tolerating LD interrupting HD where necessary, and never failing to parse L, are given in (123a-c). Returning to depression anticipation from §7.4, I add (123d), which serves to prevent excessive left-alignment of WSA-Lf (L), where such wide-alignment would otherwise incorrectly extend a L from beyond a HD into that HD (to be demonstrated in Tableau 10 as (124j-p).

(123) Anti-LD rankings

| a. Express_Edge >> *L-in-H | better to express the right edge than exclude L
| b. Max-L >> *L-in-H | no underparsing L to satisfy H/L domain antagonism
| c. Head_H >> *L-in-H | better to include Head position, even if L
| d. *L-in-H >> WSA-Lf (L) | better to bar L from being inside HD, if it is not sponsored inside the HD
| e. *L-in-H >> Express_L | better to exclude L from within HD, rather than faithfully express any number of LDs that are found inside a HD.

Tableau 9 is repeated as Tableau 10, with formerly pseudo-optimal candidate (121a=124b) now adequately excluded by *L-in-H. Thus (121a=124b) now fails by virtue of violating *L-in-H twice, whereas optimal (121b=124a) does so only once. It is, thus, clear that an

\[WSA-Lf \text{ (L)} \] is inserted into the rankings here, whereas previously it was ranked only in relation to C\text{RISP} \text{ (L)} and BA-Lf \text{ (L)}.
important assumption for the interpretation of *L-in-H is that violation is a gradient possibility:
two\textsuperscript{63} instances of *L-in-H violation in a domain are worse than one.

Tableau 10 is also amplified with a set of candidates (124g-i) containing several instances
of L, repeated from §7.2.2.1: \textit{kúbhebhagiséléaana} [kú-bhebhagisé]laana ‘to help carry on the
back indiscriminately for each other’, which demonstrates that the new *L-in-H constraint can
never prevent legitimate instantiations of L sponsored inside a HD from being parsed.

Finally, Tableau 10 contains depression anticipation candidates where the L sponsor lies
within the HD, and then where the L sponsor lies to the right of the rightmost HD syllable (here:
on the ultima, but the penult would operate in the same way). The new constraint, *L-in-H,
prevents L from illicitly extending leftwards into the stem, as indicated in (123d) above.

(124) Tableau 10: Tableau 9 with *L-in-H: depressor blocking
\textit{báyávígíisa} ‘they cause to agree’

<table>
<thead>
<tr>
<th>/ bá- + -ya- + -vug-is-a /</th>
<th>Express Edge</th>
<th>Head_H (antepenult)</th>
<th>Max- L</th>
<th>*L-in-H</th>
<th>Express L</th>
<th>WSA-Lf (L)</th>
<th>Express H</th>
<th>Non Fin</th>
<th>Avoid Prom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) [bá-yá-{vú}]{gií}sa</td>
<td></td>
<td>*</td>
<td>*</td>
<td><strong>,</strong>,**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) [bá-yá-{vú}]{gií}sá</td>
<td></td>
<td>!*</td>
<td><strong>,</strong>,**</td>
<td>**</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) [bá-yá-{vú}]{gíí}sa</td>
<td></td>
<td>!*</td>
<td>*</td>
<td><strong>,</strong>,**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [bá-yá-vú]{gií}sa</td>
<td></td>
<td>!</td>
<td>*</td>
<td>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) [bá-yá-{vú}]{gií}sa</td>
<td></td>
<td>!</td>
<td></td>
<td><strong>,</strong>,**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) [bá-yá-{vú}]{gií}sa</td>
<td></td>
<td>!</td>
<td></td>
<td><strong>,</strong>,**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- optimal (a) fails to express the head as L, but does not include one too many LDs inside
the HD, as (b) does, underlining the fact that each lexical LD must be counted separately;
(c) attempts a version of depressor shift, but failing to achieve anything more optimal, it
also has too many LDs inside its HD; (d) looks the same as optimal (a), but would be
‘optimal’ without parsing L, thus, the antepenult should not be rising; (e) is too short
(\textit{Head} is excluded); (f) lacks an expressed H right edge.

\textsuperscript{63} For successful interpretation of *L-in-H here, there must be an assessment of violation
without LD fusion; and yet, in what follows (§7.8.1.8 footnotes 199-200), I will argue that
adjacent LDs must fuse, just as adjacent HDs must fuse. An attempt to resolve the interpretation
problem will be made when the topic reemerges below.
**kúbhebhagi sélaana** ‘to help carry on the back for each other’

<table>
<thead>
<tr>
<th>/ ku- + -bhebh-ag-is-el-an-a /</th>
<th>Express</th>
<th>Head_H (antepenult)</th>
<th>Max- L</th>
<th>*L-in-H</th>
<th>Express L</th>
<th>WSA-Lf (L)</th>
<th>Express H</th>
<th>Non</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) [kú-{bhe} {bha} {gi} sé]laana</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
<td>* , ** , ***</td>
<td>***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) [kú-bhébhág{sé}laana</td>
<td></td>
<td></td>
<td></td>
<td><em>!</em>*</td>
<td>(***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) [kú-{bhe} {bha} {gi} selana</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>* , ** , ***</td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

- optimal (g) tolerates three *L-IN-H violations, but doesn’t underparse L, as (h) does; the H right edge in (i) is not sufficiently far rightwards, as it excludes the antepenult Head position; (i) also shows that better satisfying *L-IN-H won’t necessarily lead to surface happiness.

**kú-patalagelániisa** ‘to help pay indiscriminately for each other’

<table>
<thead>
<tr>
<th>/ ku- + -patal-ag-el-an-is-a /</th>
<th>Express</th>
<th>Head_H (antepenult)</th>
<th>Max- L</th>
<th>*L-in-H</th>
<th>WSA-Lf (L)</th>
<th>Express L</th>
<th>Express H</th>
<th>Non</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>(j) [kú-{patalag} lá]niisa</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) [kú-pátá{lage} lá]niisa</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td><em>!</em>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) [kú-pátálá{ge} lá]niisa</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td><em>!</em>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(m) [kú-pátálágélá]niisa</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- optimal (j) parses the L, and therefore extends it maximally (subject to Crisp(L), which is not included here); suboptimal (k-l) fail to extend the LD as far left as possible; (m) fails to parse it altogether.

**kúpátálaaga** ‘to pay indiscriminately’

<table>
<thead>
<tr>
<th>/ ku- + -patal-ag-a /</th>
<th>Express</th>
<th>Head_H (antepenult)</th>
<th>Max- L</th>
<th>*L-in-H</th>
<th>WSA-Lf (L)</th>
<th>Express L</th>
<th>Express H</th>
<th>Non</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n) [kú-pátá] {laaga}</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(o) [kú-pátá]laa{ga}</td>
<td></td>
<td></td>
<td></td>
<td><em>!</em>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(p) [kú- {pata]laaga]</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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optimal (n) extends the LD only as far as the right boundary of HD; suboptimal (o) fails to extend the LD as far leftwards as the H/L ... boundary; (p) demonstrates fatal H/L overlap.

7.4.3.4. Alternative analysis: parasitic domains

I examine one proposal that appears to succeed at accounting for shifted HDs, also in an ODT architecture, though only at great cost: it departs from a crucial aspect of the framework’s basic relationship established between the parsing feature and its feature domain.

Cassimjee (1998:54-55), in an explicit attempt to avoid serial derivation, proposes to overcome the apparently ‘processual’ depressor shift problem in Xhosa (which has essentially the same properties of shift as Phuthi) not by the parsing of a second tone feature, L (with all of the implications of that strategy, including Low Domains), but by allowing a second tier of HD-structure to be built parasitically off the first domain-alignment tier. She indicates that her analysis is driven by a desire ‘to confine CON [the device that generates all possible output candidates, Prince & Smolensky (1993)] to constraints rather than procedures’ (1998:54). I strongly concur with this line of thinking, that is, that the great strength of OT is the move away from the ‘telic’ procedures that characterised generative phonology, where phonological events (such as rules) contained both start and end points, driving an input sound pattern towards a specific goal. The consensus that emerged in the early 1990s is that this type of grammatical device is far too powerful; rather, a grammar composed entirely of declarative statements of required or impossible structures is the constrained, atelic way to proceed. This would hugely simplify the class of possible behaviours that a phonological grammar needs to be capable of.

As such, statements of a processual nature, as suggested for an adequate description of shift (given in Depression Pattern 3 in (90) above, and then rejected as unencodable in an ODT grammar) are ineligible as constraint types in OT, and in ODT.

Cassimjee concedes, however, that her proposed analysis confines CON to constraints ‘by introducing a degree of serialism’ (1998:54). This comes in the form of a two-tiered H domain structure: a basic domain parsing the feature H, and a second meta-domain built off the right edge of the basic domain. That is, HD₁ is the regular domain that parses a H feature; a level of ‘HD₂’ structure then builds itself off the head of the ‘HD₁’ structure, where the head of HD₁ is the antepenult, that is, the rightmost extent of a HD under normal conditions (and assuming the
discussion is limited to antepenult-targeting paradigms such as the present indicative phrase-final paradigm). Cassimjee does not use the notion Head here, but does refer to heads in expressing only the rightmost syllable in a HD as H, e.g. she prevents Xhosa non-heads from being expressed as H by means of *(H, nonhead)’ (1998:31).

Cassimjee seems to intend a set of domain structure alignment constraints, parallel to the H domain alignment constraints used in that work and also here in Chapter 4 §4.4. She then seems to desire that the rightmost element in that domain be identified by a Head alignment constraint, inferred as (125).

(125) \textbf{HD}_1 \textbf{Head}
\begin{align*}
\text{Align} & \left( \text{Head}(\sigma), \text{Rt}, \text{HD}_1, \text{Rt} \right)
\end{align*}

A HD$_1$ head, then, is the starting point for a second level of domain structure: HD$_2$ (126).

(126) \textbf{Basic Alignment: parasitic HD-structure}
\begin{enumerate}
\item \textbf{BA-Lf (HD$_2$):} \text{Align} (HD$_2$, Lf, Head$_{HD_1}$, Lf)
\item \textbf{BA-Rt (HD$_2$):} \text{Align} (HD$_2$, Rt, Head$_{HD_1}$, Rt)
\end{enumerate}

The depressor/H clash constraint(s) would then apply to this new domain, HD$_2$ (127a), stretching it wider (127b), if the head of HD$_1$ is depressed.

(127) \textbf{Schema of HD}_1 \text{ and HD}_2 \text{ tier relations}
\begin{enumerate}
\item \text{[(\sigma)]}_2 \\
\sigma\sigma[\sigma\sigma\sigma(\sigma)]_1\sigma\sigma \#_pWord
\item \text{[(\sigma) \sigma]}_2 \\
\sigma\sigma[\sigma\sigma\sigma(\sigma)]_1\sigma\sigma \#_pWord
\end{enumerate}

With respect to non-depressed (antepenult) heads, HD$_2$ is redundant, serving no purpose. But with respect to a depressed head, we can infer three assumptions: (a) HD$_2$ must obey the CLASH effect (in the present work, HD$_2$ would be triggered by EXPRESS\_L), that is, a breathy

\textsuperscript{64} This is also the case in Digo, Jita, standard Xhosa and standard Zulu, where nonheads fail to properly express the domain-parsing feature. The expression of heads vs. nonheads is considered further in Chapter 8 §8.2.3.

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syllable cannot be expressed as H on the surface; (b) HD$_2$ must be expressed somewhere (see earlier discussion of *Masking and Contrast, in §7.2.5 (37-38)); (c) there must follow a theoretical convention that conflates HD$_1$ and HD$_2$, resulting in a single HD output, perhaps much as grid theories of stress conflate lines 0-2 asterisks (Halle & Vergnaud 1987). The rankings suggested in (128) would predict the surface shapes in Tableau 11 (129), including the correct output for a word with a non-depressed antepenult (129a), and for one with a depressed antepenult (129c).

(128) **HD$_2$ ranking**
    Clash (= Express$_L$) $>>$ Contrast $>>$ BA-Lf (HD$_2$), BA-Rt (HD$_2$)

(129) **Tableau 11: Parasitic HD$_2$ structure**

<table>
<thead>
<tr>
<th>/ ba- + -ya- + -lim-is-a /</th>
<th>Clash (=Express$_L$)</th>
<th>Contrast (HD$_2$)</th>
<th>BA-Lf &amp; BA-Rt (HD$_2$)</th>
<th>Express$_H$</th>
<th>Avoid</th>
<th>Prom</th>
<th>WSA-Rt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(a)</strong> [bá-yá-(lí)]miisa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td><strong>(b)</strong> [bá-yá-(lí)mí]isa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>**</td>
</tr>
</tbody>
</table>

| / ba- + -ya- + -ýul-is-a / |                     |                  |                        |             |       |       |        |
| **(c)** [bá-yá-(ýul)]liisa  |                     |                  |                        |             |       |       |        |
| **(e)** [bá-yá-(ýú)]liisa    | *!                   |                  |                        |             |       |       | ***    |
| **(f)** [bá-yá-(ýú)]liisa    | *!                   |                  |                        |             |       |       | ***    |
| **(g)** [bá-yá-(ýú)]liisa    | *!                   |                  |                        |             |       |       | **     |

- HD$_2$ structure is indicated by ‘( )’, extending the Head notation slightly.
- Gratuitously extending the HD to the penult in (b) is bad (for unclear reasons); (c) resolves Clash (here, Express$_L$ $>>$ Express$_H$) and Contrast(HD$_2$) by expanding to the penult; (d) fails to parse any HD$_2$ structure; (e) fails to contrast its HD$_2$ because there is no surface expression of any syllable in this HD; (f-g) contrast HD$_2$ but at the expense of Express$_L$.

It is specifically the interplay of what I am calling Express$_L$ and Contrast$_H$ that force the expansion of HD$_2$ in (129c), so that the extension to the penult can take place, which is

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crucial in the case of a depressed H antepenult. The problem, as we now turn to it, concerns what status a construct such as HD₂ would have in OT or ODT.

7. 4. 3. 5. Objections to parasitic domains

Among a number of objections to parasitic domains, five stand out.

First, ODT explicitly takes the realisation of a feature specification on the surface as indication of the presence of a domain which uniquely parses that feature (Cole & Kisseberth (1994, 1995a-b, 1997)). Thus, expressed H tones signal the presence of a H domain. According to the parasitic domains approach just articulated, HD₁ and HD₂ both parse aspects of the same feature H. Thus, the unique relationship between F-sponsor and F-domain is lost; apart from the undeniably tricky internal logic of depressor shift, there is no motivation for a second type of HD, since there is no second type of H-tone. This strikes me as a serious analytic impasse.

Second, and related to the first point, HD₂ has no sponsor in the normal sense of the word. Its left edge is premised on the location of unarticulated HD₁ head. This might not be as serious as it seems, since grammatical H tone domains lack sponsors in the normal (lexical) sense too. Nevertheless, HGRAM does not violate the unique [sponsor feature]:[feature domain] relationship. And HD₂ is not the result of a grammatical H; it is a positional ‘derivation’ built off a lexical H.

Third, HD₁ and HD₂ overlap, and intrinsically so by the way that HD₂ is constructed; this violates the ban on overlapping domains of the same type. To this one may respond that HD₁ and HD₂ are essentially different domain types, and therefore *OVERLAP is irrelevant. And yet they are fundamentally and inescapably triggered by the same H feature.⁶⁵

Fourth, it is not the case that the full set of alignment constraints that apply to HD₁ now also apply to HD₂. HD-MIN, for example, must explicitly not apply to HD₂; if it did, then one would expect a H always to right-align from the antepenult to the penult, not only when the antepenult is depressed.

---

⁶⁵ This overlap objection to parasitic domains loses some of its impact when it is seen in §7.7.1 below that two HDs can (and must) overlap, to satisfy expression and clash requirements. The important difference between the present (rejected) shift analysis involving parasitic domains and the overlapping HDs in §7.7.1 is that the overlap below will be seen to be motivated by independently observable demands on the tone grammar. There is no independently motivated overlap regarding shift and block domains. *OVERLAP was introduced in Chapter 3 §3.3.2.
Fifth, all of the parasitic domain structure is established by Cassimjee to achieve the crucial inclusion of the antepenult within the scope of a widely aligned lexical H tone. The second parameter—resolving the HD in a rightwards direction—fortuitously falls out of the fact that H domains never realign leftwards. There is no principled reason why HD₂ should resolve the depressor problem by extending rightwards, and not leftwards, or by aligning itself to the right edge of the word, and so on.

Thus, the tone shift facts can be ground out with parasitic domains, but it is not clear how theoretically tenable or how insightful this approach is. The burden of proof would remain on Cassimjee to demonstrate that such a radical innovation away from standard O(D)T theoretical machinery is truly motivated.

The account I have proposed in §7.4.3.2 and §7.4.3.3 does not encounter any of these problems. Instead, my account avoids the problems just enumerated, as follows. First, the [feature]::[feature domain] relationship remains unique; H and L domains uniquely reflect underlying H and L features. Second, each domain has a distinct sponsor: H and L domains are not ever triggered by the same sponsor. Third, there are typically no instances of domain overlap, where the overlap is between instantiations of the same domain (e.g. H, or L). True, HD and LD do overlap (crucially) in my analysis, but this does not violate any general notion of overlap which refers to the proper construction of domains parsed linearly by distinct instantiations of the same feature. Fourth, there is no confusion over whether constraints apply only to H, or to both H and L, since they invoke separate sets of constraints, as they are distinct featural entities. Finally, the expansion of depressor-induced shift crucially expands (as opposed to shrinks) a HD, once the inclusion of the domain head has been identified as critical. There is no further comment needed with respect to directionality: shift can only be resolved by expansion.

For these five reasons, then, the analysis proposed above in §7.4.3, is more integrated and less architecturally divergent than a parasitic domains analysis.

66 But cf. §7.7.2, where a single H sponsor can trigger what is analysed to be two distinct instantiations of a H domain right edge.
7.4.3.6. Pre-O(D)T approaches

There have been a variety of pre-ODT (and pre-OT) proposals for the behaviour of depressor-induced shift and block in southern Bantu languages such as Zulu (Cope (1966), Khumalo (1981, 1982, 1987), Lieber (1987), Laughren (1984)), Xhosa (Claughton 1992), Swati (Bradshaw 1999), and Ikalanga (Hyman & Mathangwane 1998). Except for Cope (1966:67) who explicitly rejects the possibility that depressor consonants can carry an inherent L tone, all authors cited consider that this shift phenomenon involves the insertion of a redundant L feature which is triggered postlexically by depressor consonants (or by grammatical insertion). When this L feature is inserted on a syllable already occupied by a H tone, then the ill-formed LH configuration requires resolution; this is invariably achieved by spreading the H rightwards, and delinking it from LH, resulting in a parsable (shifted) syllable sequence of L-H. In the case of depressor block, LH-L cannot be resolved by spreading H over L (which would result in crossed association lines). The rising tone, L→H, must thus be parsed in situ.

I will not review these approaches in any detail, since none is forced to engage with the range of empirical data already seen in sections §7.2-§7.4 here (in particular, with the anticipation data in §7.3). All offer a certain structural insight into these processes; none can be readily stretched to handle the Phuthi data set; nor does any manage to unpack the shift/block/depression anticipation data in the functionally explicit ways I believe I have been able to in this chapter so far.

7.4.4. Conclusion

In this section, we have seen robust data sets that demonstrate the common Nguni phenomenon of depressor shift (§7.4.1) and depressor block (§7.4.2), summarised in anticipation in Tableaux 3 (67) and 4 (69). For the shift and block patterns, the data has been drawn from both lexical and grammatical paradigms, from all three relevant right-edge prosodic positions: antepenult-to-penult, penult-to-ultima and ultima-to-initial. The analysis proposed has strongly rejected derivationality (§7.4.3.1), instead proposing a Head-HD_x strategy invoking a nested constraint ranking (§7.4.3.2-§7.4.3.3). Competing analyses—one within ODT, but derivational (§7.4.3.4-§7.4.3.5), others that invoke a redundant L feature (§7.4.3.6)—are firmly rejected.
We turn, in the next two sections (§7.5-7.6), to paradigm-specific patterns which incorporate grammatically triggered depression. In the two sections following that (§7.7-7.8), I turn my attention to extensions of the tone/voice interactions that are empirically unprecedented elsewhere in Nguni, to the best of my knowledge. The shift/block analysis in the present section is robustly confirmed in all data sets that follow (there will be a significant challenge to the analysis in the form of depression block triggered without breathy voicing, cf. §7.8.1).

7. 4. 5. Constraint Summary

I summarise the new rankings (130), and the entire tone/voice constraint set up to this point (131), with the dominance relations visually sketched in (132).

(130) Constraint set (tone/voice), version 3: new rankings

• Shift rankings
  a. Head, = (*AE, >> NonFin(\pi), >> HD-Min, >> AvoidProm(\pi), >> WSA-Rt(\pi), >> BA-Rt,)
     (from 114)
  b. Express_Edge >> Head_H >> Express_L >> Express_H
     (from 118)

• Block rankings
  a. Express_Edge >> *L-in-H
     (from 123)
  b. Max-L >> *L-in-H
     (from 123)
  c. Head_H >> *L-in-H
     (from 123)
  d. *L-in-H >> WSA-Lf (L)
     better to bar L from being inside HD, if it is not sponsored inside the HD
     (from 123)
  e. *L-in-H >> Express_L
     better to exclude L from within HD, rather than faithfully express any number of LDs that are found inside a HD.

(131) Total constraint summary (tone/voice, partial): version 3

• Resolving Clash
  a. BA-Lf (L), BA-Rt (L)
  b. Express_L >> Express_H
  c. Max-H, Max-L >> Express_L >> Express_H >> *Rise

• Anticipating L
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)

67 WSA-Lf (L) is inserted into the rankings here, whereas previously it was ranked only in relation to Crisp (L) and BA-Lf (L).
• *Shift rankings*
  a. $\text{Head}_x = (\ast\text{AE}_x \gg \text{NonFin}(\pi)_x \gg \text{HD-Min}_x \gg \text{AvoidProm}(\pi)_x \gg \text{WSA-Rt}(\pi)_x \gg \text{BA-Rt}_x)$
  b. $\text{Express_Edge} \gg \text{Head}_H \gg \text{Express}_L \gg \text{Express}_H$

• *Block rankings*
  a. $\text{Express_Edge, Max-L, Head}_H \gg \ast\text{L-in-H} \gg \text{Express}_L, \text{WSA-Lf}(L)$

(132) Constraint rankings (tone/voice), version 3: dominance orderings
7.5. Grammatically Invoked Lexical Depression in Noun Copulas

Nominal tonology was introduced in Chapter 5 §5.6, where it was seen that nouns demonstrate essentially the same tone behaviour as found in Phuthi verb tonology. It was shown that nouns do differ morphologically in that every (focused) noun class prefix is specified for a H tone feature. In addition, unlike verbs, nouns can support independent lexical tones on every stem syllable.

Nominal tone properties, first presented in §5.6.1, are recapitulated in (133).

(133) Tonal properties of nouns
a. H targets the phrasal antepenult as the rightwards extent of HD-alignment, e.g. [tí-nó]-nyaana ‘birds’;
   b. H on phrasal antepenult extends to the penult, e.g. [èbá]-tfu ‘people’;
   c. H does not extend to the penult if stem boundary intervenes between antepenult & penult, e.g. [mú]-tfwaana ‘child’;
   d. H on ultima must parse, e.g. ...tii-[tfô] ‘things [non-focus]’;
   e. Every stem syllable can be lexically specified independently: ...mu-tfwaana ‘child’, ...mu-hlaa[bá] ‘ground’, ...mu-[táá]li ‘parent’, ...mu-[khôô][tî] ‘friend’.

Concerning nouns in the discussion of tone and voice, we now turn to the interaction of H tone and depression in nouns. It will be seen that nouns demonstrate tone/depression interaction identical to that found in the verb paradigms: general L/H antagonism; depressor shift from antepenult to penult; depression anticipation; depressor blocking between two depressors.

These properties can be demonstrated from any noun which contains a depressor consonant in its stem domain; most of the properties\(^{68}\) can also be observed by way of the productive morphological copula (introduced in Chapter 2 §2.2.1.7), which involves either (a) the preprefixing of a depressed consonant / syllable—for a large subset of noun classes (134); or (b) the grammatical insertion of depression alone (in my analytic terms: a L feature) on the noun prefix—for almost every noun class\(^{69}\) (135).

\(^{68}\) Depressor anticipation cannot be demonstrated with copulative prefixes, because there are no pre-depressor syllables to be depressor-anticipated, as can be seen from the data in (131). When there is the morphological option of a full segmental copula syllable (in Classes 1, 1a, 2b, 3), then that syllable is always phonologically depressed too.

\(^{69}\) Class 1a and 2b have no non-segmental copula; but these classes act in a grammatically distinctive or aberrant way in every Bantu language that has them. Thus, the Class 1a copula prefix (Ø-) is unsurprising, since the (non-copula) citation form lacks an overt segmental prefix
too. Although Class 2b has a segmental non-copula citation form noun prefix (bó-), this is in all likelihood historically a preprefix, or a contraction from another part of speech; it displays irregular behaviour in Phuthi in other ways too, e.g. the vowel -o- of bó- does not harmonise under mid-vowel ATR harmony conditions: it has a fixed [+ATR] value:

*bó-ŋkêkê *bó-ŋkêkê ‘grandmothers’, bó-nyoog *bó-nyoog ‘your mothers [taboo]’.

Gloss conventions: ‘(it is a) child’ indicates the non-copula citation gloss: ‘child’, and the copula citation gloss: ‘it is a child’ (this gloss ‘it is...’ is selected over ‘s/he is a child’, because there is obligatory coreference between ‘s/he’ and the head noun, here: ‘child’). For ease of comparison, all stems exemplifying the copulative here are toneless (low) and bisyllabic. The only Class 1a/2b bisyllabic (non-depressor-bearing) stem I have recorded is the one given in this table: ‘his/her mother’ (there is also ú-nyoog ‘your mother’, but it contains a depressor in the σ2 position); the word is mostly used in a taboo register (or the very familiar style, to and among children); this word is atypical for Class 1a, in that it contains a prefix vowel (which, however, makes no difference for the copulative). Almost all examples in Class 1a lack a segmental or tonal prefix, e.g. ntaaté ‘father’. H tone must continue to be sponsored on the segmental noun prefix (where this overt) as well as on the copula prefix: although no noun prefix commences with a breathy (depressor) consonant (so that non-shift off the depressed copula prefix (that is, depression block) cannot be tested), shift off a depressed antepenult onto a long penult should produce a falling H (that is, first mora H, second mora toneless). Instead, the penult is level H: Class 1 prefix is sponsored with UR H: 

\[ \text{móú-thfu ‘person’}, \text{gu-múú-thfu ‘it is a person’} \]  

(73) This is the default copulative prefix (used with other parts of speech, e.g. pronouns), and also in some dialects (e.g. Sigxodo) as a productive copulative prefix with any noun class.

---

70  In Sigxodo Phuthi, the default copula is yhi-, which can be used for any noun class, in place of the segmental copula for that class, e.g. not only gu-múú-thwaana ‘it is a child’, but also yhi-múú-thwaana (where Sigxodo thw corresponds to Mпapa tfw). This accords with the use of the same prefix as a general copulative with pronouns (see footnote 73 below).

71  ‘Citation (form)’ indicates a noun not in the copula, e.g. ‘child’, ‘children’.

72  ‘Citation (form)’ indicates a noun not in the copula, e.g. ‘child’, ‘children’.

### Glosses Copula form Citation

<table>
<thead>
<tr>
<th>NC</th>
<th>Copula Prefix 1</th>
<th>NC Prefix</th>
<th>Citation form 2</th>
<th>Copula form</th>
<th>Glosses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gu-</td>
<td>mu-</td>
<td>mú-tfwaana</td>
<td>gu-mú-tfwaana</td>
<td>(it is a) child</td>
</tr>
<tr>
<td>2</td>
<td>g(e)-</td>
<td>eba-</td>
<td>ėbá-tfwaana</td>
<td>g-ēbā-tfwaana</td>
<td>(it is) children</td>
</tr>
<tr>
<td>1a</td>
<td>gu-</td>
<td>Ø, (ú-)</td>
<td>ŭ-ŋ:na</td>
<td>gu-ŋ:na</td>
<td>(it is) his/her mother</td>
</tr>
<tr>
<td>2b</td>
<td>yhi-</td>
<td>bó-</td>
<td>bó-ŋ:na</td>
<td>yhi-bó-ŋ:na</td>
<td>(it is) his/her mothers</td>
</tr>
<tr>
<td>3</td>
<td>gu-</td>
<td>mu-</td>
<td>mú-miito</td>
<td>gu-mú-miito</td>
<td>(it is a) throat</td>
</tr>
<tr>
<td>NC#</td>
<td>Copula form</td>
<td>NC Prefix</td>
<td>Citation form</td>
<td>Copula form</td>
<td>Gloses</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>-----------</td>
<td>---------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>4</td>
<td>yhi-</td>
<td>mî-</td>
<td>mî-mîito</td>
<td>yhi-mî-mîito</td>
<td>(it is a) throat</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>g(e)-</td>
<td>ema-</td>
<td>émá-tiipho</td>
<td>ge-má-tiipho</td>
<td>(it is) nails</td>
</tr>
<tr>
<td>7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9</td>
<td>yhi-</td>
<td>i-</td>
<td>í-tshaaba</td>
<td>yhi-tsháaba</td>
<td>(it is a) mountain</td>
</tr>
<tr>
<td>10</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>14</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>15</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

(135) Phonational (depressor) copulas

<table>
<thead>
<tr>
<th>NC#</th>
<th>Citation form</th>
<th>Copula form</th>
<th>Gloses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>mú-tfwáana</td>
<td>mú-tfwáana</td>
<td>(it is) person</td>
</tr>
<tr>
<td>2</td>
<td>ébá-tfwáana</td>
<td>ba-tfwáana</td>
<td>(it is) people</td>
</tr>
<tr>
<td>1a</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2b</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3</td>
<td>mú-míito</td>
<td>mú-míito</td>
<td>(it is a) throat</td>
</tr>
<tr>
<td>4</td>
<td>mî-míito</td>
<td>mî-míito</td>
<td>(it is) throats</td>
</tr>
<tr>
<td>5</td>
<td>lí-tiipho</td>
<td>lí-tiipho</td>
<td>(it is a) nail</td>
</tr>
<tr>
<td>6</td>
<td>émá-tiipho</td>
<td>ma-tiipho</td>
<td>(it is) nails</td>
</tr>
<tr>
<td>7</td>
<td>sî-liimo</td>
<td>sî-líimo</td>
<td>(it is) year</td>
</tr>
<tr>
<td>8</td>
<td>tî-liimo</td>
<td>tî-líimo</td>
<td>(it is) years</td>
</tr>
<tr>
<td>9</td>
<td>í-tshaaba</td>
<td>yhi-tsháaba</td>
<td>(it is a) mountain</td>
</tr>
<tr>
<td>10</td>
<td>tî-tshaaba</td>
<td>tî-tsháaba</td>
<td>(it is) mountains</td>
</tr>
<tr>
<td>14</td>
<td>búú-tfu</td>
<td>búú-tfu</td>
<td>(it is) humanity</td>
</tr>
<tr>
<td>15</td>
<td>ku-liima</td>
<td>ku-líima</td>
<td>(it is) cultivating</td>
</tr>
</tbody>
</table>
If the copula syllable structure is identical for every noun class, then Class 1a and 2b in (134) demonstrates that the copula prefix must be (a) a full syllable, and (b) tonally H in the UR, as indicated in (136a-l).

(136) **Copula prefix consists of a H syllable**

a. ntaa[té] father, man

b. [{gu⁻]-n]taa[té] it is a father / man

c. mː[má] mother

d. [{gu⁻]-mː][má] it is mother

e. [ú]-nːna his/her mother [taboo]

f. [{gu⁻]-nː]na it is his/her mother [taboo]

g. [bó⁻]-nːtaa[té] fathers, men

h. [{yhi⁻}-bó⁻]-taa[té] it is fathers / men

i. [bó]-mː[má] mothers

j. [{yhi⁻}-bó]-mː[má] it is mothers

k. [bó⁻]-nːna his/her mothers [taboo]

l. [{yhi⁻}-bó⁻]-nːna it is his/her mothers

The tone/depressor properties which have emerged in §7.2 to 7.4 are largely demonstrable in the copula paradigms too. Firstly, all copula examples show general L/H antagonism where the pre-prefix (134) or the prefix itself (135) is depressed and expressed L on the surface, even though H in the UR. This can be seen from the copula examples that instantiate, secondly, depressor shift from the depressed antepenult (here: depressed noun class prefix) to the long penult, which in turn becomes a falling (phrasal) H tone, as in the data above in (135). Thirdly,

---

74 The penult of gu-ₐmː and gu-ₐnː bears a falling tone, obscured slightly by the syllabic penult representation, effectively [ː], in other words, -ₐmː- or -ₐnː-. These examples used for Class 1a are typical, in that they have no class prefix, but only Ø-. But the example used to illustrate Class 1a in (134, 136e) is unusual; its class prefix is ú-.
depressor blocking between two depressors (prefix and first stem syllable) behaves just like the depressor block in §7.4.2, as in (137).

(137) **Depressor blocking in nouns**

<table>
<thead>
<tr>
<th>citation</th>
<th>copula</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. lí-dvoolo</td>
<td>lí-dvoolo (it is) a knee</td>
</tr>
<tr>
<td>b. mú-bhiíñjí</td>
<td>mú-bhiíñjí (it is) a singer</td>
</tr>
</tbody>
</table>

Finally, depression anticipation (that is, realigning a LD leftwards to the left edge of the stem) is demonstrated in (138a,d,f) vs. (138b,c,e,g) where the depressors lie outside the HD and have no realignment effect.

(138) **Depression anticipation (single sponsor)**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-labhonyáana</td>
<td>little river</td>
<td></td>
</tr>
<tr>
<td>b. mú-laabho</td>
<td>river</td>
<td></td>
</tr>
<tr>
<td>c. mú-lájhaana</td>
<td>little river</td>
<td></td>
</tr>
<tr>
<td>d. mú-tibhanyáana</td>
<td>a little body</td>
<td></td>
</tr>
<tr>
<td>e. mú-tiibha</td>
<td>body</td>
<td></td>
</tr>
<tr>
<td>f. mú-tshegínyáana</td>
<td>little buyer</td>
<td></td>
</tr>
<tr>
<td>g. mú-tshéegí</td>
<td>buyer</td>
<td></td>
</tr>
</tbody>
</table>

In (138a, d), a single H prefix sponsor appears disjunctively on the prefix—that is, on the domain preceding the noun stem—and also shifts onto the penult; stem σ1 in both cases is toneless by virtue of LD realignment leftwards (depressor anticipation). This contrasts with the unextended stems in (b, e), where the sponsor does not extend at all (because of the conjoined HD-MIN & CRISPSTEM constraint from Chapter 4 §4.3. In (138c), a second type of diminutive shows the regular HD expansion to the penult; the depressor in this example is irrelevant.

75 Nouns with a labial consonant in the final syllable often display a version of the now non-productive morphophonemic pattern called ‘palatalisation’ in the literature (cf. Chapter 2 §2.2.1.6); here: "bh > jh."
because it lies outside the scope of the HD. Similarly in the H stem noun, (138g), the depressor lies in the ultima, and has no effect on the sponsor stem $\sigma$1; in (f), however—the diminutive of (g)—the pre-depressor (post-stem-edge) syllable is toneless (-tshe-) by virtue of LD anticipation.

7.5.1. Low Domain Minimality

Thus far we have seen that nouns manipulate depressor/H interactions in exactly the same way as verbs do in §7.3-7.4 above. We now turn to an additional property of L domains: L appears to obey minimality effects, in that the syllable following a depressor trigger also surfaces as depressed low (at least, in the prefix domain, as exemplified in (139-142): 6th-last in (139), 5th-last in (140), and 4th-last in (141); these right edge-relative positions are exemplified so that it is clear that LD-MIN is indeed the correct constraint, and not some form of WSA-RT (LD) which would simply target the antepenult (as with H domains).

That is, (139a-142a) are the citation form base nouns (with diminutive suffix already attached); the (b) examples reflect what for many speakers is the standard copula form, with two depressed syllables in the prefix sequence; some speakers will also accept the otherwise predicted non-minimal LD forms in (139c-142c), under as yet slightly unclear non-default conditions.

(139) Minimality effect from 6th-last to 5th-last syllable

a. mú-tfwáná-nyaana a tiny child citation form (no depressed $\sigma$)

b. {gu-mu}-tfwáná-nyaana it is a tiny child default copula form: depressed post-depressor syllable

---

76 For simplicity of exposition in these examples (139-142), HD structure is omitted.
77 Morpheme structure in this data set is as follows: mú- NOUN CLASS 1 PREFIX + -tfwáná- ROOT + -nyaana DIMINUTIVE SUFFIX. Copulas, e.g. (139b), contain a copula prefix that is both segmental and phonational, e.g. gu-.
78 Insufficient data is as yet available to determine conclusively whether the stem boundary plays a crucial role, that is, whether it is preferable to extend a LD rightwards simply because it precedes the stem boundary (as it does here). Stem-internal data (142) does not resolve this question. But cf. Appendix A, paradigm H, template III, (46b,f), and the discussion in footnote 55 where it seems clear that the present relative depressed SP triggers LD-MIN onto the following OP.
79 An alternative analysis could consider that segmental copula prefix gu- and potentially
c. \{gu\}-mú-tfwána-nyaana it is a tiny child non-default copula form

(140) **Minimality effect from 5th-last to 4th-last \(\sigma\)**

a. mú-lá{jhaa}na little river citation form

b. \{gu-mu\}-lá{jhaa}na it is a little river default copula form: depressed post-depressor syllable

c. \{gu\}-mú-lá{jhaa}na it is a little river non-default copula form

(141) **Minimality effect from 4th-last to 3rd-last (antepenult) \(\sigma\)**

a. mú-tfwáana child citation form

b. \{gu-mu\}-tfwáana it is a child default copula form: depressed post-depressor syllable

b. \{gu\}-mú-tfwáana it is a child non-default copula form

(142) **Depressed stem syllable, toneless/low stem: minimality effect from 4th-last to 3rd-last \(\sigma\)**

a. lí-{dvo}lo knee underived citation form

b. \{lij-dvolo\}nyáana it is a little knee default (derived) citation form: depressed post-depressor syllable

b. \{lij-dvo\}lónyaana it is a little knee non-default citation form

It must be observed that the second syllable of the now extended LD is *not* apparently breathy: it does not have the acoustic footprint of late F2 onset and high frequency turbulence; it does, however, maintain pitch at a uniformly low level, suggesting a proposed LD analysis as follows: there is a constraint, parallel to HD-M\(_{\text{IN}}\) (from Chapter 4 \$4.2), which requires that a L feature be parsed across (at least) two syllables: LD-M\(_{\text{IN}}\) (143)(80).

phonomically depressed Noun Class prefix \textit{mu}- are \textit{both} simply depressed in the lexicon (or, at least, in the output of the grammatically depressed copula morphology), hence, that these forms merely reflect the concatenation of two depressed morphemes, not the instantiation of the constraint to be proposed immediately below: LD-M\(_{\text{IN}}\). Such a ‘depressor sequence’ analysis is contraindicated by the (admittedly slim) data in (142).

80 In fact, this constraint is in part dialect-, speaker- and register-dependent, and the exact
**Low Domain Minimality (LD-MIN)**

\[ \sigma_{LD} \]

A low domain cannot consist of a single syllable.

LD-MIN cannot, however, operate in unrestricted fashion: unlike resolving an *L-IN-H* violation, LD-MIN cannot be satisfied by extending rightwards onto a penult syllable (144), nor onto an ultima (145).

(144) **LD-MIN: no extension to penult (or ultima)**

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>([{\text{mu}}-\text{tfwá}]ana</td>
<td>correct copula output: LD-Min is violated</td>
</tr>
<tr>
<td>b.</td>
<td>(*[{\text{mu}-\text{tfwaa}}ná]*</td>
<td>LD-Min incorrectly extended to penult syllable; HD expresses edge on ultima</td>
</tr>
<tr>
<td>c.</td>
<td>(*[{\text{mu}-\text{tfwa}}á]*na</td>
<td>LD-Min incorrectly extended to first penult mora; HD expresses edge on second penult mora</td>
</tr>
<tr>
<td>d.</td>
<td>([{\text{gú}}-\text{múú}}-\text{tfu}</td>
<td>correct (segmental) copula output: LD-Min is violated</td>
</tr>
<tr>
<td>e.</td>
<td>(*[{\text{gú}-\text{mu}}]-\text{tfú}</td>
<td>LD-Min correctly extended to penult syllable; HD expresses edge on ultima</td>
</tr>
<tr>
<td>f.</td>
<td>(*[{\text{gú}-\text{mu}}ú]-\text{tfu}</td>
<td>LD-Min incorrectly extended to first penult mora; HD expresses edge on second penult mora</td>
</tr>
</tbody>
</table>

(145) **LD-MIN: no extension to ultima**

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>...[\text{mu}-[{\text{bhi }}ñi]}</td>
<td>correct output: LD-Min is violated</td>
</tr>
<tr>
<td>b.</td>
<td>*...[\text{mu}-[{\text{bhi }i }ñi]}</td>
<td>LD-Min incorrectly extended to second mora of penult; HD expresses edge on ultima</td>
</tr>
<tr>
<td>c.</td>
<td>*...[\text{mu}-[{\text{bhi }i }ñi]}</td>
<td>LD-Min incorrectly extended to ultima; HD expresses edge on ultima</td>
</tr>
<tr>
<td>d.</td>
<td>...\text{ti}-[{\text{bho }}ñi]</td>
<td>correct output: LD-Min is violated</td>
</tr>
<tr>
<td>e.</td>
<td>*...\text{ti}-[{\text{bhoo }}ñi]</td>
<td>LD-Min incorrectly extended to second mora of penult; HD expresses edge on ultima</td>
</tr>
</tbody>
</table>

Sociolinguistic performance conditions are not yet well understood.
LD-Min incorrectly extended to ultima; HD expresses edge on ultima

- Copulas in (144) are glossed: mu-tfwána ‘it is a child’; gu-múúfu ‘it is a person’; citation forms in (145) are glossed: ...mu-bhǐjiŋ ‘singer’; ...ti-bhoɔni ‘maize (cobs)’.

The data we have seen in (144-145) demonstrates that the ranking in (146) holds, in that the default copula and default citation forms typically expect a depressor syllable to be low, and the syllable successive to that as well.

(146) LD-Min rankings
   a. NonFin, AvoidProm >> LD-Min   LD cannot extend to either the penult or ultima
   b. LD-Min >> Express_H    Minimally extended LD better than all Hs expressed

(146) presents a transitivity problem. Since we know that EXPRESS_H is fairly highly ranked (constraint summaries in Chapters 4, 5, e.g. §4.5.3; §5.5.8), and EXPRESS_H outranks both NONFIN and AVOIDPROM, we have the problem identified in (147).

(147) LD-Min transitivity problem
   NonFin, AvoidProm >> LD-Min >> Express_H >> NonFin, AvoidProm

   It seems from this that NONFIN and AVOIDPROM may need splitting into two sets of anti-edge constraints: the lower ranked set addresses the parameters of HD-construction; the higher ranked set addresses the parameters of LD construction. In other words Phuthi needs all the constraints in (148).

(148) NONFIN, AVOIDPROM explosion
   a. NonFin\textsubscript{HD}   No HD may be parsed on the ultima.
   b. AvoidProm\textsubscript{HD}   No HD may be parsed on the penult.
   c. NonFin\textsubscript{LD}    No LD may be parsed on the ultima.
   d. AvoidProm\textsubscript{LD}   No LD may be parsed on the penult.

(147) is reconceived as (149), in the light of (148).
Although any constraint ‘explosion’ needs to be approached with great conservativeness, it is not clear that a way around the proliferation in (149) presents itself. There are precedents to such proliferation in the form of paradigm-specific varieties of constraints which handle grammatical H distribution in short stems: HD-MIN$_{SUBJUNCE}(\pi)$ in Chapter 6, §6.2.2.3; NONFIN (reranked in §6.3.1.2 but not ultimately exploded).

Finally, LD-MIN cannot be satisfied if a second LD follows immediately (the depression blocking effect); this is an effect of domain integrity, implemented—I suggest—by an instantiation of *OVERLAP(L), as applied to a sequence of L features.

The optimal interaction of LD and HD in a form such as (139b) above, *gu*-mu]-tfwáná-nyaana, is presented in Tableau 12 (151).

---

81 These examples (150b,c) raise the question of domain overlap and domain fusion. It will be argued in §7.7.1 below that no LDs or HDs can ever overlap while maintaining structural coherence; but it will be seen in §7.8.1 below that there are clear paradigm-specific occasions where adjacent depression domains (LDs) must be argued to fuse, and perhaps more generally too. The paradox that will emerge is that even in such fused configurations, the identity of each LD must remain distinct at some level, for the purpose of *L-IN-H evaluation (cf. §7.4.3.3 footnote 63; comment under Tableau 17 (203) in §7.7.2.2; fusion in §7.7.2.4; §7.8.1.7 footnotes 159; §7.8.1.9 footnotes 182-183; §7.8.1.10 footnotes 199-200).
(151) **Tableau 12: LD-M\_in interactions**

**LD-M\_in optimally satisfied**

*gumutfwánányaana* ‘s/he is a little child’

<table>
<thead>
<tr>
<th>/ gu- + -mu- + -tfwana-nyaana /</th>
<th>Express Edge</th>
<th>NonFin (LD)</th>
<th>Avoid Prom (LD)</th>
<th>LD-M_in</th>
<th>Express_L</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) {[gu-mu]-tfwáná]-nyaana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>(b) {[gu-mu-tfwa]ná]-nyaana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*<em>!</em></td>
</tr>
<tr>
<td>(c) {[gu-mú]-tfwáná]-nyaana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>(d) {[gu]-mú-tfwáná]-nyaana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(e) {[gu-mu]-tfwana]]-nyaana</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>****</td>
</tr>
</tbody>
</table>

**LD-M\_in optimally violated**

*gumúútfu* ‘s/he is a person’

<table>
<thead>
<tr>
<th>/ gu- + -mu- + -tfu /</th>
<th>Express Edge</th>
<th>NonFin (LD)</th>
<th>Avoid Prom (LD)</th>
<th>LD-M_in</th>
<th>Express_L</th>
<th>Express_H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f) {[gu]-múú]-tfu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>(g) {[gú]-múú]-tfu</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>(h) {[gu-mu]-tfú]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>(i) {[gu-mu]-tfú]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>(j) {[gu]-muu-tfu</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

- Note that in (f), Avoid Prom (LD) is not violated, since the prominent penult is not being compromised to satisfy LD-M\_in, even though the penult *is* being compromised: it is the original Avoid Prom (HD) that is being violated (not charted here).
- Other forms such as were not included: *{[gú]-muu-tfu would fail on the Express\_L >> Express\_H violation (as well as the obvious Max-H violation);*

*{[gú]-múu-tfu and {[gú]-mu-u-tfu would underexpress or underparse the lexical prefix H.*
7.5.2. Conclusion

In this section, I have shown that a specific morphological configuration—the noun copula—confirms the tone/voice interactions demonstrated in the preceding sections (§7.2-§7.4), with the additional wrinkle that L domains have now been shown to mimic the properties of H domains in an additional way: they are also subject to minimality requirements (§7.5.1).

And yet the two tones continue not to have identical align properties: LD right-edge anti-align constraints (NonFin, AvoidProm) are ranked distinctly from the equivalent HD constraints, adding a further instance of constraint explosion to the theoretical profile of this language.

Further LD minimality instantiation is found in §7.8.1.9, where the present negative extends the LD set up by a depressed SP onto the following OP. And the effect of LD minimality is visible in the verbal paradigms at least in the present relative (Appendix A, paradigm H, template III: the discussion in footnote 55), from depressed SP onto OP.

7.5.3. Constraint Summary

I summarise the new rankings (152), and the entire tone/voice constraint set up to this point (153), with the dominance relations visually sketched in (154).

(152) Constraint set (tone/voice), version 4: new rankings

- **L Minimality**
  a. NonFin, AvoidProm >> LD-Min (from 146)
  b. LD-Min >> Express_H (from 146)
  c. NonFinLD, AvoidPromLD >> LD-Min >> Express_H >> NonFinHD, AvoidPromHD (149)
  d. *Overlap(L) >> LD-Min (from 150)

(153) Total constraint summary (tone/voice, partial): version 4

- **Resolving Clash**
  a. BA-Lf (L), BA-Rt (L)
  b. Express_L >> Express_H
  c. Max-H, Max-L >> Express_L >> Express_H >> *Rise

- **Anticipating L**
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)
• **Shift rankings**
  a. \( \text{Head}_x = (*\text{AE}_x \gg \text{NonFin}(\pi)_x \gg \text{HD-Min}_x \gg \text{AvoidProm}(\pi)_x \gg \text{WSA-Rt}(\pi)_x \gg \text{BA-Rt}_x) \)
  b. \( \text{Express}_\text{Edge} \gg \text{Head}_H \gg \text{Express}_L \gg \text{Express}_H \)

• **Block rankings**
  a. \( \text{Express}_\text{Edge}, \text{Max-L}, \text{Head}_H \gg *\text{L-in-H} \gg \text{Express}_L, \text{WSA-Lf}(L) \)

• **L Minimality**
  a. \( \text{NonFin}, \text{AvoidProm} \gg \text{LD-Min} \)
  b. \( \text{LD-Min} \gg \text{Express}_H \)
  c. \( \text{NonFin}_{LD}, \text{AvoidProm}_{LD} \gg \text{LD-Min} \gg \text{Express}_H \gg \text{NonFin}_{HD}, \text{AvoidProm}_{HD} \)
  d. \( *\text{Overlap}(L) \gg \text{LD-Min} \)
  \( *\text{Overlap}(L), \text{NonFin}_{LD}, \text{AvoidProm}_{LD} \gg \text{LD-Min} \gg \text{Express}_H \gg \text{NonFin}_{HD}, \text{AvoidProm}_{HD} \)

[turn to the next page for (154) ‘Constraint rankings (tone/voice), version 4: dominance orderings’]
It is not possible to uniquely rank all constraints, since the interactions are often explicitly ranked for just one or two other constraints, e.g. \(*L\text{-}{\text{IN}}\text{-}H >> WSA\text{-}Lf(L)\) and \(EXPRESS\_L\); this was reflected in the ranking summaries of §7.4.5 (130-131). But \(WSA\text{-}Lf(L)\) is not uniquely ranked with reference to many other constraints. Instead of writing it floating next to \(EXPRESS\_L\), it is now offered at the right, as part of another ranking fragment. The ordering hierarchy and expository demands on an ODT constraint set inhibit ranking grammars from being explicit in any salient visual way.
7. 6. Masked Depression and Quasi-depression: SP and OP Affixes

This section briefly considers the role of depression—a wider, more complex, more nuanced range of depression effects than has yet been seen—in a closed set of morphological affixes: subject prefixes (SP) and object prefixes (OP). I will argue that subsets of these prefixes behave in three distinct ways: (a) as regular depressor syllables (which display the full range of depression effects), in §7.6.1; (b) as positionally masked depressors (which display the full range of depression effects, but which effects are masked in most paradigms), in §7.6.2; and (c) as quasi-depressors (which fail to surface as H, and which prevent a H being depressor-shifted onto them, as expected from depressors, but which do not manifest depressor shift or block to their right)\(^83\), in §7.6.3. The outcome of this discussion will be that SP—and particularly OP—morphemes display a startling range of variation on canonical (lexical) depression. These pronominal prefixes will be considered lexically depressed underlyingly, but with paradigm-specific suspension of that depression\(^84\).

7. 6. 1. First Person Singular SP and OP

It is instructive to test for depressor shift in pre-antepenult, pre-stem position, to see whether depressors in such positions behave similarly to the way they do inside the stem domain. Yet there is a dearth of available pre-stem morphological candidates which contain depressors. Of the SPs and OPs, only the first person singular (1ps), -gi-, is unambiguously depressed, since it commences with a depressor consonant\(^85\). No other subject or object prefix contains a segmental depressor, as has been shown in Chapter 2 §2.2.4.1, §2.2.4.2.

Lexically, the 1ps subject prefix—like all non-third person subject prefixes—is toneless in the present indicative and other lexical paradigms (Chapter 4 §4.1). As such, toneless SP gi- is uninteresting. There are, however, paradigms where this prefix is H due to a grammatical tone.

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\(^{83}\) There is a fourth type of ‘extended’ depression (though unrelated to SP or OP morphemes), grammatically assigned to a particular prosodic position, e.g. penult, which (a) does display shift and block effects, (b) is not segmentally but grammatically triggered, and (c) is subject to certain OCP effects on the grammatical insertion of depression (discussed in §7.8.1).

\(^{84}\) There is a further consideration, to be addressed subsequently in §7.8.1 below, whether to consider all instances of what is being claimed as depression to reflect the same phonological property. The conclusion there will be that there are two distinct types: L\(_{\text{GRAM}}\) and L\(_{\text{LEX}}\).

\(^{85}\) Cf. Chapter 2 §2.1.1, and this chapter §7.2, for the inventory of depressor consonants.
condition on prefixes, e.g. the past subjunctive *gá- (examples in §7.6.2 below); the remote past *gá- (§7.6.2 below; cf. Appendix A, paradigm L); the present subjunctive, *gí- (Chapter 6 §6.1)86.

Like all object prefixes, the 1ps OP is underlyingly H-*gí- for all paradigms (though it surfaces as H itself in only a few paradigms, excluding the present indicative). Examples from the present indicative in (155) indicate that the 1ps OP behaves tonally as expected: it contributes a H to the output (155a-c, 156a-c), while not itself being expressed as H (for two reasons: OPs try always to anti-express, as argued in Chapter 5 §5.4; also, the OP is now segmentally depressed in this case). Where not blocked by a stem-initial depressor consonant (156a), the 1ps OP H depressor-shifts into the toneless stem, visible only on the penult (155a), and not visible on longer stems (155b-c). In H stems, the OP itself is H (155d, 156d) because the stem is too short to support shift (or block); the OP is toneless on the surface in (155e-g, 156e-g), not through any resolution of the H/L clash, but because the OP H domain fuses with the stem H domain (also demonstrated in §5.4). The 1ps OP thus behaves in all respects as a regular depressor syllable87.

(155) First person singular Object Prefix
Toneless (low) stems: no stem depressors88

a. li-ya-ghi-hláaba you (pl.) stab me 2-σ stem
b. li-ya-ghi-líbaala you (pl.) forget me 3-σ stem
c. li-ya-ghi-líbátiisa you (pl.) delay me 4-σ stem

H stems: no stem depressors
d. li-ya-ghi-pha you (pl.) give me 1-σ stem
e. li-ya-ghi-bóóna you (pl.) see me 2-σ stem

86 The first two of these three prefixes can be argued to be a complex morphological sequence, where the H is not assigned to the 1ps grammatically, but to the tense/mood/aspect marker -á-, that is, they are *gi-á- > g-á-. There is no synchronic evidence of a segmental host for the subjunctive H tone, however. Cf. Appendix A, paradigm I.
87 First person singular OP examples with a depressor stem syllable in post-σ1 position (e.g. σ2, σ3) are provided in §7.7 below.
88 Domain structure, expositionally too distracting here, is to follow in (157-158) below.
(156) First person singular Object Prefix (depressor)
Toneless (low) stem: depressor in σ1

a. li-ya-gí-bheeka you (pl.) look at me 2-σ stem
b. li-ya-gí-vuléela you (pl.) open for me 3-σ stem
c. li-ya-gí-dzakálíisa you (pl.) injure me 4-σ stem

H stem: depressor in σ1

d. li-ya-gí-dlá you (pl.) eat me 1-σ stem
e. li-ya-gí-yháála you (pl.) refuse me 2-σ stem
f. li-ya-gí-yhalíísa you (pl.) make me refuse 3-σ stem
g. li-ya-gí-yhalíisiisa you (pl.) refuse me intensively 4-σ stem

Depressor shift is demonstrated with domain configurations in (157a-b), depression blocking in (157c). All three are toneless (low) stems, repeated from (156) above. In (157a), shift is triggered by the depressed 1ps syllable, which is the head of the HD; in (157b), shift is triggered by the H from the 1ps OP reaching the HD head, itself the segmentally depressed antepenult; here, the OP is early enough in the word—that is, pre-antepenult—not to cause depression blocking. In (c), the OP in the antepenult is blocked from shifting to the depressed penult.

(157) Shift and block with 1ps OP and toneless stems

a. li-ya-{{gi }-hlá}aba you (pl.) stab me depressor shift off OP
b. li-ya-{{gi }-{{vu}lé}ela you (pl.) open for me depressor shift off segmental depressor trigger head
c. li-ya-{{gf}}-{{bheec}ka you (pl.) look at me depressor block at OP/stem boundary
H stems, however, fuse with the HD of the preceding OP, and thus neither shift nor block can be demonstrated with this data. (158a-b)—(155e, 156e) repeated—exemplify this.

(158) **No demonstrable shift and block in fused 1ps OP and H stems**

a. li-ya-[{gi}-bóó]na  
HD-fusion precludes shift

b. li-ya-[{gi}-{xhá}á]la  
HD-fusion precludes block

Thus, the 1ps behaves just as expected tonally of any segmentally depressed syllable.

### 7. 6. 2. Masked Depression: Non-third Person SP

Some Nguni language researchers—Rycroft (1980b, 1983), Cassimjee (1998), Jokweni (1995)—have claimed that non-third person (hence: non-3p) *subject* prefixes in Nguni languages act as depressors: not only is the 1ps depressed (by virtue of its depressor onset consonant: Xhosa /nd-, Zulu/Swati /ŋ/; now also Phuthi /ŋ/-), but the remaining non-3p prefixes are also grammatically depressed. Rycroft (1983:98-99), for example, analyses the non-3p prefixes as depressed for the closely related Nguni language, Zimbabwean Ndebele. He claims the same status for Swati non-3p prefixes (1980b:7,11). I name this depressed state ‘masked depression’, because, largely, the *phonological* (as opposed to phonetic) depressor status of these prefixes is typically masked.

We have already seen one example of grammatically triggered depression, in the form of the depressor copula, achieved by inserting a depression feature (that is, L tone) on the noun prefix (in §7.5 above). Non-3p SP depression in the present discussion would be a second form of grammatical depression.89

Phuthi non-3p SPs (besides the segmentally depressed 1ps /gi/-) are: 2ps /u/-, 1pp /si/-, 2pp /li/-. These morphemes typically surface toneless in Phuthi; up to now, they have been regarded as tonally inert.90 In the paradigms where these prefixes are toneless on the surface,

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89 There are, in fact, several instantiations of grammatically triggered and lexical depression, summarised below in §7.8.2.

90 These non-3ps SPs are possibly phonetically low (that is, lower than toneless). No systematic study has been performed for Phuthi yet, but the phonetic degree of pitch lowering on its own is an insufficient criterion for phonological L-ness. From a phonetic standpoint, the
there is no H which can appear on such a SP, by definition; there is also no pre-SP sponsor syllable that could trigger H spread onto the SP (which would then allow depressor shift to be manifest off the SP and onto a following syllable), since no prefix can precede a SP in a lexical tone paradigm. So, the claim to L status for these non-3p SPs appears to be untestable.

There is, however, a cross-paradigm source of potential phonological comparison: in certain grammatical tone paradigms, such as the present participial or the remote past, there is a grammatical requirement that all SPs be H. This morphological environment could—and does—pose a test case for the depressor status of non-3p SPs, since we would expect a depressed H prefix syllable to display shift / block properties.

The data presents conflicting information on depression, however. In the present participial (treated in §6.2.1.1), not only are the 3p participial prefixes H (159e-f, k-l below), but the non-3p SPs are all H too (159a-d, g-j). And the non-3p SPs are clearly (audibly and instrumentally) not depressed (159b-d, h-j), except—predictably—for the segmentally depressed 1ps (159a, g). So, the masked depression hypothesis is not born out for this paradigm.

**Present participial**

(159) **Non-3p vs. 3p SPs: Toneless (L), H stems**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>a. gi-liima</td>
<td>...me cultivating</td>
<td>1ps</td>
</tr>
<tr>
<td>b. sí-liima</td>
<td>...us cultivating</td>
<td>1pp *sí-liima</td>
</tr>
<tr>
<td>c. ú-liima</td>
<td>...you cultivating</td>
<td>2ps *ú-liima</td>
</tr>
<tr>
<td>d. lí-liima</td>
<td>...you (pl.) cultivating</td>
<td>2pp *lí-liima</td>
</tr>
<tr>
<td>e. ká-liima</td>
<td>...him/her cultivating</td>
<td>3ps *ká-liima</td>
</tr>
<tr>
<td>f. bá-liima</td>
<td>...them cultivating</td>
<td>3pp *bá-liima</td>
</tr>
<tr>
<td>g. gi-bóona</td>
<td>...them seeing</td>
<td>1ps</td>
</tr>
<tr>
<td>h. sí-bóona</td>
<td>...them seeing</td>
<td>1pp *sí-bóona</td>
</tr>
<tr>
<td>i. ú-bóona</td>
<td>...them seeing</td>
<td>2ps *ú-bóona</td>
</tr>
<tr>
<td>j. lí-bóona</td>
<td>...you (pl.) seeing</td>
<td>2pp lí-bóona</td>
</tr>
<tr>
<td>k. ká-bóona</td>
<td>...him/her seeing</td>
<td>3ps ka-bóona</td>
</tr>
<tr>
<td>l. bá-bóona</td>
<td>...them seeing</td>
<td>3pp ba-bóona</td>
</tr>
</tbody>
</table>

Phuthi data remains insufficiently closely examined. Until this occurs, the assumption could fall conservatively towards claiming that non-3p SPs are straightforwardly toneless.
In the remote past, by contrast, all SPs are tonally H (160a-l), and, in addition, non-3p SPs—that is: 1ps, 1pp, 2ps, 2pp—are depressed (160a-d, g-j); they also display depressor block characteristics, in that these prefixes fail to shift their audibly depressed H onto the immediately following (depressed) penult of the toneless (160a-f) or H (160g-l) verb stem.

**Remote past**

(160) Non-3p SPs (depressed) vs. 3p SPs (not depressed): toneless (L) vs. H stems

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gaá-li i má</td>
<td>I cultivated</td>
<td>1ps</td>
</tr>
<tr>
<td>b. saá-li i má</td>
<td>we cultivated</td>
<td>1pp</td>
</tr>
</tbody>
</table>

91 The role of depression in paradigms such as the remote past tense stem is difficult to resolve; this is dealt in a fuller way with respect to the present negative, in §7.8.1. It seems to be that toneless/low stems can support depression—whether actually breathy voicing or not is not clear—on the penult, salient only in these short 2-σ stems. In the remote past (different to all other paradigms in the language), there is downstep at the prefix+stem boundary, which cannot be explained merely by inserting a L in the toneless (low) stem. Even the H stems (160g-l) block (abstract) tone shift across the stem boundary: a depressed H prefix remains H. The opacity to tone shift reflects a prefix+stem prosodic juncture anomaly widely recognised for remote past paradigms in Nguni languages, that is, where there is a morphologically long vowel (not necessarily in penult position (Doke 1954:108); the remote past tense is likely a contracted form, arising from (auxiliary + main stem).

The details of how depression is realised on the surface are not entirely resolved: the grammatically depressed SPs here are clearly breathy voiced, and this appears to extend to their preceding onset sonorant consonants w-, l-, but not clearly to the non-sonorant s- (it is not clear that [ɔ] is a meaningful representation, outside a Ní Chiosáin & Padgett-esque (1997, 2001) model of strictly local harmony, which tolerates consonants with articularily vowel harmonic settings). Because depression is triggered here on the subject prefix as a whole (though likely triggered on the nucleus, since the depressability of the onset is not relevant in assigning depressed status), I indicate depression (breathy voice) only on the depressable consonants, thus excluding s- (as earlier for the copulative in §7.5 where no depression was indicated on Class 7 s-, 8,10 τ-, class 15 k-). Nothing hinges on this particular representational choice. But the fact that s(i)-a- is included in the set of depressed SPs for this paradigm allows us—crucially—to distinguish between two distinct depression strategies that Phuthi paradigms invoke: (a) toneless morpheme depressor attraction; and (b) sonorant attraction, where all sonorant-initial prefixes—corresponding nearly exactly to the set of prefixes from the traditional Bantu weak noun classes (1, 1a, 3, 4, 6, 9)—attract depression, such as occurs in the past subjunctive (further discussion in §7.8.2).

93 The recent past tense/aspect, formed with fixed prefix vowel -e- —cf. Chapter 2 §2.2.4.7 (116f)—has precisely the same tone properties as the remote past paradigm: H SP (which is depressed in non-3p forms); stem σ1 is reserved for lexical tone; stem grammatical H tone extends to ultima. Swati (Nguni: Tekela) has the same distribution of prefixes and tones as in
c. waá-liimá you cultivated 2ps

d. laá-lii-má you (pl.) cultivated 2pp

e. wáá-liímá s/he cultivated 3ps

f. báá-liimá they cultivated 3pp

g. gaá-bóoná I saw 1psp

h. saá-bóoná we saw 1pp

i. waá-bóoná you saw 2ps

j. laá-bóoná you (pl.) saw 2pp

k. wáá-bóoná s/he saw 3ps

l. báá-bóoná they saw 3pp

7. 6. 2. 1. Unified analysis: toneless morphemes are Low

For toneless/low stems, the explanation offered is that the stems themselves are depressed, that is, have a depression property (L) associated with them. In the case of the paradigm just discussed (remote past), and in others to come (present negative, cf. §7.8.1), the toneless/low stem depression (L) is manifest on the penult (for the data in (160), the penult happens to be the stem-initial syllable). An independent principle in §7.8.2 will target the penult as a prosodically ‘salient’, that is, as the likely position for the depression property (L) to reveal itself.

An explanation for non-shift in the case of H stems—(160g-l), modelled in (162c,d)—is more difficult to provide, given that these H stems do not appear to be depressed in any way (further instrumental work is called for, in the case of the remote past paradigm). We can note as plausibly causal in the case of this unexpected shift failure (160g-l) that the remote past tense

Phuthi: 1ps, 1pp, 2ps, 2pp are all depressed; 3ps and 3pp are not depressed, e.g. from the remote past: sá-liímá, ‘we ploughed’; vs. sá-liímá ‘s/he [class 7] ploughed’; wá-bóona ‘you saw’, wá-bóona ‘s/he saw’ (Rycroft 1980b:7,14). Given that Swati is the most closely related language to Phuthi (cf. Chapter 1 §1.1.7), it is not surprising that even such apparently low level prosodic properties are shared with Phuthi.
prefix syllable, for both toneless/low and H stems, is audibly lengthened. In line with other Nguni languages, these lengthened prefixes are analysed as phonologically long\textsuperscript{94}. It seems that phonological length inhibits depressor shift\textsuperscript{95}. This accords with our expectation that shift would fail here, because the first mora of the lengthened vowel satisfactorily parses depression (L), and the second mora can be reserved for H-ness (160a-f and 160g-l).

For toneless/low prefixes (non-3p), by comparing the behaviour of non-3p SPs in the remote past, above, with that of lexical paradigms (e.g. present indicative, perfective indicative, as seen in Chapters 4-5), we are able to unify the underlying representation of ‘toneless’ SPs if we analyse these non-3p SPs as invariably depressed: their lexical representation includes a L tone (161a-d). (161a) is uninteresting, given its predictable segmentally triggered depression. But (161b-d) are departures from what is typically considered to be lexical tonelessness. The three columns reflect the underlying form, and the surface forms with domain structure, first where there is no H requirement on non-3p subject prefixes, then where there is such a H condition.

[turn to the next page for (161) ‘Non-3p subject prefixes are L, not toneless’]

\textsuperscript{94} See footnote 91, concerning remote past <prefix>#<stem> juncture anomaly. If the observation here about prefix vowel length is correct, then such an observation clearly violates my earlier statement (in Chapter 4 §4.1) to the effect that the only prosodic position for syllable length is the phrase penult: in this instance of the remote past paradigm, the lengthening site is a word-internal syllable. The generalisation made earlier does remain true, however: non-penult lengthened syllables—such as found here in the remote past tense—are extremely rare in Nguni, outside of the ideophone lexicon (ideophones frequently bear extra-systemic phonological properties, such as lengthening, ultra-H pitch, extraneous phonemes, \textit{in any position}, cf. Doke (1954:43-44), Cassimjee & Kisseberth (1999)).

\textsuperscript{95} This is analogous to other phonological effects, such as vowel syncope, which fail in the case of long vowels; long vowels appear to be prosodically ‘strong’ (David Odden, Jennifer Cole, lecture notes, Seminar on Grounded Phonology, Fall 1993).
Non-3p subject prefixes are L, not toneless underlying surface: toneless surface: H

a. 1ps gi- L {gi}- [{gí}]-

b. 2ps u- L {u} [-] [{ú}]-

c. 1pp si- L {si} [-] [{sí}]-

d. 2pp li- L {li} [-] [{lí}]-

In the general case, then, this depression is masked, because no H needs to try to surface on the non-3p prefixes (1ps, 1pp, 2ps, 2pp). But where these prefixes arise in grammatical paradigms which do require prefixal H (e.g. remote past), the depressor nature of these SPs becomes clear ⁹⁶.

Where the remote past prefix syllable is depressed, I include only the first mora inside the LD; the second mora realises the H of the HD (exactly as happens under conditions where the rightmost syllable in a HD is the long phrasal penult). The depressor block pattern from the minimal pair (2ps, 3ps) is illustrated, with full domain configuration, for toneless/low stems (162a,b), and for H stems, too (162c,d).

Configuring LD on a 2ps (vs. 3ps) subject prefix

a. [{wá}á]- [lii ] [má] you cultivated 2ps

b. [wáá]- [lii ] [má] s/he cultivated 3ps

c. [{wá}á]- [bóó ] [ná] you saw 2ps

d. [wáá]- [bóó ] [ná] s/he saw 3ps

Even with this claim, there is a problem: there is at least one paradigm—the present participial, cf. Chapter 6 §6.2—which requires grammatically H SPs, but does not display depression on non-3p prefixes (except the lexically depressed (breathy) 1ps). See discussion that follows, and the anti-parse constraint proposed in (163).
The elegance of this account is analytically fruitful: (a) all lexical stems now have a tone specification, H or L, thus removing the asymmetry of H vs. toneless; (b) all non-3p prefixes (not only the consonantally triggered 1ps) are now uniformly lexically L (not H), whatever the particular paradigm they occur in; (c) the link between toneless and Low requires no explanation: Low stems would in some instances simply have their L-ness suspended, and would remain toneless.

Assuming non-3p SPs are in fact underlyingly L, then in the case of grammatical paradigms where the prefix is H but not depressed (e.g. present participial, in 159), that is, not Low, we need to invoke a paradigm-specific anti-parse constraint (163) suppressing the lexical depressor status of the non-3p prefixes, with the cophonological ranking in (164b). This is the first occasion in Phuthi that we would encounter the underparsing of lexical L (and specifically a SP L tone). Data from the present indicative and present participial exemplify (165a-b).

(163)  \*Max-L (π)
Do not parse L, subject to paradigm π-specific conditions (e.g. π = present participial).

(164)  Suppressing depression in non-3p prefixes
a. Max-L >> \*Max-L (π) general L ranking for non-3p SPs (including remote past: 165a-b, c-d)
b. \*Max-L >> Max-L (π) paradigm-specific L ranking (e.g. participial: 165e-f)

(165)  Masked vs. unmasked vs. underparsed SP depression: 2ps vs. 3ps

present indicative (masked depression)
a. {u}yaliima ~ {uya}liima you cultivate 2ps
b. [úyá]liima s/he cultivates 3ps

remote past (unmasked depression)
c. [{wá}á]-{lii} [má] you cultivated 2ps
d. [wáá]-{lii} [má] s/he cultivated 3ps

present participial (underparsed depression)
e. [ú]-liima you cultivating 2ps
f. [ká]-liima him/her cultivating 3ps
Although this reanalysis of non-3p SPs as depressed means that in all preceding data the non-3p SPs can be rewritten as depressed (that is, underlying L), there are no immediate analytic consequences for this, given the generally masked status of the depression.

It remains to be seen how \(^{\text{Max-L}}(\pi)\) would apply in the event that it targets only specific morphemes; so far, the SP\(^{97}\) would be a candidate for underparsing of L in any paradigms where there is a grammatical H assigned to the prefix, and yet no sign of L-ness (that is, also no sign of depression); so far, only the present participial is a sure candidate for this anti-parse constraint.

In many lexical paradigms, the status of ‘toneless’ stems as toneless or as Low is typically phonologically indeterminate, if depression were to be grammatically manifestable only on the penult syllable (cf. discussion of the present negative in §7.8.1, where toneless stems are argued to unambiguously display a L in bisyllabic toneless/low stems, and in all longer toneless/low stems by hypothesis); this is so, since phrase-final widescope H alignment usually does not extend beyond the antepenult for lexical paradigms (grammatical paradigms would be expected to show depression effects more readily, since their right target is frequently the penult or ultima).

There are three ways to assess the putative toneless vs. Low settings for all toneless/low stems: (a) if the Head position (widescope right-align limit) is the antepenult, we expect the penult-ultima sequence to manifest a gradual intonational descent from high(er)ness to lowness, in which case we may argue that there is no stem depression (since depression demands near-immediate pitch adjustment to low); (b) in paradigms where a H does reach\(^{98}\) a grammatically depressed penult, we expect shift effects off that depressed penult onto the ultima; (c) in all items where the antepenult head is depressed, we expect depressor block (pitch rise) between the lexically L antepenult, and the grammatical L penult (triggered by the lexical item itself, if it belongs to the toneless/low class). But unfortunately, in the light of the present negative paradigm data in §7.8.1 to follow, we will not be able to use any of these tests as a diagnostic for what I will claim is a grammatical L domain: L\(_{\text{gram}}\).

\(^{97}\) We will see in the following section (§7.6.3) that the OP, too, can be depressed, and will need paradigm-specific underexpressing.

\(^{98}\) A verb H tone could reach the penult in either a lexical or a grammatical paradigm (though more commonly in grammatical); phrase-final penults are never H for toneless/low stems in Phuthi lexical paradigms.
In all paradigms where the penult of a toneless stem is clearly not depressed (not L), we would need to assume that the *MAX-L (π) constraint needs invoking (e.g. participial present tense, phrase-medial (short) present indicative). This, then, is the likely status of so called ‘toneless’ stems and prefixes (perhaps all affixes) in Phuthi: they are grammatically L in the underlying representation (L_{GRAM} to anticipate the claims in §7.8.1).

Having noted the elegance of reanalysing the High vs. toneless lexical stem contrast as High vs. Low (with paradigm-specific suspension of the Low feature), I continue for expositional clarity and consistency to refer in the remainder of this dissertation to the stem contrast as the traditional High vs. toneless. The matter is resumed briefly in §7.8.1.10, in the discussion of present negatives.

I note, crucially, that the underlying status of OPs is not called into question by the toneless-is-Low claim made in this section: OPs are demonstrably underlyingly H (and not L), as will be confirmed in the discussion in §7.6.3.

7. 6. 2. 2. Alternatives: Low enhances toneless stems and affixes

An analysis with the opposite specifications is also possible: non-3p SPs are underlyingly toneless; but under certain paradigm-specific conditions they attract lexical depression; in that case, under different paradigm-specific conditions (such as the participial) this depression attraction would simply fail.

But aspects of the toneless/Low association would remain unexplained, even paradoxical, under this alternative approach: (a) why is lexical depression attracted to toneless SPs in certain paradigms where SPs surface H (e.g. remote past), and to stem penults in paradigms where there is a (grammatical) H on the penult (e.g. remote past, present negative)? (b) why is there any

---

99. The suppression of L would apply to these phrase-medial forms in Mpapa (where H reaches the penult, cf. Chapter 4 §4.5.1). In Sigxodo, phrase-medial lexical Hs do not reach beyond the antepenult (§4.5.1).

100. It would also remain unexplained why in other paradigms (e.g. present participial) the toneless/Low SPs and toneless/Low stems fail to attract depression. But this is not necessarily a weakness; under either approach, there will be a set of paradigms simply stipulated (marked in the lexicon) as manifesting their toneless/low SPs and/or toneless/low stems as depressed (L), or not. The basis for the toneless/Low association is clearly finessed according to paradigm, without there (yet) being any clear pattern for why certain paradigms exploit this association, and others do not.
kind of phonological enhancement between tonal depression (L) and tonelessness at all, given that the two constitute distinct tone settings, and given that there is no *a priori* reason why L should enhance tonelessness (that is, the complete absence of tone)? The theoretical means for implementing such an ‘enhancement’ is not self-evident: a distinction would need to be made between, for example, a SP occurring as surface-H in some paradigms (e.g. remote past, past subjunctive), and its being faithful to its occurrence in (most) other paradigms as toneless/low. Thus, there would need to be cross-paradigm references (perhaps achievable through a paradigm uniformity effect).

On the other hand, this alternative strategy would not entail claiming a lexical tone property (L) for toneless prefixes and stems, which L property is hardly ever directly attested (though see §7.6.3 below for a similar situation with regard to the general absence of H tone from (surface-toneless, but UR-H) object prefixes). Such a more surface-true set of lexical items could constitute an advantage through economy of representation (if economy still constitutes analytic advantage). Given the reasons above that seem to speak against a toneless-attracts-L strategy, I propose that all toneless morphemes in Phuthi, including stems and affixes (such as the SP), are underlyingly L. (Later, in §7.8.1, it will be shown that $L_{LEX}$ and $L_{GRAM}$ do not have the same properties; cf. footnote 102; demonstrable surface non-L-ness is achieved through underparsing lexical L. But for reasons of expository clarity and consistency, I continue in all sections that follow to name and configure L morphemes as toneless morphemes).

7. 6. 3. QUASI-DEPRESSION: REEVALUATING ANTI-EXPRESS

In Chapter 5 §5.4, it was seen that the object prefix (OP) introduces a H tone into a representation, but *optimally* fails to surface as H itself, restricting H expression to all *post-OP* syllables in the OP-triggered HD. Analytically cornered, I proposed a ‘morpho-phonetic’ constraint in §5.4 to force the antiexpression of H *just on the OP*: *EXPRESS_(OP, H), or simply *EXPRESS_OP.*

We will see in what follows, however, that the OP data is inconsistent, on the one hand suggesting that OPs are not generally depressed (§7.6.3.1), but on the other indicating that OPs in some paradigms do behave as if they are depressed (§7.6.3.2). We are forced in this section to admit the existence in the grammar a class of morpheme, the OP, that selects in a very
paradigm-specific way different aspects of depression that it will manifest. I will conclude that the OP is not lexically depressed in the UR; rather, OP depression is invoked paradigm-specifically.

7. 6. 3. 1. No general OP depression

As observed earlier in Chapter 5 §5.4.1.4, if the OP is considered to be generally lexically L (at least in the present indicative phrase-final (long) form), then the OP should display salient shift and block effects (166b-c, 167b-c), here, from antepenult to penult, which effects it does not manifest. Rather, it does so only for the segmentally depressed 1ps (166a, 167a) where the predicted shift/block forms coincide with what does in fact occur.

(166) No depressor shift off non-1ps OP

<table>
<thead>
<tr>
<th>actual surface form</th>
<th>predicted shift form</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {l̂i}-ya-[g̃i]-hláaba</td>
<td>{l̂i}-ya-[g̃i]-hláaba</td>
<td>you (pl.) stab me</td>
</tr>
<tr>
<td>b. {l̂i}-ya-[t̃j]-hlaaba</td>
<td>*{l̂i}-ya-[t̃j]-hláaba</td>
<td>you (pl.) stab them(^{101})</td>
</tr>
<tr>
<td>c. {l̂i}-ya-[b̃a]-hlaaba</td>
<td>*{l̂i}-ya-[b̃a]-hláaba</td>
<td>you (pl.) stab them</td>
</tr>
</tbody>
</table>

(167) No depressor block off non-1ps OP

<table>
<thead>
<tr>
<th>actual surface form</th>
<th>predicted block form</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {l̂i}-ya-[g̃i]-{bhee}ka</td>
<td>{l̂i}-ya-[g̃i]-{bhee}ka</td>
<td>you (pl.) stare at me</td>
</tr>
<tr>
<td>b. {l̂i}-ya-[t̃j]-{bhee}ka</td>
<td>*{l̂i}-ya-[t̃j]-{bhee}ka</td>
<td>you (pl.) stare at them</td>
</tr>
<tr>
<td>c. {l̂i}-ya-[b̃a]-{bhee}ka</td>
<td>*{l̂i}-ya-[b̃a]-{bhee}ka</td>
<td>you (pl.) stare at them</td>
</tr>
</tbody>
</table>

The non-occurring depressor block forms in (167b-c) differ only from the well-formed candidates in that they contain depressed OPs (-[t̃j]-, -[b̃a]-), whereas on the surface these non-1ps OPs are not apparently depressed, that is, if we assume (as I do) that lexical depression always reflects some form of breathy voicing\(^{102}\).

\(^{101}\) The OPs used here are Class 2 -bā-‘them’ (human), Class 10 -tī- ‘them’ (usually non-human, even inanimate ‘them’), and Class 14 -bū- ‘it’ (to refer to the default object noun for this verb, búu-nya ‘excrement’).

\(^{102}\) We do not in fact need to assume a priori that depression uniquely reflects breathy
Similarly, in monosyllabic stems where the OP surfaces as H (e.g. *si-ya-[búú]-nya* ‘we excrete it’, *si-ya-[báá-pha]*, ‘we give them’), this OP H is not a rising H tone; therefore, it is not depressed (and is certainly not breathy voiced). To complicate matters further, in other paradigms—including the present indicative phrase-medial (short) form, cf. Appendix A, paradigm C (16)—the non-1ps OP universally expresses surface-H, that is, failing to lower even in longer stems.

But in all longer toneless (low) stems and in all H stems in the present indicative long form, I have posited that the OP morpheme is consistently underlyingly H, but surface-low (168). One possibility for these non-short stems is that the OP is indeed depressed in every instance, as suggested in (168).

(168) **Positing OP as L in all other stems**

a. *si-ya-[{ba}-lí]miisa* we help them cultivate  
b. *si-ya-[{ba}-lábátiisa* we delay them  
c. *si-ya-[{ba}-lábáfí]siisa* we delay them intensively  
d. *si-ya-[{ba}-bóó]na* we see them  
e. *si-ya-[{ba}-bóńí]sa* we show them  
f. *si-ya-[{ba}-sé]bé]tiisa* we use them  
g. *si-ya-[{ba}-hlóníphú]l*la we are disrespectful to them

But we cannot maintain such a depressed OP proposal in the face of the annoying and persistent presence of not only the short 2-σ forms above (166-167), and similarly the 1-σ stems, but also OPs in all other paradigms where it is clear that (non-1ps) OPs are not only underlyingly voicing, nor that depression is triggered exclusively by segmental breathiness. If we suspend this assumption, however, a considerable problem arises concerning what exactly the nature of depression is. The analysis of depression in this work involves categorial tone lowering (I reflect elsewhere how depression is distinct from downstep, cf. §7.9, and Chapter 8 §8.1.4, §8.3.10). All other things being equal, I continue to assume that depression *does* involve identifiably low (in the default case: breathy) properties, as identified in §7.2 above: (a) H tones realised on depressed syllables are rapidly rising; (b) a non-H depressed syllable is lower than toneless; (c) given the right prosodic environment, H on a depressed syllable is shifted to the right, or blocked from shifting by a following depressor. I have, however, already acknowledged the analytic role of tonal (non-breathy?) depression in the form of widescope leftward depressor anticipation (examined at some length in §7.3). Lexical depression always involves breathy voice, *contra* grammatical depression (to be seen in §7.8.1), which is independent of segmentally or grammatically *triggered* lexical depression, and does not involve breathy voice. (Chapter 8 §8.3.10 concludes the discussion on the relationship between breathy voicing and depression.)
H, but are also not depressed on the surface; in fact, they express as consistently surface-H! Thus the uneasy linking of phonological H expression and morphology in the form of the anti-parse constraint, *EXPRESS_(OP, H), as proposed for phrase-final (long) lexical paradigms in Chapter 5 §5.4 must remain, no matter how phonetically ungrounded it may appear. Given the failure to display shift and block effects (166-167) and the absence of audible depression (as a rising H) in monosyllabic stems, and the OP information from other paradigms, we cannot straightforwardly maintain that the OP is generally depressed or L in the same sense that all preceding L data in this chapter has been seen to behave.

Thus, there are two reasons for rejecting general OP depression: first, it would be a very marked, theoretically inelegant constraint indeed that required OPs to be depressed but where the realisation of that depression was contingent on the prosodic length of the lexical stem (‘only in stems longer than two syllables’); second, even if we were to maintain general OP depression, it is not clear how depression could be suspended in paradigms such as the present indicative on all OPs except the segmentally-triggered depression of the 1ps -gí-. There is further OP data in the following section which seems to make the choice for non-depressed OPs much harder to maintain, but which will not ultimately alter the conclusion reached here: to opt for OPs as underlingly non-depressed (and to maintain the anti-expression constraint proposed in Chapter 5 §5.4).

7. 6. 3. 2. OP quasi-depression: shift resisted; shift not triggered

There are grammatical tone paradigms such as the past subjunctive\(^{103}\) where the OP acts as though it were depressed. It will be seen, however, that this effect is achieved not by lexical depression of the OP, but by the effect of LD-M\(^{-\text{IN}}\), minimally requiring a sequence of two syllables within a single morphological domain to be depressed.

The past subjunctive has a grammatical tone pattern like the present participial (Chapter 6, §6.2.1.1): the SP is always H; the stem retains its lexical status as toneless or H. In addition, the past subjunctive SP is invariably\(^{104}\) depressed (169), as reflected by successful depressor shift.

The paradigm name ‘past subjunctive’ is traditional among Southern Bantu scholars, but is somewhat opaque: the paradigm is typically used as a consecutive form, in sequence with specific auxiliaries, such as Phuthi -se (SP\(_Y\)-se SP\(_Y\)-X ‘Has Y ever X-ed?’), or in series with other main verbs: ...SP\(_Y\)-X ‘...and Y X-ed’. Also cf. Chapter 2 §2.2.4.9.

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\(^{104}\) The past subjunctive, in fact, has two sets of possible realisations, one where all SPs are
in (169a-d, e-h), unambiguously demonstrable only in (169b), though breathy phonation is audible throughout the SPs.

(169) Past subjunctive: successful shift into stem

Toneless (low) stems

a. ... baá-nya       [[baá]-nya]       ...and they excreted
b. ... ba-líima      [[ba]-líima]      ...and they cultivated
c. ... ba-líbaala    [[ba]-líbaala]     ...and they forgot
d. ... ba-líbátíisa  [[ba]-líbátíisa]  ...and they delayed

H stems

e. ... báa-khá      [[báa]-khá]       ...and they drew (water)

f. ... ba-bóóna      [[ba]-bóóna]      ...and they saw
g. ... ba-bóníisa    [[ba]-bóníisa]     ...and they showed
h. ... ba-khúlúmiisa [[ba]-khúlúmiisa]  ...and they helped speak

In this past subjunctive paradigm, OPs refuse to accept a depressed H shifted off the SP into the OP syllable. Up to now, a Phuthi syllable has blocked a H being shifted onto it from its depressed (as the data reflects here); another where third person (3p) SPs are *not* depressed (not illustrated here, but cf. Appendix A, paradigm N). In this second possible realisation, non-3p SPs (e.g. 2ps) are still obligatorily depressed, e.g. 2ps wá-*, *wá- vs. 3ps wá- ~ wá-. In this second realisation, the OP consistently fails to fuse its H with that of a preceding H SP as indicated by a downstep, even in positions where downstep should not otherwise occur, that is, earlier in the word that the antepenult-penult boundary: e.g. wá-’bá-hlaaba ‘s/he stabbed them’, wá-’bá-bóóna ‘s/he saw them’. One may argue that this downstep is the residue of a depression effect on the OP domain. Alternatively, it could be that Phuthi requires there to be a Register Domain boundary between SP and OP. For further discussion of Register Domains and depression, see §7.9.

105 This is the first time we have seen a depressed falling H, that is, a required sequence of LHL across the penult, because the ultima is also H, but where the penult is depressed at the same time. This rising-falling tone shape was indicated in Chapter 2 §2.1.1 (3d). The H/L CLASH conflict is thus not resolved across such penults, *contra* the case of non-depressed H penults where the two features can be phased as LH; rather, the tones present across the two syllables in (169e) are: LHØ-H (where ‘-’ separates the syllables).
left, *only* if the would-be recipient syllable is depressed. There are now two analytic escapes:

(a) we can conclude that in paradigms such as the past subjunctive shift is once again being blocked by depression, that is, by a depressed OP; or (b) we need to stipulate that the SP-OP boundary is opaque to shift in this paradigm (I will end up adopting this second strategy).

Pursuing strategy (a) first, we see in (170a-d, e-g) that non-shift off the (clearly) depressed SP could be blocked by the depressed OP’s LD left edge.

(170)  *Past subjunctive OP opacity: shift failure (block) into OP could imply depressed OP*

**Toneless (low) stems**

a. ... bá-búú-nya  
   {bá}-{{búú}}-nya  ...and they excreted it

   *...bá-búú-nya  
   *{bá}-{{búú}}-nya

b. ... bá-tí-liima  
   {{bá}}-{{tá}}-liima  ...and they cultivated them

   *...bá-tí-liíima  
   *{{bá}}-{{tá}}-lííima

c. ... bá-ti-Íbaala  
   {{bá}}-{{tá}}-Íbaala  ...and they forgot them

   d. ... bá-ti-Ibátíisa  
   {{bá}}-{{tá}}-Ibátíisa  ...and they delayed them

**H stems**

e. ... bá-tú-kha  
   {{bá}}-{{tú}}-kha  ...and they picked / drew it

f. ... bá-ti-bóóna  
   {{bá}}-{{tá}}-bóóna  ...and they saw them

g. ... bá-ti-bóníisa  
   {{bá}}-{{tá}}-bóníisa  ...and showed them

h. ... bá-ti-khůlúmiisa  
   {{bá}}-{{tá}}-khůlúmiisa  ...and they helped them speak

If this analysis is correct (with domain structure as above), we now face two further problems: how to explain why in (170a) there is no audible rising H on the OP in the short stem, and why in (170b) there is no depressor-induced shift off the OP onto the first stem syllable.

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106 Recall that all toneless (low) stems longer than 2σ fail to express the OP morpheme (syllable) itself as H; this phenomenon is quite independent of the past subjunctive paradigm.

107 Recall from Chapter 5 §5.4.1, §5.4.2.6 that 1-σ H stems fail to express H if they occur immediately after another H syllable (here: the OP), to which they fuse their HD.
Under this analysis, the problem of non-shift off the SP onto the OP has simply been transferred to the following morpheme; nothing has been solved. I concede, thus, that there is no strategy more insightful at this point than the second strategy suggested above: to construe the SP-OP boundary as opaque to shift under conditions specific to a paradigm like the past subjunctive. Analytically, this does not mean that the depressor shift constraints (HEAD_H; EXPRESS_EDGE) must be rerankable (since they continue to be satisfied by the depressed H SP in this paradigm); rather, it means only that the more lowly ranked EXPRESS_L must be reranked beneath EXPRESS_H, such that the failure to express the depressed SP as L is not an obstacle for the wellformedness of this past subjunctive subject prefix morpheme at the surface. The reranking to achieve this occurs paradigm-specifically, much as occurred with the reranking of domain right-edge constraints (addressing antepenult, penult or ultima positions) for grammatical paradigms in Chapter 6. (171) indicates the reranking of the two expression constraints; (172) exemplifies.

(171) Past subjunctive depressor shift expression reranking
a. SP_{general}: EXPRESS_Edge, Head_H >> EXPRESS_L >> EXPRESS_H
b. SP_{past subjunctive}: EXPRESS_Edge, Head_H >> EXPRESS_H >> EXPRESS_L

(172) No shift predicted (given reranking)

a. (*) ...{bá}-tí-liima EXPRESS_L >> EXPRESS_H correct surface form
b. (√) ...{ba}-tí-liima EXPRESS_L >> EXPRESS_H incorrect surface form (but predicted as correct without reranking)
c. ...{bá}-tí-liima EXPRESS_H >> EXPRESS_L correct surface form
d. * ...{ba}-tí-liima EXPRESS_H >> EXPRESS_L incorrect surface form

Without reranking the two express constraints, the non-shifted past subjunctive SP is incorrectly predicted to be ill-formed (172a), and the shifted form (172b) should be correct (but in fact is not). Once EXPRESS_H has been reranked over EXPRESS_L (172c-d), however, the non-shifting surface form (172c) is correctly predicted as optimal, because it is no longer
desirable that L is underexpressed for this morpheme; similarly, depressor shift is now predicted
to be undesirable (172d).

I term the OPs in paradigms such as examined here ‘quasi-depressors’, because they act
in part like depressors, but are demonstrably not depressed. The past subjunctive OPs seem to
want the best of both phonological worlds, if ‘best’ can be understood as perfect alignment of
phonological and morphological categories; essentially, ‘H domain boundaries must not misalign
with morpheme edges’. We can see in this paradigm that OPs resist boundary blurring: no H / OP
domain misalignment at the OP left edge (no shift). Yet they also resist H / OP domain
misalignment (triggering shift) at the right edge108.

I note that the quasi-depressed OPs in (170) above contrast with real (non-quasi-)
depression triggered segmentally by the first person singular OP in this same past subjunctive
paradigm; the depressed (but lexically H) 1ps OP then triggers shift onto the penult (173a), and
triggers block (173b), precisely as ‘real’ depressors should. This pattern confirms the analysis of
quasi-depressors as non-depressed.

(173) True OP depression: shift off segmentally depressed 1ps
   a. ... bá-gí-hláaba    [{bá}]-[{gí}]-hláaba ...and stabbed me  shift
   *... bá-gí-hlaaba     * [{bá}]-[{gí}]-hlaaba  hypothetical non-shifting OP
   b. ... bá-gí-bheeka   [{bá}]-[{gí}]-{bhee}ka ...and looked at me  block

Given the data in this section from the past subjunctive, we need to admit that a
morphological entity such as the OP—perhaps the OP is the only example in the language—can
seem to be depressed in one respect (shift off the depressed SP onto the (depressed) OP is
resisted), and yet seem not to be depressed in another respect (the OP itself does not trigger shift
into the stem, unless it is segmentally depressed109).

108 I observe that this apparently phonological/morphological optimal alignment does not
contradict the *MASKING (= CONTRAST_L) claim made in §7.2.5, where only the perfect alignment
of two distinct phonological categories (H, L) was rejected.
109 The cline of tone/depression effects is considered further in Chapter 8 §8.3.8, §8.3.10.
Since I have suggested above that OPs are not lexically depressed as a class, the left-edge anti-expression of the OP (motivated in Chapter 5 §5.3, and imitated in many OP paradigms) appears to reveal no profounder explanatory insight. It strikes one impressionistically as an almost lexically depressed morpheme, given that it could be analysed that way in all cases except 1-σ and 2-σ stems in certain paradigms. We may speculate that just this locus of ambiguity may have provided speakers the chance historically to reanalyse the OP away from being depressed to being (mostly) unexpressable as H, ‘ameliorating’ some of the depression effects.

But the opposite may also be true: the OP may be becoming fully depressed, in which case we may expect that non-depressor characteristics discussed here would recede, for example, the failure to display shift/block properties. This latter possible reinterpretation of the OP is supported by the propensity of the 1psOP not to invoke its disjoint HD option (cf. the phenomenon to be examined in §7.7.2) in present tense short form paradigm data where the 1psOP should otherwise allow two surface-forms (one disjoint ‘double’ reflex of the single UR H; and one non-disjoint ‘single’ reflex of the single UR H). Cf. Appendix A, paradigm C, especially the data in (19), and cf. footnote 27 in that appendix.

We may speculate, then, that based on these cross-paradigm inconsistencies (that is, the tonal instability of the OP), we may have located an example of language change in progress. Such ambiguity has long been speculated to be the locus of language change. A parallel phenomenon from Zulu has been documented and explored in Downing (2001), where apparent ambiguity of analysis in Zulu is leading to a change in stem tone.

7.6.4. Conclusion

A continuum of incomplete depression effects in Phuthi has been revealed in data from SP and OP prefixes. I have argued that in addition to the 1ps SP/OP being unambiguously lexically depressed (that is, L) by virtue of its depressor onset consonant (§7.6.1), it is more correctly all non-3ps SPs that are lexically L (§7.6.2); it is just that in many instances, this L is masked (in other paradigms, the L is underparsed).

OPs, on the other hand, while displaying paradigm-specific depressor properties (such as unwillingness to receive a H depressor-shifted onto them, and the general tendency to be
surface-expressed as L), are merely quasi-depressors. Masked depression is thus analytically quite distinct from quasi-depression.

Toneless stems in Phuthi may be argued all to be lexically L, where this specification is underparsed paradigm-specifically. It appears more explanatory to underparse L, than to require insertion of L only for ‘toneless’ stems (again, only in certain paradigms).

7.6.5. **Constraint Summary**

I summarise the new rankings (174), and the entire tone/voice constraint set up to this point (175), with the dominance relations visually sketched in (176).

(174) **Constraint set (tone/voice), version 5: new rankings**
- *Masked and quasi-depression*
  a. *Max-L (π) >> Max-L*  \(\pi = \text{past subjunctive, ...} \) (from 164)
  b. (Express_H >> Express_L) (π)  \(\pi = \text{past subjunctive, ...} \) (from 171)

(175) **Total constraint summary (tone/voice, partial): version 5**
- **Resolving Clash**
  a. BA-Lf (L), BA-Rt (L)
  b. Express_L >> Express_H
  c. Max-H, Max-L >> Express_L >> Express_H >> *Rise
- **Anticipating L**
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)
- **Shift rankings**
  a. Head_\(x\) = (*AE_\(x\) >> NonFin (π)_\(x\) >> HD-Min_\(x\) >> AvoidProm(π)_\(x\) >> WSA-Rt(π)_\(x\) >> BA-Rt_\(x\))
  b. Express_Edge >> Head_H >> Express_L >> Express_H
- **Block rankings**
  a. Express_Edge, Max-L, Head_H >> *L-in-H >> Express_L >> NonFin >> WSA-Lf (L)
- **L Minimality**
  a. NonFin, AvoidProm >> LD-Min
  b. LD-Min >> Express_H
  c. *Overlap >> LD-Min
  d. *Overlap, NonFinLD >> LD-Min >> Express_H >> NonFinHD, AvoidPromHD
- **Masked and quasi-depression**
  a. *Max-L (π) >> Max-L*  \(\pi = \text{past subjunctive}
  b. (Express_H >> Express_L) (π)  \(\pi = \text{past subjunctive} \)
(176) Constraint rankings (tone/voice), version 5: dominance orderings

- paradigm(\(\pi\))-specific reranking of \textit{Express\_H} over \textit{Express\_L} is from the past subjunctive.
7. 7. **Edgeness Blurred: Unincorporated and Disjoint H Domains**

We turn to examine two phenomena observed in words containing depressed *prefixes*. First, in §7.7.1, some words appear to abstractly violate the fundamental assumption that domains parsing the same feature type cannot overlap sequentially with one another, that is, two adjacent HDs—the first a depressed prefix, the second a depressor-bearing HD whose left edge is anticipated as depressed—seem to manifest overlapping edges triggered by depressor shift at the prefix+stem boundary. The analysis to follow will avoid such overlap by minimally misaligning the parsing domain of a lexical stem H sponsor one syllable rightwards. Second, in §7.7.2, a depressed H prefix preceding a toneless/low stem with depressor in non-σ1 position appears either to instantiate its H feature twice, or to instantiate it once but disjointly: at the stem edge, and again at the domain head. This is argued not to be an instance of tone fission proper, but rather a boundary marking at the left edge (a form of morphological headedness).

7. 7. 1. **Unincorporation and H Sponsor Misalignment**

7. 7. 1. 1. Apparent overlap reflects InCOrporation failure

Depressor shift is valued so highly in Phuthi that it must be satisfied even at the expense of causing a H sponsor to be disconnected—unincorporated—from its parsing domain, causing two HDs in sequence to appear to overlap. If this configuration were to be analysed as overlap, it would violate the universal phonological parsing principle expressed through *O*VERLAP (cf. overlap discussion in Kisseberth (1994:134)), a constraint which forbids any configuration of the sort [x...[y...]y...], where x and y refer to distinct tokens of the same feature category (e.g. harmonic features such as H, L or ATR). Any sequence of tokens of the same feature that would overlap, would lead immediately to incoherent—that is, uninterpretable—feature configurations.

There are two cases of ‘overlap’ which are distinct from the data to be considered in this section, and which can be demonstrated to be analytically unproblematic. First, potentially overlapping configurations were raised in the discussion under locality (§7.2.2.1): the overlap of H and L features was considered in relation to depression anticipation. It was noted that split tone configurations are ruled out as incoherent by a ‘no gapping’ principle (13). Rather, L and H tones that compete for the same syllables are typically phased across parsable material (§7.2.5.1). Only
in rare cases was it necessary to parse and express both tones on the same mora\textsuperscript{110}. In addition, it
turned out that H and L did not constitute a *OVERLAP violation in this analysis, since the two
tone features are claimed in this work to be privative, and thus strictly do not inherently compete
for the same domain ‘plan’ (or on the same tier, if the metaphor is tiers).

Second, we have seen a kind of overlap response to the anti-adjacency condition (*AE)—the OCP on H tones—in Chapter 5 §5.2.2. When two or more adjacent HDs fuse, I claimed
that the edges of the new domain are each parsed as many times as there are fusing H features;
for every H feature in a fused HD, at least one HD edge is being parsed nonlocally, for example
\[[x, y]_{\sigma x, \sigma y}\], where the two H sponsors \(\sigma x\) and \(\sigma y\) fuse their adjacent edges, thus avoiding a
violation of *AE, but obliging that each ‘basic’ sponsor edge be successfully parsed, even if
nonlocal to the sponsor. It must be acknowledged that a special parse condition is required to
allow the two H features—and later, in §7.8.1.10, two L features as well—to overlap, but only on
condition of perfect overlap. That is, both (or however many) left edges, and both (or however
many) right edges must coincide. The left position and right position can only be computed once
for any adjacent edgemate (ruling out all possibility of overlap for domains of the same feature
type).

Turning to the fresh depressor data that suggests overlap in this section, the present
participial mood in (178), with segmentally depressed—but H—1ps SP \textsuperscript{111}, will suggest that the
depressor-shifted H tone from the prefix overlaps with the immediately following H token from
the stem, as indicated by the would-be domain structure in the righthand column. Thus, the
question of overlap in the toneless stems does not arise in (177a-f) as there is but a single H
token present. Nor does edge overlap arise in (177g-h) as the (non-depressed) prefix and stem H
tones fuse unproblematically (which in fact amounts to perfect overlap, yet this overlap which is
not depressor-driven but rather OCP-driven, cf. Chapter 5 §5.2). Nor does edge-overlap arise in
(177i-j) where the prefix H and stem H parse and express adjacently without any HD fusion (this
fusion failure is dealt with subsequently in §7.8.1.7-§7.8.1.9, cf. the fusion typology in (292)).

\textsuperscript{110} We have seen that HD and LD in Phuthi seek to avoid gratuitous overlap, articulated by
the anti-parse (clash) constraint, *L-IN-H (§7.4.3.3, Tableau 10). The effect of this tone clash
constraint is depressor block (124a-f); ‘overlap’ in this sense—of L and H—is only tolerated if
forced by the parse requirements on the L feature (124g-p).

\textsuperscript{111} All SPs are lexically H in this grammatical paradigm (including the 1ps), cf. Chapter 6
§6.2.1.1, and Appendix A, paradigm G.
By contrast, in the 1ps (depressed) prefix forms with H stems (178a-f), there does seem to be overlap between prefix and stem H. I provide domained representation of the would-be overlap in (178), which analysis is to be abandoned in light of the ensuing discussion, and to be reconfigured as unincorporation in (180) below.

**Present participial**

(177) **Toneless/low stems, stem-σ2 depressor: no apparent depression-induced overlap possible**

1ps

a. gi-láadza   me fetching   [{gi}-lá]a{dza}

b. gi-ládzeela me following   [{gi}-lá]{dze}la

c. gi-ladzelíisa me helping follow   [{gi}]-{ladze}lí]isa

3ps

d. ká-laadza   him/her fetching   [ká]-laa{dza}

e. ká-ládzeela him/her following   [ká-lá]{dze}la

f. ká-ladzelíisa him/her helping follow   [ká-{ladze}lí]isa

**H stems, H non-depressed prefix (prefix+stem fusion): no apparent depression-induced overlap possible**

3ps

g. ká-búluuga   him/her saving   [xyká-bú]luugá

h. ká-búlugiisa   him/her helping to save   [xyká-búlú]giisa

i. ká-búlugiisíisa   him/her saving intensively   [ká],-{bu}lugi{sí}isa

j. ká-búlugiisíisiisa   h/h helping save intensively   [ká],-{bu}lugi{sí}siisa

112 There is another surface form for this word, gi-ládzelíisa, where the single H sponsor (the prefix) surfaces disjointly both before and after the stem depressor -dze-. Similarly, there are alternative disjoint H forms for all longer toneless/low stem category items (treated in §7.7.2). For a rich set of the participial data argued from in this section of the chapter, the reader is referred to Appendix A, paradigm G (II), (39v) following, cf. especially Appendix A, footnote 44.
H stems, stem-\(\sigma_2\) depressor: apparent depression-induced shift overlap

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\(178\) H stems, stem-\(\sigma_2\) depressor: apparent depression-induced shift overlap

\(_{1p}\) (\([x..]\)_s and \([y..]\)_s indicate distinct tokens of \(H\); to be reconfigured after \((180c)\) below)

a. \(\text{gi-}tshééga\) me buying \(([\text{x} \{\text{gi}\} \text{-}\{tshé\} \text{-}\{ga\}])\)
b. \(\text{gi-}tshégiís\)a me selling \(([\text{x} \{\text{gi}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{sa}\}])\)
c. \(\text{gi-}tshégiís\)ísa \(^{113}\) me buying intensively \(([\text{x} \{\text{gi}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{isa}\}])\)
d. \(\text{gi-}tshégiís\)ísiisa me selling intensively \(([\text{x} \{\text{gi}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{si}\} \{\text{si}\}])\)

H stems, stem-\(\sigma_3\) depressor: apparent depression-induced shift overlap

\(_{1p}\) (to be reconfigured after \((180c)\) below)

e. \(\text{gi-búlugiís\}ísa}\) me saving intensively \(([\text{x} \{\text{gi}\} \text{-}\{bú\} \{\text{lu}\} \{\text{gi}\} \{s\} \{\text{isa}\}])\)
f. \(\text{gi-búlugiís\}ísiisa}\) me helping save intensively \(([\text{x} \{\text{gi}\} \text{-}\{bú\} \{\text{lu}\} \{\text{gi}\} \{s\} \{\text{si}\} \{\text{si}\}])\)

Again, the overlap question does not arise where the SP is non-depressed 3ps \((179a-f)\).

\(179\) H stems, stem-\(\sigma_2\) depressor: no apparent depressor-triggered overlap

\(_{3p}\)

a. \(\text{ká-}tshééga\) him/her buying \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{ga}\}])\)
b. \(\text{ká-}tshégíís\)ísa \(^{114}\) him/her selling \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{gi}\} \{f\} \{\text{sa}\}])\)
c. \(\text{ká-}tshégíís\)ísa him/her buying intensively \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{isa}\}])\)
d. \(\text{ká-}tshégíís\)ísiisa him/her selling intensively \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{si}\} \{\text{si}\}])\)
e. \(\text{ká-búlugiís\}ísiisa}\) him/her saving intensively \([\text{x} \{\text{ká}\} \text{-}\{bú\} \{\text{lu}\} \{\text{gi}\} \{s\} \{\text{si}\} \{\text{si}\}])\)
f. \(\text{ká-búlugiís\}ísiisa}\) h/h helping save intensively \([\text{x} \{\text{ká}\} \text{-}\{bú\} \{\text{lu}\} \{\text{gi}\} \{s\} \{\text{si}\} \{\text{si}\}])\)

\(^{113}\) The data in \((178c-f)\) supplies evidence that HD fusion does not operate in this paradigm. If HD fusion succeeded, we would not expect any shift effect from the depressed prefix onto stem-\(\sigma_1\). Rather, \((178c)\) should be \(\text{gi-tshégíís\}ísa}\) \([\text{x} \{\text{gi}\} \text{-}\{tshé\} \{\text{gi}\} \{s\} \{\text{isa}\}])\), with just a single \(H\) syllable. In other words, fusion would eliminate the need for unincorporation.

\(^{114}\) \((179b-f)\) offers further evidence for the failure of fusion in this paradigm—but distinct from \((178c-f)\) in the previous footnote. If the prefix HD and stem HD fused here, the prefix should be eligible for depression anticipation; in other words, we would expect \((179b)\) to be \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{ga}\}])\), which is not what occurs. Yet there is a problem that cannot be resolved here: if the domain of \((179a)\) is as given \([\text{x} \{\text{ká}\} \text{-}\{tshé\} \{\text{ga}\}])\), there should be a downstep at the prefix+stem boundary; but there is not.
Now we could try to maintain that the data in (178a-f) reveals true instances of feature domain overlap, and that the strict universal *OVERLAP ban must be violated to save the highly valued segment/tone resolution that is manifest through EXPRESS_L >> EXPRESS_H. In other words, the need for depressor-induced shift on the depressed H prefix outweighs the impenetrability of the left edge of the stem’s H domain.

We would have to say that this overlapping configuration needs to be signalled as distributionally rare, that is, highly marked, in the phonology of any language. Overlap could be simply be considered a highly undesirable and marked configuration, but tolerated in a rare case such as this, as repeated in (180a). This might be argued to be superior to an autosegmental representation (180b) in a derivation account that could easily extend the first HD into the segmental space of what ‘was’ the second HD (before it got lowered by depression anticipation). Further reflection would quickly lead one to conclude that *OVERLAP is truly a non-negotiable requirement for the proper construction and implementation of domain structure: (180a) is incoherent. If this were to be the solution, all analysis in the entire grammar is called into question, as the nearest left- or right-edgemate of any given domain might in fact belong to some other domain entirely.

Instead, a far more coherent (albeit still marked) analytic route is open: unincorporation of the stem H-sponsor, that is, the stem-initial sponsor syllable fails to be parsed inside its own parsing domain, as given in (180c).

(180) Maintaining ‘overlap’ vs. unincorporation
a. \[ x\{gi\} - [y\text{tshé}]x\{gi\}\text{sf}\text{isa} \] domain overlap \[ y... \] would be incoherent in ODT
b. \[ x\{gi\} - [y\text{tshé}]x\{gi\}\text{sf}\text{isa} \] -tshe- would easily ‘receive’ H from depressed SP \(gi\)-
   \[ \underline{\text{H}} \quad \underline{\text{H}} \] in a derivational autosegmental account
c. \[ x\{gi\} - \text{tshé}x, y\{gi\}\text{sf}\text{isa} \] no HD overlap; H sponsor -tshe- parses stem HD \(y\text{gi} \ldots \)

Whereas the overlapping domained configurations in (178)—reflected by the configuration in (180a)—are certainly computationally incoherent in that a second H feature cannot begin its execution before a first H feature is complete, as this would result in the very
gapped configuration that was rejected much earlier in §7.2.2.1 (13), the unincorporation analysis in (180c) is promising.

Indeed it is not incoherent to claim that the H domain parsed from the normal trigger position for a stem HD—the leftmost syllable in the stem—is misaligned a single position to the right, to the stem peninitial. Similarly, the syllables leftwards of the depressor that should be anticipated as depressed—here, only -\textit{tshé}—do not commence at the stem-initial position, but at the peninitial; that is, depression anticipation fails to reach as far leftwards as -\textit{tshé}.

The analysis places this single instance of the Phuthi domain structure into a very marked category for a Nguni language, where the sponsor and parse domain are mismatched, albeit minimally. But it is a mismatch that Optimal Domains Theory allows for, even anticipates. Specifically, while the ODT principle of \textit{Incorporation} is one of the four that govern the normal proper parsing and expressing of tone domains (C&K (1998:43-45); Chapter 3 §3.3.3)\textsuperscript{115}, there can be circumstances under which this principle is violated. In the present case, it is only to satisfy the very highly valued \textit{Express}_L >> \textit{Express}_H ranking that governs the competition between L and H domains. In this light, the data in (178) can be recast such that the prefix HD and stem HD do not overlap, preserving the linear integrity of H tokens, after the unincorporation configuration in (180c).

This empirical prefix/stem phenomenon obtains in both verbs and nouns\textsuperscript{116} (but is to some extent context-dependent). Thus, apparent HD overlap between two HDs is likewise manifest in noun copulatives, where the morphological noun prefix is phonologically depressed to signal grammatical copula: copulative prefix H and stem-initial anticipated LD syllable.

Non-copula (181a-f) are noun citation forms (thus, lacking the unincorporation—apparent overlap—phenomenon); (181a,c,e), are underived nouns, (181b,d,f) are derived diminutives. In (181g-l), however, unincorporation is displayed in the derived copulas: the copula prefix is depressed, triggering depressor shift; in each case, the first HD appears to have two sponsors in it, the second contains none—in fact, the sponsor of the second domain is unincorporated. In (181h,j,k,l), the stem-initial syllable is H as a result of depressor shift off the

\textsuperscript{115} This principle of Incorporation has been introduced and discussed in Chapter 3 §3.3.3, Chapter 5 §5.2.2 (36-37). the principles of Incorporation and Uniqueness—first presented coherently in Cassimjee (1998)—are reviewed in Chapter 8 §8.3.7, in light of the data in §7.7.1-§7.7.2.

\textsuperscript{116} In fact, the phenomenon obtains in principle for any word category, but is most robustly attested in nouns and verbs, because they are the most readily productive and lengthenable forms.
copula, displaying the unincorporation clearly. In (181g,i), the first mora of the long penult must carry the depressor-shifted H from the prefix, with unincorporation of the stem-initial H sponsor being merely to the second mora of that penult syllable, as domained on the right.

**Copula**

(181) Non-copula H stems\(^\text{117}\): no unincorporation (no apparent overlap)

- a. mú-tshéégi, buyer [mú]-[tshéé][gi]
- b. mú-tshegi -nyáana, small buyer [mú]-[(tshégi )-nyá]ana
- c. mú-qéédzi, decider [mú]-[qéé][dzi]
- d. mú-qedzi -nyáana, small decider [mú]-[(qedzi )-nyá]ana
- e. mú-búluúgi, saviour (saver)\(^\text{118}\) [mú]-[búluúú][gi]
- f. mú-bulugi -nyáana, small saviour (saver) [mú]-[(bulugi )-nyá]ana

Copula H stems: unincorporation (apparent depression-induced overlap)

- g. mú-tshéégi, s/he is a buyer [{mú}-tšéé][šéé][gi]
- h. mú-tshégi -nyáana, s/he is a small buyer [{mú}-tšéé][šéé][gi]-nyá]ana
- i. mú-qéédzi, s/he is a decider [{mú}-qéé][dzi]
- j. mú-qedzi -nyáana, s/he is a small decider [{mú}-qéé][dzi]-nyá]ana
- k. mú-búluúgi, s/he is a saviour [{mú}-búluúú][lugi]
- l. mú-bulugi -nyáana, s/he is a small saviour [{mú}-búluúú][lugi]-nyá]ana

\(^{117}\) (181) contains only H stems, because, as with the verbs in (177a-f), toneless (low) stems are inherently unable to display overlap effects with a depressed copula prefix, since there is only one H tone present (no stem H). Instead, these toneless/low copula forms will display disjoint H properties (analysis in §7.7.2 below). In (181g,i, 182g,j), there is a single stem-internal sponsor on the word-penult (stem-initial) syllable. Even though each mora of the penult is domained in a distinct HD, this has no implications for execution of a single high (non-contour) pitch. But cf. Appendix A, paradigm I (footnote 60) for data that could threaten this unincorporation analysis.

\(^{118}\) This derived form literally means ‘saver’, that is, ‘one who saves’. It can also refer to the redeemer in Christianity: the ‘Saviour’. The form more commonly occurs with the stem-initial consonant assimilated to the prefix (after vowel syncope): mú-múluúgi instead of mú-búluúgi.
Corresponding to the shift data for verbs in (178a-f) above, and for nouns in (181g-l), there is a set of depressor block data, where unincorporation is predicted to take place, but fails to, as the first syllable of the verb/noun stem is itself depressed (180-181); thus due to the failure of the otherwise expected depressor shift.

The blocking of the unincorporation effect is again not manifested in toneless/low stems (182a-f)—where there could be no unincorporation because there is only one H sponsor (on the prefix); but unincorporation is manifested in H stems, where there are the two H tokens necessary for the effect to reveal itself, and only when the prefix is depressed (182g-i), not when the prefix is H but non-depressed (182j-l).

**Present participial**

(182) **Toneless/low stems, stem-σ1 depressor: no blocking (and no unincorporation)**

1ps

a. \(\text{gī-vuula} \) me opening \([\{\text{gī}\}\{-\text{vu}\}\text{la}\]

b. \(\text{gī-vuléela} \) me opening for \([\{\text{gī}\}\{-\text{vu}\}\text{lé}\text{ela}\]

c. \(\text{gī-vulísiisa} \) me opening intensively \([\{\text{gī}\}-\{\text{vu}\}\text{lí}\text{siisa}\]

d. \(\text{kā-vuula} \) him/her opening \([\text{kā}-\{\text{vu}\}\text{la}\]

e. \(\text{kā-vuléela} \) him/her opening for \([\text{kā}-\{\text{vu}\}\text{lé}\text{ela}\]

f. \(\text{kā-vulísiisa} \) him/her opening intensively \([\text{kā}-\{\text{vu}\}\text{lí}\text{siisa}\]

**H stems, stem σ1 depressor: blocking (unincorporation actively avoided)**

1ps

g. \(\text{gī-vuúna} \) me harvesting \([\{\text{gī}\}\{-\text{vu}\}\text{ú}\text{na}\]

h. \(\text{gī-vuníísa} \) me helping harvest \([\{\text{gī}\}\{-\text{vu}\}\text{níí}\text{sa}\]

i. \(\text{gī-vuníísiisa} \) me harvesting intensively \([\{\text{gī}\}\{-\text{vu}\}\text{níí}\text{siisa}\]

3ps

j. \(\text{kā-vuúna} \) him/her harvesting \([\text{kā}-\{\text{vu}\}\text{ú}\text{na}\]

k. \(\text{kā-vuníísa} \) him/her harvesting \([\text{kā}-\{\text{vu}\}\text{níí}\text{sa}\]

l. \(\text{kā-vuníísiisa} \) him/her harvesting intensively \([\text{kā}-\{\text{vu}\}\text{níí}\text{siisa}\]

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Similarly, as with the nouns in (181) above, non-copula H stem nouns (183a-d) contain no would-be unincorporation (‘overlap’) because there is no depressed H prefix to force depressor shift. But the nouns in (183e-h), however, do demonstrate would-be unincorporation of the stem-initial H sponsor, though unincorporation is blocked because that stem-initial syllable is depressed.

As before, non-copula (183a-d) form the morphological basis for the copula forms (183e-h); all can be divided into underived forms (183a,c,e,g), and diminutive (derived) forms (183b,d,f,h).

Noun copula
(183) Non-copula H stems\(^{119}\): no unincorporation

a. mú-vuúñi  
    harvester  
    [mú]-[vuúñi]

b. mú-vuñi-nyaana  
    small harvester  
    [mú]-[vuñi]-nyaana

c. mú-geéñi  
    one who enters  
    [mú]-[geéñi]

d. mú-gení-nyaana  
    small one who enters  
    [mú]-[geñi]-nyaana

Copula, H stems: depression block-induced failure of unincorporation (non-overlap)

e. mú-vuúñi  
    s/he is a harvester  
    [{mú}]-[vuúñi]

f. mú-vuñi-nyaana  
    s/he is a small harvester  
    [{mú}]-[vuñi]-nyaana

g. mú-geéñi  
    s/he is one who enters  
    [{mú}]-[geéñi]

h. mú-gení-nyaana  
    s/he is a small one who enters[{mú}]-[geñi]-nyaana

For the unincorporated and non-unincorporated HD/LD configurations that have been demonstrated to be parsed correctly—for example, (181k-l), repeated as (184a-b)—the complex of depressor shift and block requirements must outweigh depression anticipation and the principle of incorporation (185a-d): the right edge of the depressed prefix HD must be expressed at all costs\(^{120}\). This requirement on right-edge expression has already been motivated for HDs

---

\(^{119}\) As before, toneless (low) stems cannot manifest unincorporation. They will, however, be seen in §7.7.2 to display disjoint domain properties under both shift and block conditions.

\(^{120}\) I will suggest in the discussion on disjoint domains to follow in §7.7.2 that there is a
We see from the present discussion that obligatory right-edge expression applies to prefixes as well.

(184) **Unincorporation induced by depressor copula**

a. *muję-búłúugi*  

s/he is a saviour  

\[ \{muj\}-bú]\, \{lú\}\, \{gj\}\]

b. *muję-búlugi*-nyáana  

s/he is a small saviour  

\[ \{muj\}-bú]\, \{lug\}\, \{i\}\, \{nyá\}\, ana\]

(185) **Incorporation violation and related L/H rankings**

a. Express_Edge >> Incorporate  

: parsing the right edge of a HD violates INCORPORATE  

(184a-b): \...-bú\, \{,lú\}\, \...-bú\, \{lu\}\]

b. Contrast_HD >> Incorporate  

: the requirement to express at least *some* element in the HD can violate INCORPORATE:  

(184a-b): \...{muy}-bú\, \{...\} \...>> \*...{muy}-bú\, ...\]

c. Express_Edge >> Express_L  

: right edge of HD outweighs expressing Lf edge of the expanded LD.

d. Max H, Max L >> Incorporate  

: H and L cannot be underparsed to prevent incorporation.

e. Max-L >> *L-in-H  

: no L underparse to prevent worse L/H overlap (multiple nesting).

f. Express_Edge >> *L-in-H >> Express_L >> WSA-Lf (L)  

: *L-in-H ranking from §7.4.3.4 (123,124)

g. Express_Edge, Max L >> *L-in-H >> Express_L >> WSA-Lf (L) >> Incorporate  

: by transitivity: (185a-f)

(185e-f) were indicated in §7.4 above: they ensure depressor blocking; (185c,g) form the ranking complex which guarantees that rightwards expansion of the prefix HD is preferred, in order that the HD right edge actually be expressed, rather than favouring a shrunken (depressorless) HD.

Tableau 13 (186) demonstrates the set of interactions for 3-σ stems: INCORPORATE, which evaluates the second HD sponsor, must fail in order to satisfy prefix HD parse and expression. The *OVERLAP constraint has been inserted into Tableau 13 (186) as an undominated constraint in an ODT grammar.

deeper requirement on expressing the left edge of a HD, which will fall out of the interaction of the prefix+stem boundary with a depression feature (L) on the prefix, resulting in a disjoint HD. It could be proposed—alternative to unincorporation—that proper anchoring of the stem sponsor is overridden, but I do not explore that here.
(186) **Tableau 13**: Abstract HD overlap rescues prefix expression

`mubúlíúgi` ‘s/he is a saviour (saver)’

Tableau 13: Abstract HD overlap rescues prefix expression

<table>
<thead>
<tr>
<th>/ mu- + -bulug-i /</th>
<th>*Overlap</th>
<th>Express Edge</th>
<th>Max L</th>
<th>*L-in-H Express L</th>
<th>WSA-Lf (LD)</th>
<th>Max H</th>
<th>Incorporate</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) $\Rightarrow [{m} \cdot {b}]_x {j} {g}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) $[{m} \cdot {b}]_x {j}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) $[{m} \cdot {b}]_x {j} {g}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) $[{m} \cdot {b}]_x {j} {g}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) $[{m} \cdot {b}]_x {j}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) $[{m} \cdot {b}]_x {j}$</td>
<td>*</td>
<td>*</td>
<td>0, ***</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- *L-IN-H is irrelevant for all candidates with this word length: (i) the LD on the ultima is too far to the right to affect H expression; (ii) the HD sponsor is depressed and obligatorily domained inside a HD, by virtue of its (sponsor) position;
- (b) fails on MAX-H for the second HD; (c) respects the domain integrity of the second HD, and fails to extend into it, at the cost of failing to adhere to depressor shift principles; (d) fails to parse the L (copula) feature on the prefix; (e) fails to express the right edge of the first HD (also fails to express at least one member of the HD, that is, fails to satisfy CONTRAST_HD; (f) parses both H domains, but parses and expresses the verb root lexical H only on the first syllable of the stem thus fatally violating *OVERLAP (unlike the fusion cases in Chapter 5 §5.2.3, the two sets of HD edges do not *perfectly coincide* here, and thus do not instantiate the HD coincidence requirement for structural coextension, that is, fusion-driven perfect overlap).

Tableau 14 displays copula-triggered unincorporation (187), which unincorporation rescues the otherwise unparsed or unexpressed or clashed first HD in the sequence of two HDs. The ‘overlapped’ HD is more salient in this example than in (186), because it surfaces inside what should be a left-extended LD driven leftwards by depression anticipation; there are now two quite distinct H pitch excursions.
(187) **Tableau 14:** Salient HD unincorporation for longer (4+σ) stems

\[ \text{mubuluginyáana} \ ‘s/he is a small saviour (saver)’ \]

<table>
<thead>
<tr>
<th>/ mu- + -bulug-i-nyana /</th>
<th><em>Overlap</em></th>
<th>Express Edge</th>
<th>*L-in-H Max</th>
<th>Express L</th>
<th>Max H</th>
<th>Incorporate</th>
<th>WSA-Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ a ]</td>
<td>[ {{\text{mu}}}-{\text{bú}}{\text{lugi}}-{\text{nyá}}{\text{ana}} ]</td>
<td>* , *</td>
<td>*</td>
<td>*</td>
<td>0 , **</td>
<td>* , **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ b ]</td>
<td>[ {{\text{mú}}}-{\text{bulugi}}-{\text{nyá}}{\text{ana}} ]</td>
<td>* , *</td>
<td>* !</td>
<td>*</td>
<td>0 , *</td>
<td>0 , **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ c ]</td>
<td>[ {{\text{mu}}}-{\text{bulugi}}-{\text{nyá}}{\text{ana}} ]</td>
<td>* ! *</td>
<td>**</td>
<td>0 , 0</td>
<td>* , **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ d ]</td>
<td>[ {{\text{mu}}}-{\text{bú}}{\text{lugi}}-{\text{nyá}}{\text{ana}} ]</td>
<td>* !</td>
<td>* , *</td>
<td>0 , **</td>
<td>* , **</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- In (a) both HD heads are depressed, and both shift; in (b), non-shift off the H depressed prefix would force failure of either H or L expression (here: L expression); (c) fails because the two HDs attempt to fuse, whereas HD₂ contains a depressor and contributes an extra violation of *L-in-H (to each of the two fused HDs: HD₃ and HD₄)—(c) is thus not a fusion-candidate (cf. §7.8.1.9 (292) for a typology of fusion opportunities); in (d), the two HDs fatally overlap on the stem-initial syllable.

As already exemplified, HD unincorporation fails to take place if the stem commences with a depressor consonant, resulting in depression blocking at the prefix+stem HD interface, as in the two candidates in Tableau 15 (188a-d,e-g).

(188) **Tableau 15:** Depressor blocking in a potentially unincorporating stem

\[ \text{múvuúñi} \ ‘s/he is a harvester’ \]

<table>
<thead>
<tr>
<th>/ mu- + -vun-i /</th>
<th><em>Overlap</em></th>
<th>Express Edge</th>
<th>*L-in-H Max</th>
<th>Express L</th>
<th>Max H</th>
<th>Incorporate</th>
<th>WSA-Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ a ]</td>
<td>[ {{\text{mu}}}-{\text{vu}}{\text{ú}}{\text{ni}} ]</td>
<td>* , *</td>
<td>* , 0</td>
<td>*</td>
<td>0 , *</td>
<td>* , *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ b ]</td>
<td>[ {{\text{mú}}}-{\text{vú}}{\text{u}}{\text{ni}} ]</td>
<td>* ! * , *</td>
<td>0 , *</td>
<td>*</td>
<td>* , *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ c ]</td>
<td>[ {{\text{mu}}}-{\text{vú}}{\text{ú}}{\text{ni}} ]</td>
<td>* !</td>
<td>* , *</td>
<td>0 , 0</td>
<td>* , *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ d ]</td>
<td>[ {{\text{mu}}}-{\text{vú}}{\text{ú}}{\text{ni}} ]</td>
<td>* !</td>
<td>* , *</td>
<td>0 , *</td>
<td>* , *</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- (188a) expresses a rising H tone on the prefix, that is, a phonetic sequence of L and H (but evaluated as the failure of EXPRESS_L since the prefix syllable is not uniformly L);
(188b) is the unincorporation candidate, but unincorporation only works by worsening the first HD in terms of number of embedded LDs; (188c) successfully expresses L on the prefix but at the expense of fatally failing to express the edge of the first domain at all; (188d) ‘solves’ the L/H prefix clash with depressor shift, but shift entails additional *L-in-H violation, as well as a *OVERLAP violation.

múvunínyaana ‘s/he is a small harvester’

<table>
<thead>
<tr>
<th>/ mu- + -yun-i-nyaana /</th>
<th>*Overlap</th>
<th>Express Edge</th>
<th>Max-L</th>
<th>*L-in-H Express L</th>
<th>Max-H</th>
<th>Incorporate</th>
<th>WSA-Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e) [₃,mu-]₃-[₃,vu]-n̥-nyaana</td>
<td></td>
<td>* , *</td>
<td>* , 0</td>
<td></td>
<td></td>
<td></td>
<td>0 , *</td>
<td></td>
</tr>
<tr>
<td>(f) [₃,mu-]₃-[₃,vu]-n̥-nyaana</td>
<td></td>
<td>*! , *</td>
<td>* , 0</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(g) [₃,mu-]₃-[₃,vu]-n̥-nyaana</td>
<td></td>
<td>*!</td>
<td>* , *</td>
<td></td>
<td></td>
<td></td>
<td>* , *</td>
<td></td>
</tr>
</tbody>
</table>

- (188e) tolerates partially failed L-ness on the prefix; (188f) attempts unincorporation but adds another depressor domain into the first HD; (188g) fails to express the first HD at all.

We have now seen the full range of shift and block patterns in High noun and High verb stems. We have seen that Phuthi tolerates minimal misalignment of the domain parsed by a H stem sponsor, just in order to allow a prefix HD to be expressed, without violating the inviolable structural architectural constraint *OVERLAP. This misalignment of the domain left-edge to stem σ2—to μ2, in the case of 2-σ stems—is the first time that the grammar is seeking to interfere with the in situ local parse that happens with Basic Alignment for sponsors (BA-Lf, BA-Rt), other than in the special case of HD fusion (where one edge of each sponsor parses non-locally, but only under condition of perfect edge coincidence, that is, of perfect domain coextensiveness, as argued in Chapter 5 §5.2.2).

7. 7. 1. 2. Non-alternatives: fusion; shift violation (and contrast loss)

It is worth noting that two further analytic alternatives to unincorporation are not viable in accounting for the data just adduced in §7.7.1.1.

First, a fusion response to domain unincorporation might fuse the SP HD and the stem HD, in which case no talk of H shift appears necessary initially: the first syllable of a fused domain is simply depressed, and expressed L (189b,d,f,h,j). Given my observation that nouns do
not fuse across the NPref-Stem boundary (cf. footnotes 113-114 above), even though this would seem plausible in (189b,d,f) if we ignore the fusion properties of nouns (which we cannot do!), then this strategy is only firmly possible for verbs (189h,j). More than this, it is not clear what to do with longer items such as (189d): the status of stem $\sigma_2$ remains unaccounted for; if fusion is the only response (as reflected here), then stem $\sigma_2$ should be H (but it is typically not).

(189) **HD fusion: shift/unincorporation vs. fusion**

a. $\text{mu-búlúgi}$ \[ s\{\text{mu}\}-bú\], lúú, gi \] unincorporation, no fusion

b. *$[s_{xy}\{\text{mu}\}-\text{bulúu}]_{s_y}\{gi\}$* \[ but NPref and stem are unfusable \] no unincorporation, fusion

c. $\text{mu-búlugi-nyáana}$ \[ s\{\text{mu}\}-bú\], y, lúú, gi\]-nyá]ana unincorporation, no fusion

d. (*$\text{mu-bulugi-nyáana}$)\[ s_{xy}\{\text{mu}\}-\{\text{bulugi}\}-\text{nyá}\], x\y\]ana no unincorporation, fusion

  (stem $\sigma_1$ incorrectly low)

e. $\text{mu-tshéégi}$ \[ s\{\text{mu}\}-tshé], é, gi \] unincorporation, no fusion

f. *$[s_{xy}\{\text{mu}\}-\text{tshéé}]_{s_y}\{gi\}$* \[ but NPref and stem are unfusable \] fusion, no unincorporation

g. $\text{gi-tshéega}$ \[ s\{\text{gi}\}-tshé], é, y\] sa \] unincorporation, no fusion

h. *$[s_{xy}\{\text{gi}\}-\text{tshéé}]_{s_y}\{ga\}$* fusion, no unincorporation

i. $\text{gi-tshégiísa}$ \[ s\{\text{gi}\}-tshé\], y, fi\], sa \] unincorporation, no fusion

j. (*$\text{gi-tshégiísa}$)\[ s_{xy}\{\text{gi}\}-\{\text{tshégi}\}\], x\y\]sa fusion, no unincorporation

Finally, we might anticipate that a solution where no shift is needed, for some reason, might lead us to correctly identify the optimal surface candidates, while also avoiding unincorporation violations. But even without pursuing such a strategy in domained configurations, it is clear that, without further constraints being added to prevent WSA-Lr(L) from extending leftwards to the stem edge, the same outputs would be arrived at as identified in (189b,d,f,h,j) above, that is, in (189d,j) the stem $\sigma_1$ is incorrectly predicted to be low, not high, if
there is no shift off the depressed prefix. In other words, an analysis where the first (prefix) HD must shift off the depressed H prefix cannot be circumvented.

In addition to the failure of the fusion explanation, it is not possible to not depressor shift—for some reason—and to somehow allow the prefix domain to simply surface as L anyway. Besides the problem of how to force the post-prefix stem σ-1 to surface-H, the surface-low prefix would violate the inviolable CONTRAST_HD, as the failed tableau candidates in (186e) and (188c,f) have shown.

Thus, we can now conclude analytically, firstly, that fusion is not a solution to this prefix-shift phenomenon, and secondly, that shift must take place, so that the tone status of stem σ-1 (after shift off the prefix) can be correctly predicted as H in all cases; thirdly, unincorporation is a satisfactory analytic strategy, while an overlapping domains configuration is not.

7.7.2. DISJOINTED HDs: SALIENT STEM EDGES

We turn in this section to a property of depressor syllables—unattested elsewhere in Nguni—that would be identical to the overlap violation seen in the previous section, were it not for the fact that the forms to follow here have only one H sponsor. It seems like a single H tone can be fissioned into two pieces.

I first provide an account which follows from an expression requirement on the morphological prefix domain when the prefix is lexically H: the leftwards realignment of a stem L is inhibited by obligatory (but minimally misalignable) prefix expression; this inhibiting will be seen to fall out of a pre-existing constraint ranking. This account will point to the symmetry of the two HD edges, left and right, subject to the presence of the morphological prefix+stem complex. In the process of building this strategy, I reject an account that is observationally parallel to the ‘overlap’ (unincorporation) effects seen in §7.7.1, but that would try to analyse the problem as a ‘double reflex’ of a single sponsor feature, even though this approach would eliminate the typological language-internal oddity of a single morphological domain with two disjoint excursions of H.

121 Disjoint reflexes seem unattested elsewhere in Nguni either because this pattern does not apply to the pre-stem H sponsor, or the language is a not a whole-domain-H language (including the standard dialects of Swati, Xhosa, Zulu), in which case we do not anticipate any pre-head syllables being surface-H under normal conditions (depressed or not).
7. 7. 2. 1. HD disjointness is a function of prefix expression (not of shift, block)

A depressed H prefix sponsor syllable can trigger two disjunctive surface manifestations of H from the left of the stem, but where these two H pitch excursions both occur inside the stem domain. I illustrate the would-be ‘shift’ phenomenon in (190a,b), from the present participial verb paradigm (noun paradigm to follow in (192)), with two stems morphologically elongated (by means of reduplication), and crucially with a depressor consonant in the head position (antepenult). There are two salient excursions of H intonation, but a single underlying H sponsor.

Present participial

(190) Single H sponsor surfaces in disjoint stem domain\textsuperscript{122}

a. \ldots gi-\limalimagisíisa \quad me intensively cultivating indiscriminately now & then
b. \ldots gi-pátapatalagisíisa \quad me intensively paying indiscriminately now & then

Now, it is tempting to consider that the disjoint H domain reflects a kind of double shift phenomenon: there are, literally, two sequences of LH, which is the classic Nguni response to a depressed H clash configuration. Thus, it is as if a single H sponsor (a pre-stem H prefix) can trigger two instances of depressor shift: one at the stem left-edge; the other on (or right after) the Head position inside the stem (that is, at the right-edge of the HD). Yet this would be a very strange structural proposition: there would be two right-edge reflexes of a single H sponsor.

If this were truly a double reflex of a single H, then the domain structure would need to be as in (191a,b), where the H sponsor, $\sigma$, has two right edges (both marked $j_r$): the first after stem $\sigma_1$, the second after the first mora of the penult (in these particular examples), that is, after the post-head mora.

\textsuperscript{122} For some speakers, it is slightly more complex than this data set reveals. There appear to be optional degrees of penetration into the stem by the shifted H from the prefix domain: one syllable, two syllables, or all syllables up to the syllable preceding the depressed stem syllable, i.e. $gi-\limalimagisíisa$, as in (190a); $gi-\limalimagisíisa$ (two H syllables; perhaps a post-depressor binary foot); or $gi-\limalimagisíisa$ (all pre-depressor syllables H). Note that $*gi-\limalimagisíisa$ is always ill-formed and does not occur (it has just three H stem syllables). This illformedness is important: the left-alignment pattern, however potentially realignable the stem LD left-edge appears to be, is still constrained in some way. The details of these alternative forms await further work.
Would-be ‘double reflex’ domain structure

a. ...[x{g\text{\textsc{i}}}]-lị]x[malimag\text{\textsc{i}}]sf]xisa

b. ...[x{g\text{\textsc{i}}}]-pá]x[tapatalag\text{\textsc{i}}]sf]xisa

The ‘double shift’ or ‘double reflex’ proposal assumes that WSA-LF(L)—the leftwards realignment constraint that effects depression anticipation (cf. §7.3)—is dependent on the position of the first ‘shift’ instance of the disjoint H (now found on stem σ-1) for its own left boundary. In other words, in (190a/191a), H appears on -li- although sponsored by -g\text{\textsc{i}}-; the left edge of the following LD (triggered by the second (stem) instance of -g\text{\textsc{i}}-) is then aligned not to the stem left-edge, as it would normally be, but to the (bold) right-edge of -li-: -[x{g\text{\textsc{i}}}-lị]x[ma...]

But, given the domain structure motivated throughout this dissertation, and the basic operating principles of ODT, it would be completely untenable to have a single feature domain with one left edge and two right edges. This is not an interpretable representation. Locality, in general, could be easily and multiply violated in this way. All potential predictivity of the ODT constraint grammar would be undone. Surrendering domain edge-pairing would lead to fundamental analytic incoherence: we could not be sure, for any particular domain edge, whether it corresponded to one or two (or more) edgemates.

One may concede that this flawed line of thinking may follow from the observation that, for the first time, we have now encountered data where a single morphological domain (the stem) contains two excursions of H. In all previous data, any surface disjointness of H was distributed across two morphemes—to the left on the prefix complex; to the right in the stem. (In the case of unincorporated H in §7.7.1 (178c-f), there were two excursions of H in the stem, but the stem itself was also lexically H). To be sure, this configuration is a marked one; yet the central issue remains how to achieve the correct output, while not violating basic domain structure principles.

The solution, simply, will entail formalising the requirement that a prefix be expressed as H (and allowing the prefix expression to minimally misalign to stem σ-1). Before pursuing this analysis (in §7.7.2.2 below), I provide further examples of this disjoint H phenomenon: the noun copula examples in (192) confirm the disjoint patterns from the verb depressor shift data (190).
Noun copula

(192) Misaligning prefix expression from disjoint H (nouns)

<table>
<thead>
<tr>
<th>Citation</th>
<th>Copula 1</th>
<th>Optional Copula 2</th>
<th>copula gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mú-nyaago</td>
<td>mú-nyaago</td>
<td>mú-nyaago</td>
<td>it is a doorway</td>
</tr>
<tr>
<td>b. mú-nyago-nyáana</td>
<td>mú-nyago-nyáana</td>
<td>mú-nyago-nyáana</td>
<td>it is a little doorway</td>
</tr>
<tr>
<td>c. lí-laaga</td>
<td>lí-láaga</td>
<td>n/a</td>
<td>it is a day</td>
</tr>
<tr>
<td>d. lí-laga-nyáana</td>
<td>lí-lága-nyáana</td>
<td>lí-lága-nyáana</td>
<td>it is a short day</td>
</tr>
</tbody>
</table>

By the constraints motivated to this point, there is no reason for shift to occur off a depressed prefix onto the following syllable. Thus far, for the copula (192b,d), the only form predicted to occur is Copula 2: the first three syllables of the word (that is, prefix + two stem syllables) should be inside two LDs, with the first mora of the penult as the only locus for expression of H^{\text{124}}.

In (193-194) I provide verb and noun data from the same constructions just instantiated in (191-192) that indicates the presence of a depressor block\textsuperscript{125} analog: H fails to shift off the depressed prefix (= H sponsor) if it is followed by a lexically depressed syllable, even

\textsuperscript{123} There are two surface forms manifest in each row of (192), distinct only in (192b,d): Copula 1 contains two H syllables (a disjoint reflex of H); optional Copula 2 has a single H surface syllable (that is, a single reflex). (192a,c) only appear not to reflect a disjoint (double) reflex under Copula 1 because post-sponsor shift target and Head syllable are coexpressed by the penult (which in this case requires no shift). The sociolinguistic parameters of the two copula forms are not fully understood. Copula 2 is given by some informants as the default form, a form that feels to them ‘more relaxed’, whereas Copula 1 is felt to be a more emphatic form. Others have less secure intuitions about which form matches which pragmatic context. What is important here is that both patterns occur.

\textsuperscript{124} In fact, Copula 1, the ‘non-default’ form for some speakers, is quite common; factors of dialect, speaker, register and style are not yet properly understood. For at least some speakers, this non-default Copula 1 is most definitely the default form; for them, Copula 2 form exists, but mostly as a pragmatically emphatic utterance.

\textsuperscript{125} I omit any present indicative verb data with disjoint (double) H reflexes that demonstrate blocking, for now; blocking effects with OPs can be elicited, but with greater difficulty; these are reported by native speakers to be less comfortable configurations in lexical paradigms—e.g. present indicative long form, cf. Appendix A, paradigm A—that the shift examples (190a-b). This is unsurprising, given that a blocked H on the OP preceding the stem would entail the OP being expressed as surface-H, which OPs in lexical paradigms in the ‘long’ form explicitly avoid (cf. *EXPRESSION_OP in Chapter 5 §5.3). But also cf. Appendix A, paradigm C: present indicative short form, cf. (19g,i,k) and footnote 27): the depressed 1psOP offers disjoint and blocked forms.
though—again—there has been, up to now, no obvious reason for depression block earlier in the HD than at its Head position.

Present participial

(193) **Blocking disjoint H from misaligning off prefix into verb stem**

a. ... *gí-vúlél:la
me opening on behalf of
H blocked on prefix

b. *... gí-vúlél:la
(shift into depressed stem σ-1 is bad)

c. ... gí-dzakadzakáliisa
me injuring now and then
H blocked on prefix

d. *... gí-dzákadzakáliisa
(shift into depressed stem σ-1 is bad)

Noun copula

(194) **Blocking disjoint H from misaligning off prefix into noun stem**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Copula 1</th>
<th>Optional Copula 2</th>
<th>copula gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. má-dvoolo</td>
<td>má-dvoolo</td>
<td>—</td>
<td>they are knees</td>
</tr>
<tr>
<td>b. má-dvoló-nyaana</td>
<td>má-dvoló-nyaana</td>
<td>má-dvoló-nyaana</td>
<td>they are little knees¹²⁶</td>
</tr>
<tr>
<td>c. tí-dzaaba</td>
<td>tí-dzaaba</td>
<td>—</td>
<td>it is news¹²⁷</td>
</tr>
<tr>
<td>d. tí-dzabá-nyaana</td>
<td>tí-dzabá-nyaana</td>
<td>tí-dzabá-nyaana</td>
<td>it is small news</td>
</tr>
<tr>
<td>e. tí-dlu</td>
<td>yí-í-dlu</td>
<td>—</td>
<td>it is a house</td>
</tr>
<tr>
<td>f. í-dlu-nyaana</td>
<td>yí-dlu-nyaana</td>
<td>yí-dlu-nyaana</td>
<td>it is a little house</td>
</tr>
</tbody>
</table>

The noun copula pattern confirms what was suspected for verbs in (191) above: shift *seems* to happen twice, e.g. (192b) [ˌmu-nyaː]ˌgo-nyaː]ana: the first shift ‘edge’ is mu-nyaː]ˌ...

but the real HD right edge in this example is go-nyaː]ˌ. Even in the block environment, two edges appear to be referred to, e.g. (194b) [má]ˌ-{dvoló}-nyaana, where H fails to shift off

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¹²⁶ I have intentionally selected the ‘non-default’ form of these nouns, i.e. without the effects of LD-Mn included; this makes evaluation simpler (and has no impact on the analysis of what will turn out to be ALIGN PREFIX below).

¹²⁷ Nothing follows from the choice of gloss as ‘they are’ or ‘it is’; these both attempt to adequately translate the same morphological copula construction.
depressed *má-* before lexically depressed *-dvo*, but the right-edge HD head is *-lo-*, which must be inside the same HD.

I now attempt to explain this shift and blocking data in disjoint H words, beginning with the most insightful analysis (§7.7.2.2), then mentioning, but not substantively exploring, alternative approaches (§7.7.2.3).

7.7.2.2. Resolving disjointness: expressing the prefix+stem edge

Although we must admit that the patterns above present what appears to be an insuperable analytic problem for the tonological grammar constructed for Phuthi so far, there is a more coherent solution, that builds off several key insights (195), which will provide an explanation for disjointness.

(195) Characteristics of the disjoint Hs

a. If a H-sponsor lies outside (before) the stem domain of a word, that pre-stem locus must be realised as H (even if misaligned into the stem through shift);

b. If that pre-stem syllable is depressed, there must still be surface expression of H at the prefix+stem boundary (shift to the first stem syllable preserves this morphological edge-adjacency in a minimally relativised fashion);

c. Depression on the post-sponsor syllable (that is, stem σ1) overrides the depressor shift requirement, preserving edge-adjacency *in situ* (amounting to the depressor block effect);

d. The further insight which emerges from these ‘shifted’ and ‘blocked’ forms: wherever a ‘shifted’ H is tolerated at the left edge of the stem, it is because the *leftwards* realigning L domain (triggered by the presence of a depressor syllable inside the stem domain), via WSA-LF(L), fails to realign as far as the stem left-edge. The widescope L-realignment stops one syllable short;

e. Leftward realignment of the pre-stem sponsor (to an even earlier pre-stem syllable, if earlier toneless material is available) is never possible;

f. Shifted realignment into the stem beyond stem σ1 is never possible.

The analysis has one core function: identifying and expressing a Prefix Head position, and—in accordance with the possibilities provided by the ODT framework—allowing the prefix expression to minimally misalign where necessary.
I propose that as the morphological stem domain contrives to locate a prosodic Head at a
particular phonological boundary\textsuperscript{128} for nouns and verbs (and all parts of speech), so too prefixes
form a morphological domain, and they too conspire to realise H on the rightmost syllable of that
morphological sequence, which we may call a \textsc{PrefixHead} position (196). The implementing of
this \textsc{PrefixHead} will be achieved by an Express constraint (197), given that we cannot utilise an
Align formalism (there being no phonological tone domain to align at the prefix edge).

\textbf{(196) ~ \textsc{PrefixHead}}
\begin{quote}
\text{Head}_{\text{Prefix}(\ast)} = (\text{Align } \sigma, \text{Rt}, \text{Prefix}_{\ast}, \text{Rt})
\end{quote}
The Head of a prefix sequence \( \ast \) is the rightmost syllable in the prefix sequence.

\textbf{(197) ~ \textsc{Express_PrefixHead} (= \text{Express_Prefix})}
\begin{quote}
Express (Prefix, Head)
Express the Head of the Prefix.
\end{quote}

The express constraint in (197) has the status of an intonation phonology requirement,
similar to \textsc{EndLow} (Chapter §5.3.1.1): it overrides other considerations, potentially even
overriding phonological domain structure (though that remains unnecessary in the present
instance). Similar also to \textsc{*Express_OP} (Chapter 5 §5.4), \textsc{Express_Prefix} requires a phonological
relationship (H expression) on a morphological category (prefix). Similar, finally, to
\textsc{Express_Edge}, it is undominated, but may be minimally misaligned with reference to the original
phonological or morphological reference point (here: the prefix edge).

The \textsc{Express} constraint will apply vacuously in the absence of a HD on a prefix sequence.
The tone domain / prefix alignment in (197) will, thus, not incorrectly instantiate a HD, rather
only fail to apply if there is no HD to align. The assumption, however, is that the \textsc{PrefixHead}
constraint in (196) is undominated, so \textsc{Express_Prefix} will also at least \textit{attempt} to apply (without
gratuitously inserting the expressed H).

\textsc{Express_Prefix} will fail to properly express on a depressed H prefix, under ‘shift’
conditions (190,192), and will misalign rightwards, once, to stem \( \sigma \)1. Under ‘block’ conditions

\textsuperscript{128} For example, the default boundary for phrase-final present indicative verbs (and for
nouns) is the antepenult/penult edge. The boundary in many grammatical verb paradigms is the
penult or ultima. This phonological right edge coincides with the Head position, except for shift
configurations (§7.4.3.2); further reflection is offered in Chapter 8 §8.2.3.

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(193, 194), \textsc{express\_prefix} will succeed \textit{in situ}, since misaligning would not improve the clash output at all. This proposal is reconfiguring what has been presented earlier (§7.4) as a domain align conflict (shift, block) as an \textsc{express} conflict. This opens up the analysis to the fact that the same empirical pattern (a LH tone sequence, to avoid a L/H clash) can be gotten at in at least two different ways). The relevant set of constraints interacting with \textsc{express\_prefix} is given in (198).

(198) \textbf{PrefixHead expression ranking}
\begin{itemize}
\item a. \textit{\textsc{express\_edge} >> \textsc{express\_l}} \quad \text{previously established (cf. Constraint Summary 5: 174-176).}
\item b. \textit{\textsc{express\_l} >> \textsc{express\_prefix}} \quad \text{the prefix prefers to be surface-true to its depression status (whatever the source), than to surface as H.}
\item c. \textit{\textsc{express\_prefix} >> WSA-Lf (L)} \quad \text{better to express the prefix (even if misaligned, that is, shifted) than extend the L domain leftwards to the stem edge fully successfully.}
\item d. \textit{*l\text{-in-H} >> \textsc{express\_l}} \quad \text{previously established, cf. §7.4.3.3, constraint summary (123e)}
\item e. \textit{\textsc{express\_edge, contrast\_hd} >> *l\text{-in-H} >> \textsc{express\_l} >> \textsc{express\_prefix} >> WSA-Lf(L)} \quad \text{transitivity: (a-d) above; (185).}
\end{itemize}

Disjoint ‘shift’ and ‘block’ candidates from (190-194) above are schematised in (199) and domain in (200-201).

(199) \textbf{Disjoint prefix ‘shift’ and prefix ‘block’}
\begin{itemize}
\item a. \{ [σ] -σ[... σ] ...σ] σσ \quad \text{‘shift’: \textsc{express\_prefix} is misaligned to stem σ-1}\textsuperscript{130}
\item b. \{ [ǥ]-{... ı] ...ı] σσ \quad \text{‘block’: \textsc{express\_prefix} succeeds \textit{in situ} (on prefix)}
\end{itemize}

\textsuperscript{129} In each case, the hiatus dots may represent no syllables at all, or one or more syllables.
\textsuperscript{130} It may be suggested that an OCP effect on the alignment of L domains is needed, so that the leftwards wide-aligning LD triggered in a depressor-bearing stem does not align all the way onto stem σ1; rather stem σ-1 will remain non-L in the case of the ‘shift’ environment (this schema in 199a), and therefore available to \textsc{express\_prefix}. The OCP effect on L already exists, in effect, given the broad constraint proposed in Chapter 5 §5.1.1 (17): *\textsc{adjacent\_edges}: * } \textit{[h]_[f]} \quad \text{‘The right edge of a feature domain may not be directly adjacent to the left edge of a distinct parse of the same feature type’. The constraint would be instantiated here with the feature, L. But this constraint will do no work for this data set (but cf. §7.8.1 for the introduction of the OCP constraint on L), given that this OCP effect here will be seen to fall out of pre-existing constraints (crucially, \textsc{express\_l}) interacting with \textsc{express\_prefix}. Not only that, but an OCP constraint actively at work here might \textit{prevent} the non-depressed syllable in a reduplicative stem

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(200) Disjoint H domain structure: misaligned prefix expression

a. ...[gi]-l{malimagi}sílisa  EXPRESS_PREFIX succeeds, misaligns H to stem σ-1

b. ...[gi]-{limalimagi}sílisa  alternative: EXPRESS_PREFIX fails

c. [mú-{nyago}-nyá]ana  noun citation form

d. *[má-{nyág}-nyá]ana  ill-formed citation form: no reason for stem σ-1 to be H

e. [{mú}-nyá{go}-nyá]ana  Copula 1: EXPRESS_PREFIX succeeds, misaligns H to stem σ-1

f. [{mú}-nyago-nyá]ana  Copula 2 alternative: EXPRESS_PREFIX fails

(201) Disjoint H domain structure: non-misaligned prefix expression in situ

a. ...[gi]-{dzakadza}ká]liisa  EXPRESS_PREFIX succeeds in situ (no misalign)

b. ...[gi]-{dzakadza}ká]liisa  alternative: EXPRESS_PREFIX fails; LD fusion

c. [má-{dvo}ló]-nyaana  noun citation form

d. *[má-{dvo}ló]-nyaana  ill-formed citation form (no reason for prefix not to be H)

e. [{má}-{dvo}ló]-nyaana  Copula 1: EXPRESS_PREFIX succeeds in situ (no misalign)

f. [{má}-{dvoló}-nyaana  Copula 2 alternative: EXPRESS_PREFIX fails

Tableau 16 (202)\(^\text{131}\) lays out the constraint interactions that optimally select the disjoint forms (both misaligned and the expected right-edge H) from (200a).

(\(\text{where the prefix will express in situ}\), such as (201a), from being properly L (not H). A fuller examination of the (non-)role of the OCP is called for here.

\(^{131}\) The constraint ranking in Tableau 16 is sufficient, though there may be some possible rerankings; not all sequenced constraints are explicitly ranked relative to each other. But the chart adequately reflects all tone/voice dominance orderings argued for so far in this chapter.)
Tableau 16: Expressing PREFIXHEAD by misaligning onto stem σ1

...gilimalimagisiśa ‘me cultivating intensively and indiscriminately’

<table>
<thead>
<tr>
<th>/ gi- + -lima-lim-ag-isis-a /</th>
<th>*L-in-H</th>
<th>Express L</th>
<th>Express Prefix</th>
<th>WSA-Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) ...[[gi]-līf{malimagi}sf]isa</td>
<td>**</td>
<td>*</td>
<td>0, **</td>
<td>*****</td>
<td></td>
</tr>
<tr>
<td>(b) ...[[gi]-līmālīmā{gi}sf]isa</td>
<td>**</td>
<td>*</td>
<td>0, <em>!</em>****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) ...[[gi]-{limalimagi}sf]isa</td>
<td>**</td>
<td><em>!</em>*****</td>
<td>0, *</td>
<td>*****</td>
<td></td>
</tr>
<tr>
<td>(d) ...[[gī]-{limalimagi}sf]isa</td>
<td>**</td>
<td>*!</td>
<td>0, *</td>
<td>*****</td>
<td></td>
</tr>
<tr>
<td>(e) ...[[gī]-{limalimagi}sf]isa</td>
<td>**</td>
<td>*!</td>
<td>0, *</td>
<td>*****</td>
<td></td>
</tr>
</tbody>
</table>

- (a) is optimal, even though the PREFIXHEAD is misaligned by one syllable; it does not violate L expression; (b) fails on grossly insufficient depression anticipation;
- we have to assume that in (c) both Head edges (Prefix and HD) occur at the antepenult/penult boundary; it is not that the prefix head alignment fails completely, but that it is so egregiously misaligned (I suggested above that PREFIXHEAD never fails—that is, it is inviolable);
- (d) fails by not shifting the HD off the depressed copula prefix which sponsors the H, and EXPRESS_L is inviolate in this candidate set (the ‘shift’ or misaligning data);
- (e) overextends (or, perfectly extends) the leftwards realignment of LD, again at the cost of an EXPRESS_L violation (the EXPRESS_L >> WSA-Lf (L) ranking ensures that HD and LD avoid overlapping);
- *L-in-H does no work in this data set, but it will in the following tableau.

Similarly, Tableau 17 (203) lays out the constraint interactions that optimally select the disjoint—and non-misaligned (that is, depression ‘blocked’)—H forms from (201a).

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The verb -lim-a ‘cultivate’ is an ‘optimal’ candidate for 2-σ, non-depressor-bearing, toneless transitive verbs; it serves as a useful base for reduplication, and for the semantics of the extensive suffix (‘indiscriminately’), with a semantically human grammatical subject, even though it produces curious meaning for the predicate as a whole. Nevertheless, words such as (202) are accepted as phonologically and morphologically well-formed, even when the 1ps OP is used, such as: ‘X cultivates me’. In (202) here, ‘me’ is an oblique subject in the non-finite participial clause. An alternative exemplar for this verb type is -hlab-a ‘stab’, which I use, but sparingly because of the semantic unpleasantness it denotes, especially in reduplicative forms.
Tableau 17: Expressing Prefix Head by not misaligning onto stem σ1
... *gidxkakdzakáliisa ‘me injuring here and there’

<table>
<thead>
<tr>
<th>/ gi- + -dzakadzagal-is-a /</th>
<th>*L-in-H</th>
<th>Express Prefix</th>
<th>WSA- Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) ...[{gi}-dzakadza{ká}]liisa</td>
<td>**</td>
<td>*</td>
<td>0, *</td>
<td>***</td>
</tr>
<tr>
<td>(b) ...[gi]-dzâkadza{ká}]liisa</td>
<td>**</td>
<td>*</td>
<td>0, *</td>
<td>***</td>
</tr>
<tr>
<td>(c) ...[gi]-dzakadza{ká}]liisa</td>
<td>**</td>
<td>****</td>
<td>0, *</td>
<td>****</td>
</tr>
<tr>
<td>(d) ...[gi]-dza[ká]dzâliisa</td>
<td>*<strong>!</strong></td>
<td>**</td>
<td>0, *, ***</td>
<td>***</td>
</tr>
<tr>
<td>(e) ...[gi]-dza[kádzâ]liisa</td>
<td>*<strong>!</strong></td>
<td>*</td>
<td>0, *, **</td>
<td>***</td>
</tr>
</tbody>
</table>

- The set of interactions is similar to (202), except that here *L-in-H is called into service to separate optimal (a) from non-optimal (d-e), where WSA-Lf has improperly left-aligned the depressed L domain in (d), and (e) contains an LD with a syllable expressed as H.
- There is a problem with candidate (c): it appears to be more optimal than optimal (a), because it fails to violate Express_L, if we accept that the prefix is indeed being expressed, but as far right as the -ká- syllable coexpressing the right edge (the Head) of the HD. We may require some kind of expression window (e.g. a two syllable foot) within which Express_Prefix must be satisfied. This could extend to other (re)alignable Express constraints, to eliminate technically eligible, but highly implausible, candidates such as this one. If a candidate such as (c) truly fulfilled Express_Prefix (as well as Express_Edge), there would be significant dislocation between prefix site and expression site, so as to render successful prefix expression as relatively meaningless. A further alternative is that optimal (a) does not properly violate Express_L, and that this Express failure has to be reconsidered.
- (c) also illustrates the Copula 2 pattern (returned to below) where no H surfaces on the prefix domain at all; in Copula 2, there is no such thing as a 2-σ window within which to implement the Prefix H, in which case this will be the most optimal candidate.
- (d) is an interesting candidate that tries to circumvent the blocking obstacles by realigning to an available potentially non-depressed syllable between consonant depressors -ká-, but this necessitates more LDs than needed.
- (e) is very similar, though worse: HD and LD overlap.
- Both (d) and (e) fail mainly due to disjoint LD structure internal to the stem domain; challenger candidate (c) and optimal (a) both contain a single LD domain in the stem, which assumes that stem depressors fuse to create a single stem LD domain for all contiguous syllables. We return to LD fusion in §7.7.2.4, and then §7.8.1.8 below.
I make two final observations relating to disjoint Hs. First, in the case of shorter 2-σ stems where H is sponsored on the prefix, EXPRESS_PREFIX is always redundantly satisfied: the two express constraints—EXPRESS_EDGE and EXPRESS_PREFIX—and the HD right edge alignment constraint in this instance all target the same prosodic site, whether shifted or blocked, as illustrated in Tableau 18 (204).  

(204) **Tableau 18:** EXPRESS_PREFIX and EXPRESS_EDGE can coincide  

*“it is years” (COPULA)*  

<table>
<thead>
<tr>
<th>/ tí- + -lim-o /</th>
<th>*L-in-H</th>
<th>Express L</th>
<th>Express Prefix</th>
<th>WSA - Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>#* (a) [ tô ]-lîimo</td>
<td>*</td>
<td>*</td>
<td>0</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(b) [ tô ]-liimo</td>
<td>*</td>
<td>*!</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*“it is news” (COPULA)*  

<table>
<thead>
<tr>
<th>/ tî- + -dzaba /</th>
<th>*L-in-H</th>
<th>Express L</th>
<th>Express Prefix</th>
<th>WSA - Lf (LD)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>#* (c) [ tô ]-{dzaa}ba</td>
<td>*</td>
<td>*</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) [ tô ]-{dzá}a]ba</td>
<td><em>!</em></td>
<td>*</td>
<td>*</td>
<td>0, *</td>
<td>*</td>
</tr>
</tbody>
</table>

Second, an important aspect to the way I have set up EXPRESS_PREFIX is that the depression pattern observed in §7.2.2.1, repeated as (205), remains satisfied by the ALIGN_PREFIX conditions.

(205) **Depression Pattern 1d:** HD Lf-edge (repeated)  
The left edge [=sponsor] of a HD is not necessarily surface-expressed as H.

133 These two-syllable stems have no alternative Copula 2 surface form: *{ tô ]}-liimo, *{ tô ]}-dzaba. Such forms would entail no H surfacing on the prefix, which would leave the words toneless, violating MAX_H or CONTRAST_HD. More importantly, this would never happen, because even if the prefix domain failed to reveal the H contrast (or the prefix LD was fused with the stem LD, in (204c-d), cf. §7.7.2.4 below), the ‘basic’ HD always expresses H at its right edge. It just so happens in these examples that the two expression sites coincide. The basic HD never underexpresses altogether.
Not all HDs need to be H at their left edge; rather, only pre-stem material that sponsors a H must retain a surface trace of that H tone peak position. Examples from §7.2.2.1 are re-presented in (206a-b). While alternative EXPRESS-based conceptualisations of disjoint H might be along the lines of EXPRESSSPONSOR, or EXPRESSLEFTEDGE—both of which would appear to predict the disjoint H data seen in this section so far—both of which would also have directly contradicted (205), requiring not the surface forms in (206a-b), but the non-occurring forms in (206c-d).

(206) Predictions of obligatory left-edge expression of HD

a. si-ya-tshegeláana si-ya-[{tshege}]láana we buy for one another

b. si-ya-gadzagi sélaana si-ya-[gadzagisé]laana we help stamp indiscriminately for e.o.

c. * si-ya-tšēgeláana * si-ya-[tšēge]láana

d. * si-ya-gádzagi sélaana * si-ya-[gádzagisé]laana

7.7.2.3. Alternative approaches

Alternatives to the proposed EXPRESS_PREFIX approach may be ventured but none will be explored in any detail here; I briefly enumerate three.

First, we might posit a kind of intonational or tone shape approach (207) for the disjoint H misalignment examples.

(207) Expression of disjoint H left-edge falls out of intonational requirements (hypothetical)

A depressed syllable seeks to return from below-median (low) pitch to non-low pitch, by expressing the post-depressed syllable with above-median pitch (high).

That is, a depressed (Low) syllable must be followed—where possible—by a High syllable. If the depressed syllable is not a H sponsor, then DEP-H would prevent gratuitous insertion of H; but where the depressed syllable is a H sponsor, then local shift must occur, irrespective of the ultimate right-edge target of H expansion. This LH shape—that is, local
shift—is conditional on the depressed syllable *not* being followed by a second breathy voiced (LD) syllable.

(207) can be rephrased as the need for a contour of the type [L,H] to obtain, wherever the first part of the contour condition (that is, depressed L inside a HD) is met. This may be formalised as (208).

(208) **LH Contour** (hypothetical)

\[ \text{[µ$\ldots$]} \text{ must be followed by [ú].} \]

There is additional evidence that may support such a generalisation. Data from the present indicative reduplicative (first seen in Chapter 4 §4.1ff., but not with the full range of surface possibilities), with depressor consonants in various stem positions, shows that a single H sponsor may instantiate multiply at the surface\(^{134}\): it appears that a LH contour corresponds to every depressor site.

(209) **Present indicative reduplicative: multiple H-expression sites**

a. bá-yá-dzakádzakáliisa they cause injury bit by bit

b. bá-yá-dzakádzakálísaana they cause each other injury bit by bit

Such an approach is highly stipulative, however: it does not explain the pattern. In addition, it obscures the fact that the H of LH is closely linked to the sponsor status of the L syllable, and to the antagonism of H and depressed L. While there may be some yet to be

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\(^{134}\) The conditioning of the multiple H-expression sites optional surface patterns is not fully understood. Not all stem lengths that should be able to support such multiple loci for the expression of H actually do so for all permutations. So, *bá-yá-dzakáala* ‘they become injured’ reduplicates as *bá-yá-dzakádzakáala* ‘they become injured bit by bit’, and *not* with the alternative *bá-yá-dzakádzakáala*, where the first -ka- would also be H. There are several variants that were offered as surface options related to speaker emphasis. For example, the underlyingly H object prefix in the present indicative long form, which is itself always surface-low (aside from an exceptional form with short stems), was also offered as H, under speaker emphasis. I have not included all such options in the present work. Unexpected forms such as the ones under consideration here, with multiple H loci, may indeed function as emphatic alternative forms, but robust verification of such data is awaited.
proposed articulatory account for the necessity of a LH sequence in response to a depressed
H-sponsor, it is far preferable to let the necessary LH pattern fall out of constraints that are more
explanatory, as have been proposed in the previous section.

And yet the LH shape requirement is not as far-fetched as it may seem. Comparative data
from Xhosa (Cassimjee 1998:60-65) shows that a HD is surprisingly expressed entirely as H in
that language (depending on dialect), when a depressed prefix (underlyingly H) immediately
precedes the HD of a H stem (210a-b), as opposed to the general case, where only the head
syllable (that is, right edgemost) is expressed as H (210c-d). It is as if the presence of the
depressed H is sufficient to invoke a return to ‘full’ H status (that is, whole domain H) in
successive syllables. This is analysed by Cassimjee as the interaction of an OCP-cum-fusion
effect on adjacent Register Domains, which effectively plateaus HLH (that is, H0H) sequences
into HHH. In intonation phonology terms, the LH contour would be anchored at the left edge of
the depressor sponsor, and the H edge would be stretched rightwards (the H span in fact
incorporates two merged non-downstepped H features).

(210)  Xhosa LH triggered by depressed L preceding a HD-bearing stem
   a. zi-yá-békísiisa  they (Cl. 10) lay thoroughly
   b. zi-yá-bónákíliisa they (Cl. 10) cause to be visible
   c. bá-ya-békísiisa  they (Cl. 2) lay thoroughly
   d. bá-ya-bonákíliisa they (Cl. 2) cause to be visible

Second, we could make the observation for disjoint H prefix examples which minimally
misalign (that is, which express prefix H on stem σ-1) that there are two loci in the HD that are
prominent; we might hypothesise that both edge loci need expression as H, whatever the domain
structure that underlies such expression (much as ENDLOW in Chapters 5 and 6 simply requires
right-edge lowness, whatever the domain configuration). Equally stipulative to the LH proposal,
this expression-based approach mandates two H peaks (at left and right edge of the HD), clearly
subject to the presence of a H sponsor on the (depressed) prefix. This surface shape may be
distributionally accurate, but such an approach explains nothing. It also suggests that this surface
The phenomenon is genuinely an instance of H tone fission. The `EXPRESS_PREFIX` strategy followed above avoids suggesting there has properly been tone fission.

Third, we could pursue an approach where a single UR H sponsor parses two discrete HDs (HD_x, HD_y); such domains could be triggered by the L sponsor in its sponsor position, where the HD prefix head or regular right head position overlaps with the LD sponsor (211)\(^{135}\).

\[(211)\] *Disjoint Hs indicate two discrete HDs* (hypothetical)

\begin{enumerate}
\item \([g_i]_{\text{lif}} \{\text{malima}\}_{g_i} \text{sf} \text{isa}\) shift from SP into stem \(\sigma_1\)
\item \([m_u]_{\text{nyá}} \{g_o\}_{\text{nyá}} \text{ana}\) copula 1: shift from prefix into stem \(\sigma_1\) (and also from antepenult onto penult)
\item \(\ldots \{ g_{i} \}_{\text{dazakadza}} \{ k_{a} \}_{\text{liisa}}\) block between SP and stem \(\sigma_1\)
\item \([m_{a}]_{\text{dvo}} \{l_{0}\}_{\text{nyaana}}\) copula 1: block between prefix and stem \(\sigma_1\)
\end{enumerate}

This approach promises certain fruits, such as well-formed HDs where each left and right edge have a unique edgemate, and where expression as a property distinct from HD alignment need not be invoked. But, at the same time, a single UR H sponsoring two truly discrete (disjunctive) surface-H domains conflicts with basic ODT architecture (violating `UNIQUE`, and indeed any two-level phonology); the location of the left edge (or ‘sponsor’) of the second (rightmost) HD in such a configuration is highly problematic.

On the basis of the outlined weaknesses, I reject these three putative alternative strategies, retaining the disjointness analysis presented in §7.7.2.2.

7. 7. 2. 4. Non-default non-disjoint HD outputs reflect LD fusion

It was shown in (192b,194b) above, repeated as (212a,b) that an alternative, non-default copula is available for the disjoint H forms: a single reflex of sponsor H, where H surfaces only in the expected HD right-edge position.

\(^{135}\) Examples (211a-d) = (190a), (192b), (193c), (194b), but with slightly reconfigured HD structure.
Non-default Copula 2: no disjointness

a. [{m̥}-{n̲a̱ɡ}]-nyá]ana copula 2: no prefix expression (misalign to stem σ-1)

b. [{m̥}-{d̲v}]-nyaana copula 2: no prefix expression (in situ)

Similarly, for the verb data given in (190a, 193c), repeated as (213a,b), there is an alternative form where the depressed prefix has no prefix-aligned expression.

Non-default disjoint H verb data as non-disjoint

a. ...[{g̡i}-{li̱ma̱m̱i}]-sí]isa no prefix expression misaligned to stem σ-1

b. ... [{g̡i}-{d̲z̲a̱k̲a̱d̲z̲a}]-ká]liisa no prefix expression in situ

These surface forms are explicitly predicted not to be optimal, given the high ranking of *L-$\text{IN}$-$H$, first proposed to trigger depression block. By the constraint, given the configurations in (212a,b, 213a,b), prefix expression should be guaranteed, as shift to the right (even though to the HD head position) worsens the *L-$\text{IN}$-$H$ violations in each case (from one, to two).

Rather, these non-disjoint H forms appear to result from an operation which has not been considered up to this point for LDs, but which is certainly required for adjacent HDs (Chapter 5 §5.2): domain fusion\[136\]. Just as HD fusion was argued to be triggered by an OCP instantiation, so it is for adjacent L domains: \*AE(L)\[137\] (214). This constraint is the exact analog of \*AE(H) for adjacent HDs, itself a particular instantiation of : \*ADJACENT_EDGES (*AE), first considered in Chapter 5 §5.1.1. Just as HD fusion emerges from banning the adjacency of identical H features, so it does with the OCP effect on L tokens in (214).

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\[136\] Such a move to fuse the two LDs would explain an otherwise unexplained asymmetry in non-default forms which I have not commented on: while the ‘blocking’ (that is, in situ expression) forms among disjoint H words commonly have this effectively toneless copula prefix due to LD fusion (215c,g), the shift examples (215a,e) among disjoint H words typically reveal this non-default form less often. Since there are no lexically adjacent LDs to fuse in the shift examples, this makes a certain analytic sense; it also calls for more careful account of gradient LD fusion effects, depending on whether a particular LD is lexically triggered in situ, or whether the fusable LD edge in question is a result of wide scope realignment.

\[137\] The structural conditions under which \*AE(L) applies are refined in §7.8.1 (where two distinct types of L emerge: $L_{\text{GRAM}}$ and $L_{\text{LEX}}$): §7.8.1.6 (275), §7.8.1.8 (288).
(214) \*adjacent\_ld\_edges \ (*\ae(l)\*)
* \eleq{y}{y}

The right edge of a L domain (L_x) may not be directly adjacent to the left edge of a distinct parse of L (L_y).

Non-default fusion forms respecting \*\ae(l)\* are given in (215a,c,e,g). Unfused (non-default) domains are given in (215b,d,f,h), ill-formed by excessive \*L-\in-h\* violation.

(215) Non-default non-disjoint HD selection

a. \{\mu\_nyago\}\_ny\_ana
copula 2: no prefix expression (misalignment expected); LD fusion

b. \*\{\mu\}\_\{nyago\}\_ny\_ana
copula 2: no prefix expression (misalignment expected); no LD fusion

c. \{\ma\_dvo\}\_lo\_nyaana
copula 2: no prefix expression (in situ); LD fusion

d. \*\{\ma\}\_\{dvol\}_lo\_nyaana
copula 2: no prefix expression (in situ); no LD fusion

e. \ldots\{\gi\_limalimagi\}_\{s\}\_isa
no prefix expression from SP on stem \sigma_1; LD fusion

f. \*\ldots\{\gi\}_\{limalimagi\}_\{s\}\_isa
no prefix expression from SP on stem \sigma_1; no LD fusion

g. \ldots\{\gi\_dzakadza\}_k\_liisa
no prefix expression from SP on stem \sigma_1; LD fusion

h. \*\ldots\{\gi\}_\{dzakadza\}_k\_liisa
no prefix expression on SP; no LD fusion

Clearly, the ODT style grammar or dialect grammar that allows or prefers the non-default forms must value LD fusion more highly than the parsing of LDs in situ. This would be reflected as in (216): highly ranked \*L-\in-h\* is undominated in either case. The new \*\ae(l)\* is inserted either below \express\_prefix (216a) to allow no LD fusion to take place in the case of Copula 1, and hence allow the disjoint H to surface in two places, obeying \express\_prefix; or \*\ae(l)\* is
inserted above `EXPR` (216b) to achieve LD fusion in the Copula 2 cases. The choice of *AE(L) vs. EEXPR ranking is style-dependent (marked below with ζ).

(216) Selection of disjoint H or non-disjoint H (no prefix expression)

a. *L-in-H >> Express_Prefix >> *AE(L)ζ Copula 1: prefix expression; no LD fusion; disjoint reflex
b. *L-in-H >> *AE(L)ζ >> Express_Prefix Copula 2: no prefix expression; LD fusion; single (non-disjoint) reflex

7.7.3. CONCLUSION

This section has made two important theoretical (but also empirically significant) points: the universally assumed non-overlap of distinct feature tokens is demonstrably violable in the case of depressor-bearing HDs containing a pre-depressor widescope realigned LD; such a HD, whose left edge is L (but not breathy) can receive a distinct H token depressor-shifted into it, resulting in what appeared to be abstract initially to be domain overlap but was resolved as sponsor/domain misalignment, in the form of unincorporation (§7.7.1). Further, a single HD sponsor can result in the disjoint surface expression of that feature at the left and right edges of a single stem (§7.7.2); this is the only time that Phuthi allows a single HD to be non-contiguously expressed within a single morpheme. Yet there remains the fundamental observation that—barring the special instance of perfect fusion in the merging of adjacent HDs or LDs (as discussed in §7.7.1.1 above—overlap of discrete feature tokens of the same feature type is incoherent, and thus banned above everything; hence the reranking of *OVERLAP,—now a general feature constraint—in (217-219) to the topmost position of the constraint hierarchy.

7.7.4. CONSTRAINT SUMMARY

I summarise the new rankings (217), and the entire tone/voice constraint set up to this point (218), with the dominance relations visually sketched in (219).

(217) Constraint set (tone/voice), version 6: new rankings

- Unincorporation rankings
  a. Express_Edge >> Incorporate (from 185)
  b. Contrast_HD >> Incorporate (from 185)
  c. Express_Edge >> Express_L (from 185)
d. Max H, Max L >> Incorporate (from 185)
e. Max-L >> *L-in-H (from 185)
f. Express_Edge, Max L >> *L-in-H >> Express_L >> WSA-Lf (L) >> Incorporate (from 185)

- **Disjoint H rankings**
  a. Express_Edge >> Express_L (from 198)
  b. Express_L >> Express_Prefix (from 198)
  c. Express_Prefix >> WSA-Lf (L) (from 198)
  d. Contrast_HD >> Express_Prefix (from 198)
  e. Express_Edge vs. Contrast_HD (from 198)
  f. Contrast_HD >> Express_L (from 198)
  g. Express_Edge, Contrast_HD >> Express_L >> Express_Prefix >> WSA-Lf (L)

- **Selecting disjoint H or non-disjoint H**
  a. *L-in-H >> *AE(L) >> Express_Prefix (ζ) (from 216) ζ = style-dependent
  b. *L-in-H >> Express_Prefix >> *AE(L) (ζ) (from 216) ζ = style-dependent

- **Reranking of *OVERLAP**
  a. *Overlap, >> everything (x = H, L, any other feature)

(218) **Total constraint summary (tone/voice, partial): version 6**

- **Resolving Clash**
  a. BA-Lf (L), BA-Rt (L)
  b. Express_L >> Express_H
  c. Max-H, Max-L >> Express_L >> Express_H >> *Rise

- **Anticipating L**
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)

- **Shift**
  a. Head_x = (*AE_x >> NonFin(π)_x >> HD-Min_x >> AvoidProm(π)_x >> WSA-Rt(π)_x >> BA-Rt_x)
  b. Express_Edge >> Head_H >> Express_L >> Express_H

- **Block**
  a. Express_Edge, Max-L, Head_H >> *L-in-H >> Express_L, WSA-Lf (L)

- **L Minimality**
  a. NonFin, AvoidProm >> LD-Min
  b. LD-Min >> Express_H
  c. *Overlap(L) >> LD-Min
  d. *Overlap(L), NonFin_LD, AvoidProm_LD >> LD-Min >> Express_H >> NonFin_HD, AvoidProm_HD
• **Masked and quasi-depression**
  a. \(*\text{Max-L } (\pi) >> \text{Max-L} \) \(\pi = \text{past subjunctive}\)
  b. \((\text{Express}_H >> \text{Express}_L) (\pi) \) \(\pi = \text{past subjunctive}\)

• **Unincorporation**
  a. \(\text{Express}_\text{Edge} >> \text{Incorporate}\)
  b. \(\text{Contrast}_\text{HD} >> \text{Incorporate}\)
  c. \(\text{Express}_\text{Edge} >> \text{Express}_L\)
  d. \(\text{Max H, Max L} >> \text{Incorporate}\)
  e. \(\text{Max-L} >> *\text{L-in-H}\)
  f. \(\text{Express}_\text{Edge, Max L} >> *\text{L-in-H} >> \text{Express}_L >> \text{WSA-Lf} (L) >> \text{Incorporate}\)

• **Disjoint H**
  a. \(\text{Express}_\text{Edge} >> \text{Express}_L\)
  b. \(\text{Express}_L >> \text{Express}_\text{Prefix}\)
  c. \(\text{Express}_\text{Prefix} >> \text{WSA-Lf} (L)\)
  d. \(\text{Contrast}_\text{HD} >> \text{Express}_\text{Prefix}\)
  e. \(\text{Express Edge vs. Contrast}_\text{HD}\)
  f. \(\text{Contrast}_\text{HD} >> \text{Express}_L\)
  g. \(\text{Express}_\text{Edge, Contrast}_\text{HD} >> \text{Express}_L >> \text{Express}_\text{Prefix} >> \text{WSA-Lf} (L)\)

• **Selecting disjoint H or non-disjoint H**
  a. \(*\text{L-in-H} >> *\text{AE} (L) >> \text{Express}_\text{Prefix} (\zeta)\)
  b. \(*\text{L-in-H} >> \text{Express}_\text{Prefix} >> *\text{AE} (L) (\zeta)\)

• **Reranking of *OVERLAP**
  a. \(*\text{Overlap}_x >> \text{everything} (x = H, L, any other feature)\)

[turn to the next page for (219) ‘Constraint rankings (tone/voice), version 6: dominance orderings’]
(219) Constraint rankings (tone/voice), version 6: dominance orderings

- the re-rankability of *AE(L) and EXPRESS_PREFIX is a choice conditioned by style (ζ), achieving either Copula 1 (misaligned prefix expression) or Copula 2 (in situ prefix expression).
7. 8. Lexical and Grammatical Depression without Segmental Triggers

In the previous sections of this chapter, we have established the following points relating to voice/tone interactions (220).

(220) Voice / tone interactions
a. Depression and breathiness are not coterminous: tonal depression occurs on certain syllables (stem edge to pre-breathy syllable) which do not manifest breathy voicing;
b. An independent tone feature (L) has been proposed, appearing to enable the capture of this asymmetry (breathiness entails L-ness; but L-ness does not entail breathiness).
c. Except for a surprising paradigm-specific suspension of depressor shift (the depressed SP in the past subjunctive, cf. §7.6.3), the L feature forces the depressor shift/block phenomenon at the right edge of any HD (the head position), in order to resolve the H/L clash.

In this final section on tone/voice, we examine the full set of Phuthi depression data not triggered by consonantal breathiness. In §7.8.1, we consider all possible configurations of tone and voice interactions for a single grammatical paradigm: the present indicative negative. We see new evidence for the independence of depression (analysed as the L feature) from breathiness. But we also see new wrinkles in the deployment of L. First, L can be used grammatically: it is inserted on the penult of toneless stems in certain grammatical paradigms (here: the present negative); second, this grammatical L has properties partially distinct from lexical L: it is unrealignable leftwards; its parsing is subject to an OCP constraint on adjacent L features. Third, HD and LD can co-occur, both structurally and in terms of surface expression (that is, without an LD-embedded head H being rising). Fourth, the grammatical L blocks tone shift into its domain, as lexical Ls do.

In §7.8.2, I consider a small, but diverse, set of lexical and morphological forms that require lexical parsing of non-consonant-triggered (breathy) depression, also on the penult, or on a grammatical prefix, where the insertion process is sensitive to the tone category of the penult, and to a segmental property of the syllable onset at the potential insertion site (sonorancy). We see, then, that non-consonant-triggered L can be either lexical or grammatical, but that both types target the same prosodic prominence site.
7. 8. 1. TONELESSNESS AND DEPRESSION: POSITIONAL INSERTION OF GRAMMATICAL L

There is a set of Phuthi verb paradigms whose penult syllables, in toneless stems, are depressed. These include the present negative and the remote past. The process of grammatical depression (L) insertion (and the targeting of the penult locus) is further examined in §7.8.2. In the present section, the tone/voice properties of the present negative are examined, in detail, as it is a paradigm that displays a very wide range of tone/voice interactions. Specifically, I examine the paradigm in these sections: the basic pattern of the present negative (§7.8.1.1); hypotheses concerning the location of the depressed syllable: stem-initial or stem-final (§7.8.1.2); the claim of an unrealigned grammatical L on the penult of toneless stems (§7.8.1.3); distinct behaviour between lexical and grammatical L tone (§7.8.1.4); the insertion of grammatical L exclusively on toneless/low stems (§7.8.1.5); the OCP effect on grammatical L-insertion (§7.8.1.6); the typology of fusable H domains, relative to L features: fusion and anti-fusion (§7.8.1.7); lexical tone category conflation by LD fusion (§7.8.1.8); LD minimality, including the important typology of fusable HD structures (292) (§7.8.1.9); depressed prefix-triggered shift and anti-fusion (and pseudo-anti-fusion) (§7.8.1.10); the possibility of reinterpreting the lexical stem contrast as H vs. L (§7.8.1.11).

7. 8. 1. 1. Present negative

The present tense indicative negative is a grammatical paradigm which instantiates the ‘stem-σ2-to-penult’ grammatical H pattern (cf. the chart in Chapter 6 §6.1, Tableau 1 (3)): in all stems longer than two syllables, all syllables from σ2 to the penult surface as H (providing no depression). Thus, in 3+σ toneless stems (223-225), stem σ1 is empty, reserved for the lexical H which appears in 3+σ H stems (228-230). All non-depressed negative SP prefix morphology displays essentially the same surface tone behaviour: σσ... (except for the particular pattern of 1-σ and 2-σ stems, which I comment on following the exposition of data below).

The present negative and remote past have distinct phonological and tonal properties, which are relevant in the selection of distinct analytic approaches here: (1) the remote past contains a lengthened tense/aspect (pre-stem) morpheme -a:-, which the present negative lacks; (2) the remote past also forbids in all cases tone-shift off a depressed prefix into its penult syllable; we will see that the present negative only forbids such shift for verbs in the toneless/low category. Finally, the present negative has a very short vestigial mid-to-low falling tone on its prefix a- (the only instance of its kind), which I have uniformly represented as toneless.

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Present negative: H NegSP + toneless (low) stems

(221) 1-σ stem
a. akáa-'tí  
   s/he doesn’t come
b. akáa-'nyí  
   s/he doesn’t excrete

(222) 2-σ stem
a. aká-łúuími  
   s/he doesn’t cultivate
b. aká-łáási  
   s/he doesn’t light a fire

(223) 3-σ stem
a. aká-li'bááli  
   s/he doesn’t forget139
b. aká-pa tááli  
   s/he doesn’t pay

(224) 4-σ stem
a. aká-li’bátíísí  
   s/he doesn’t delay
b. aká-li’ímísíísí  
   s/he doesn’t cultivate intensively

(225) 5-σ stem
a. aká-li’bátíísíísí  
   s/he doesn’t delay intensively
b. aká-te’pélííísí  
   s/he doesn’t make (smn) do (sth) slowly

Present negative: H NegSP + High stems

(226) 1-σ stem
a. akáa-phí  
   s/he doesn’t give
b. akáa-khí  
   s/he doesn’t draw (water)

(227) 2-σ stem
a. aká-bóóni  
   s/he doesn’t see
b. aká-méémi  
   s/he doesn’t invite

(228) 3-σ stem
a. aká-sebético  
   s/he doesn’t work
b. aká-bóñísí  
   s/he doesn’t show

(229) 4-σ stem
a. aká-sebétííísí  
   s/he doesn’t use
b. aká-khúúlúníísí  
   s/he doesn’t help speak

139 Gloss conventions: ‘smn’ = ‘someone’; ‘sth’ = ‘something’. The downstep is given for all the toneless/low stems, because the step is often more noticeable than it is in other paradigms, even though it is only crucially contrastive for the 2-σ stems (222). The downstep in (221) is ultima (cf. Chapter 5 §5.5.4), whereas for (223–225) it is regular general downstep (§5.5.2).
Thus the H tone domain structure of this paradigm is uncontroversially assigned as in (231), with the exception of 1-σ and 2-σ stems.

The 1-σ High and toneless (low) stems above (221, 226) display the grammatical H on their only stem syllable, and it is downstepped relative to the H prefix—as one expects based on the claims made about downstep (and Register Domains)—at the penult/ultima boundary of the two H syllables (Chapter 5 §5.5.4).

But the surprise lies in the 2-σ toneless (low) stems, which carry an obligatory downstep at their antepenult/penult juncture. This might appear unsurprising at first, since it was argued in Chapter 5 §5.5 that this very juncture is marked by downstep (CrISPSTEM & AVOIDPROM >> *AE, that is, the conjoined anti-antialign constraint repels the OCP instantiation which otherwise causes fusion at the HD-x-HD_y interface). But by this reasoning the 2-σ H stem aká-bóóni should also contain a downstep, and it does not. Either (a) this paradigm tolerates HD-fusion at the antepenult / penult, and the toneless (low) stems suspend this for some reason; or (b) no fusion is tolerated at this juncture (in L stems, at least), and a particular constraint must override anti-fusion and enforce it for High stems alone.

7. 8. 1. 2. Stem-initial or stem-penult depression, or neither

Before settling on an account of this wrinkle, additional information from the same paradigm is supplied (232), but with the (depressed) 1ps as SP (and H, as all SPs are in this

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140 The matter of whether the SP and the stem H domains are fused or not in (231b) is treated in §7.8.1.7 below.
paradigm): two toneless stems with a surprise rising H (not low) on the depressed second syllable SP (232a,d), each with two non-occurring but potentially expected surface forms (232b-c,e-f); contrasted with two H stems, each with no rise on the depressed SP syllable (232g,i), each with one\textsuperscript{141} non-occurring alternative (232h,j).

(232) \textsuperscript{2-σ} present negative stems

\textbf{Toneless/low stems}

a. \textipa{agí˘-líími} I don’t cultivate

b. *\textipa{agi˘-líími} this reflects HD\textsubscript{x}-HD, unincorporation, cf. participial ...gi˘-tshééga, ‘me buying’; and (g, i) below

c. *\textipa{agi˘-líími} this reflects depressor shift, cf. ...gi˘-láadza ‘me fetching’, where the penult is lexically and grammatically toneless/low

d. \textipa{agí˘-báási} I don’t light a fire

e. *\textipa{agi˘-báási} this reflects HD\textsubscript{x}-HD, unincorporation, cf. participial ...gi˘-tshééga, and (g, i) below

f. *\textipa{agi˘-báási} this reflects depressor shift, cf. ...gi˘-láadza ‘me fetching’, where the penult is lexically and grammatically toneless/low

\textbf{H stems}

g. \textipa{agi˘-bóóni} I don’t see

h. *\textipa{agi˘-bóóni} this would reflect shift failure (block), as in (a,d) above

i. \textipa{agi˘-méémi} I don’t invite

j. *\textipa{agi˘-méémi} this would reflect shift failure (block), as in (a,d) above

The refusal of (232a,d) to accept a H shifted off depressed, H -gi˘- is parallel to what was seen at the SP-OP interface in §7.6.3: no shift off a clearly depressed (and breathy voiced)

\textsuperscript{141} We do not expect depressor shift with H stems, e.g. *\textipa{agi˘-bóóni}, because the penult is already (level) H: \textipa{agí˘-bóóni}.
syllable. This phenomenon is highly marked in Phuthi: almost no non-depressed syllable refuses to receive a shifted H off the preceding depressed syllable.

Up to this point in the grammar we have seen that a H tone generally fails to shift under only two conditions (233).

(233) **Shift failure conditions**
   a. Depressed H fails to shift to an immediately following syllable if that successive syllable is also depressed;
   b. Depressed H phrasal penult fails to shift to the phrasal ultima.

In all other cases that we have seen that shift occurs if its structural description is met. Assuming, broadly, that there are no conditions for shift failure besides block (233)—and the occasional paradigm-specific condition—then in the present indicative negative, penults in the toneless (low) paradigm must be depressed (the first condition for shift failure, in 233), given that they are not in ultima position (the second condition, 233b).

But the problem we need to face is as follows: toneless stem penults in this paradigm are not apparently breathy (even though are markedly lower in pitch), or, at least, certainly not breathy in the same way that lexically depressed (breathy) syllables are. This appears to be the case from the spectrographic and pitch footprints: there is less F2 reflecting early onset of breathy perturbation and no rising F0 intonation on the lowered penult.

Breathiness in Phuthi has been argued to be mediated by a Low feature (L). Most of the data in this chapter has involved overt breathiness, and L has been a convenient feature to represent this breathiness. Not only lexical L but also what I have called grammatical L (in fact, grammatically triggered L) have been exemplified, where both kinds of syllable are breathy (e.g. the grammatical insertion of L in noun copula prefixes has also invoked a breathy syllable).

We have also seen that L domains can be extended from the sponsor syllable, both leftwards, under depression anticipation, achieved by WSA-L₁ (L), and rightwards, under L minimality, achieved by LD-Min. These extended LD syllables, in all cases, have been seen not to be breathy.

---

142 In the past subjunctive (§7.6.3.2), we saw a stipulation on shift opacity between the SP and the OP: shift fails in this paradigm, under this morphological sequence.
I propose the same for the present negative: the initial, or the penult, in the 2-σ stems above is tonally depressed (but not breathy). The question is whether all initial syllables, or perhaps all penults, in this paradigm can be considered depressed.

We will see below that one version of this hypothesis can be maintained (depressed penults), although only with modification. The current Phuthi paradigm would then, however, be different from all others thus far, in that grammatical pitch depression is being instantiated without audible breathiness, and in a prosodically defined stem position.

The domain structure in (234) exemplifies (222a) and (232a).

(234) Proposed LD for toneless (low) stem initial / penult syllable
a. a[ká]-[lïï]mi s/he doesn’t cultivate (= 222a)

b. a[gï]-[lïï]mi I don’t cultivate (= 232a)

I observe that even though this LD-proposal for the stem initial / stem penult is motivated by the non-shift of H off the (consonantal-triggered) depressed SP, -gï-, the intonationally depressed (though surface H) pitch on the penult -liï- also receives an explanation under this analysis.

Before a final analysis can be reached, we need to see the full range of stem lengths with the consonantally depressed 1ps prefix. In (235-244), the present negative paradigm is repeated, but this time with the depressed (breathy) H 1ps prefix. We see here that toneless/low stems longer than two syllables (235-237) do not block shift off the depressed SP into their stem σ1 slot. This requires an explanation.

Present negative: H 1ps NegSP + toneless/low stems

(235) 1-σ stem
a. agïi-tì I don’t come

b. agïi-nyì I don’t excrete

There is some auditory ambiguity, and without a systematic quantitative acoustic study (which I do not provide here), there can be no firm characterisation of the depression footprint.
The subset of this data set (236-237) that contains a pre-antepenult (or earlier) downstep is important evidence for (non-)fusion, to be examined in §7.8.1.10 below. This is the first time in this work that data encoding pre-antepenult downstep has been advanced. Contra the general claim made in Chapter 5 §5.5, downstep earlier in a word than the antepenult-penult boundary is encodable in Phuth, but only in grammatical paradigms such as the present negative, and usually only in response to depression-induced patterns, such as the shift instantiated here. This does not fall under general, positional or ultima downstep (§5.2-§5.4). Downstep in (235a,b) and (240a,b), by contrast, is neither depression-related, nor positional, but simply ultima downstep (§5.4).
The shift of H off -gi- into toneless/low stems longer than two syllables cannot be straightforwardly explained by the structure proposed in (234), if the proposed depression is linked to the stem-initial syllable. If stem-initial were the insertion site for grammatical L, we would predict depressor block for 3-σ to 5-σ stems (245) in addition to the attested 2-σ stems (236), according to the depressor blocking patterns seen in this chapter thus far.

(245)  Predicted depressor blocking in toneless/low present negative stems
   a. *a[gi]-{li}[baá]li vs. 237a
   b. *a[gi]-{li}[bátí]si vs. 238a
   c. *a[gi]-{li}[bátísí]si vs. 239a

   We are faced, then, with the three representational choices in (246a-c) if stem σ1 is generally the grammatical depression site for all stem lengths.
(246) Choices in solving shift into present negative stems longer than 2-σ

a. Toneless stem σ1 does not parse a LD; therefore, shift can occur into it;
b. Stem σ1 parses a LD, and shift occurs into it nevertheless;
c. Shift into stem σ1 (for the 2-σ stems) must be accounted for by some mechanism other than depressor shift.

(246c) is without merit. The shift in the present negative is not in any obvious way qualitatively different from shift in any other paradigm, and there is no reason why such shift should receive a distinct theoretical treatment. Both (a) and (b) are problematic, but for different reasons: (a) implies that a LD is parsed in stem σ1 only for 2-σ stems (where the downstep, and shift/block, are in evidence); (b) implies that the presence of a LD is insufficient to ensure depression blocking. Interestingly, after all paradigms have been considered in this dissertation, (b) is the only truly uncontested fact about depression: a depressed (or any other) H in head position absolutely never shifts into a second depressed syllable under any conditions. It would be a major analytic weakness to concede that LD only intermittently blocks depressor shift. In such a case, blocking would exit the realm of phonological predictability and enter some other (perhaps paradigm-specific) terrain.

The solution is clearly (246a) above: stem σ1 does not parse a depression domain. But it must then parse a L feature on the penult, given that depressor shift off the 1ps depressed negative SP is blocked onto the first syllable of the 2-σ stems in (236a-b).

The obvious hypothesis, then, is that not just 2-σ stems but all toneless/low stems parse a L feature on the penult. Yet this immediately runs into an analytic and empirical paradox: if the penult is depressed, why are the pre-penult stem syllables not also depressed as they should be according to depression anticipation (§7.3)?

Comparatively, this grammatically ‘imposed’ depression is also argued for on some paradigm penults in certain toneless/low paradigms in closely related Swati: present negative (as here), perfective negative, and imperative (Rycroft 1980b:10-14). But the Swati pattern is not evidence for the Phuthi pattern per se; it is merely suggestive of a penult tone/voice distribution that may be expected in Phuthi. Further, the Phuthi data is crucially testable for domain properties that the Swati data is not: since Swati is a Head-high language, only the Head (rightmost element) of a H domain surfaces as H. In Phuthi, however, all domain members strive to be surface-H. Since pre-penult (but non-initial) syllables are H for toneless stems in the
present negative, the default hypothesis is that they are not part of a L domain. If they are not part of a L domain, then L may not be being parsed on the penult. We have come full circle.

Three possibilities for toneless stems in the present negative now exist\textsuperscript{145}: (a) the penult is depressed, but no pre-penult syllables are depressed, completely violating WSA-L\textsubscript{F} (L), and contradicting the general facts of anticipated depression (248a, 249 below); (b) the penult is depressed, and WSA-L\textsubscript{F} (L) does cause pre-penult syllables to be depressed too, but these pre-penult (non-initial) L syllables can also simultaneously express H (248b, 250 below), contradicting the general claims of L/H antagonism; (c) a conjoined constraint prevents a HD from extending across the antepenult/penult (that is, prefix/stem) boundary, even if that HD extension is triggered by depressor shift, and it occurs in a particular paradigm—the present negative.

Analysis (c) can be rejected immediately; although it is technically accurate, it does no more than restate the observed facts: under this set of conditions, a HD does, indeed, not extend across the antepenult/penult boundary. But nothing is explained. Worse, it is clear that a HD can extend across the antepenult/penult boundary for non-toneless/low stems, that is, for H stems: in (247a-b), the two HDs surely fuse, \textit{contra} the anti-fusion conjoined constraint proposed in Chapter 5 \S 5.5. It may be a paradigm-specific condition that overrides the general anti-fusion condition at this prosodic boundary. But the evidence for fusion is clear: \textit{non}-downstep of the

\textsuperscript{145} There is a fourth possibility that is suggestive of an analytic direction, but which is ultimately insufficient: toneless/low stems in this paradigm could require presence of a Low (or, at least, toneless) syllable somewhere in the toneless/low stem. This would be uncontroversially satisfied in all stems longer than two syllables by the \textsigma{}\textsubscript{1} position, since \textsigma{}\textsubscript{1} is lexically empty for toneless/low stems (unless bearing a shifted H from pre-stem \textsigma{}\textsubscript{1}). But in short 2\textsigma{} stems, such a Low requirement would remain unsatisfied, unless the presence of L were manifest in obligatory downstep (as occurs), which downstep might be triggered by the obligatory \textit{but prosodically empty} Low domain: \textit{aká-liúmi} (222 above), that is \textit{a[ká]-{}[lúí]mi}, where the presence of the empty LD is sufficient to force downstep. This would be an ODT analogue to the floating L proposed as the downstep trigger in Pulleyblank (1988), and in other pre-OT works. This could also account for the failure of depressor shift at the left edge of a short stem: \textit{agi-liúmi} (232a=236 above), that is \textit{a[gi]-{}[lúí]mi}. Where this ‘empty LD’ approach would be inadequate is in its failure to account for the well-formedness of shift into stem \textsigma{}\textsubscript{1} for all toneless stems longer than two syllables (235-237 above); for these stems, the L requirement in toneless/low stems would have to be suspended, hence the overall insufficiency of this analysis. But even if there were feature-bearing units inside a domain which simply remained unexpressed (that is, fatal expression, cf. Chapter 3 \S 3.3.4)—that is, \textit{ unlike} the empty configuration mooted here—the status of an empty feature domain is theoretically troubling, possibly ill-formed.
penult, relative to the antepenult (247b-e), implies HD fusion. Thus, the data in (247) must cause hypothesis (c) to be rejected.

(247) **HD can extend across antepenult/penult boundary**

a. agi-bóóni a\[x \{g|_{x}\}-bó\_x,y,\_y, ni
b. aká-bóóni a\[xyká-bóó\]xy,ni

c. aká-sébééti a\[xy,ká-sébéé\]xy,ti

d. aká-sébětíísi a\[xy,ká-sébětíí\]xy,si

e. aká-sébětííisi a\[xy,ká-sébětííí\]xy,si

I don’t see

s/he doesn’t see

s/he doesn’t work

s/he doesn’t use

s/he doesn’t work intensively

It is worth considering the (a) and (b) analytic strategies outlined above, for examining the distribution of H/depression/shift/block in toneless stems: the general schema for toneless stems (e.g. 5-σ stems) is predicted by strategy (a) to be as in (248a), exemplified in (249), where WSA-LF(L) fails to apply at all; strategy (b) predicts (248b), exemplified in (250), where EXPRESS_H and EXPRESS_L are satisfied simultaneously throughout both domains.

(248) **Depression in present negative toneless stems**

a. no anticipated depression σ[ʃ]- σ[ʃ ʃ σ{ʃ}][σ
b. depression anticipation, σ[ʃ]- σ[{ʃ ʃ ʃ}][σ

H expression

(249) **Present negative: no anticipated depression**

a. a[ká]-li[bárfiʃi]si s/he doesn’t delay intensively
b. a[ká]-te[pélfɪʃi]si s/he doesn’t make (smn) do (sth) slowly

(250) **Present negative: H and L co-expression**

a. a[ká]-li[báfisí]si s/he doesn’t delay intensively
b. a[ká]-te[pélfí]si s/he doesn’t make (smn) do (sth) slowly

7. 8. 1. 3. Toneless stems contain an unrealigned grammatical L on the penult

There are obvious problems with both strategies, but fewer with strategy (a)—the failure of anticipated depression (‘unrealigned L’). Two conditions must apply with the unrealigned L
(L-on-penult-only) strategy (a), in (248a, 249): (1) WSA-L$F$ (L) is reranked lower, so that it fails to realign a L leftwards; (2) the left edge of the LD, on the penult, fails to suddenly lower pitch at that point, but rather lowers the entire HD pitch contour that begins (typically) on stem $\sigma$2 (that is, the microadjustments on the tone register are extended from the L penult sponsor leftwards to $\sigma$2).

Strategy (b) in (248b, 250), on the other hand, would require suspension of the basic observations about CLASH that lie at the heart of the L/H antagonism in Phuthi. Based on previous comments about interpretation of domain structure, we would expect from such configurations that every $[(\sigma)]$ syllable be both depressed (L) and H, that is, a short rising H. This is not surface-true.

Strengthening the argument for the unrealigned L strategy ((a) above), it is very difficult to decide whether the post-stem-initial pre-penult syllables are indeed H or not, for some speakers, such is the general level of audible and observable tone depression across the domain. In other words, even though WSA-L$F$ (L) may not be properly realigning left for some speakers, for others there does appear to be realignment, and (partial) expression of the resulting widescope LD as L. But even with strategy (a), there are analytic problems.

7. 8. 1. 4. Grammatical L vs. lexical (consonantal) L

There are three obstacles (though none is insurmountable) to the unrealigned L analysis. First, although post-initial pre-penult syllables are H (or H-ish)—or at least not properly toneless/low when there is a depressor on the penult—the otherwise typical WSA-L$F$ (L) effect is properly manifested when the penult (or pre-penult) contains a consonantal depressor; this is exemplified with depressors in the stem $\sigma$2, $\sigma$3 and $\sigma$4 positions (251-253)$^{146}$.

(251) $\sigma$2 depressor: 3$\sigma$ stem

a. aká-ladžééli

... s/he doesn’t follow

b. aká-mabheééli

... s/he doesn’t forgive

$^{146}$ The effect is not unambiguously visible when the depressor occurs in $\sigma$2 position, because $\sigma$1 is guaranteed to be toneless with these toneless/low stems; $\sigma$3+ depression makes it clearer.
(252) σ3 depressor: 4σ stem
   a. aká-limageélí s/he doesn’t cultivate indiscriminately for
   b. aká-hlabageélí s/he doesn’t stab indiscriminately for

(253) σ4 depressor: 5σ stem
   a. aká-patalageélí s/he doesn’t pay indiscriminately for
   b. aká-tamisageélí s/he doesn’t stir indiscriminately for

We have to conclude that the domain structure for these forms reflects successful
WSA-LF(L), as in (254c-d), contra the proposed structure for the unrealigned L strategy to
handle grammatical L (254a-b). Competing examples are provided in (254b,d).

(254) Competing (non)realignment of L
    no realignment: grammatical L on penult (unsuccessful WSA-LF (L))\textsuperscript{147}
    a. σ[σ]- σ[σ ̅ σ{σ}]σ
    b. a[ká]-li[bátí[sí]í]si
    realignment: lexical (consonantal) L on penult (successful WSA-LF (L))
    c. σ[σ]- σ[{σ ̅ σ ̅}]σ
    d. a[ká]-pa[{talage{é}}lí]

This appears to be a serious analytic impasse: WSA-LF(L) as it stands cannot select
among which input feature configurations it seeks to be surface-true for. Either all L features are
input to this realignment, or none are. The solution to this impasse will address the remaining
two empirical problems: (1) the long H penult syllable in the present negative
paradigm surfaces as -VV-, that is, not as rising -VV- (255), which is unexpected given the
established nature of phonetically depressed syllables sponsored on the penult: they are always
rising; (2) in phrase-medial position, penult depressed syllables from the present negative
paradigm do not shift H to the ultima (256), as otherwise predicted in §7.4.1 above.

\textsuperscript{147} This form could also be a[ká]-li[bátí[sí]í]si, with the grammatical L aligned to the right
edge of the penult (since there is no rising pitch in these examples). Structure addressing the
non-rise is proposed in (255) below.
Depressed penults: level vs. rising H

a. σ[σ]- σ[σ σ{μμ}]σ 

level penult H (grammatical L on penult)

b. a[ká]-li[báti{sí}]si

c. [σ]- σ[σ σ μ]σ 

rising penult H (lexical L on penult)

d. aká-pa{talage}éli

L/H clash on penult: non-shift vs. shift

a. σ[σ]- σ[σ σ{σ}]σ ...

b. a[ká]-li[báti{sí}]si ka[kguulú] 

no shift from grammatical L penult to ultima

c. σ[σ]- σ[σ σ{σ}]σ ...

d. aká-pa{talage}li ka[kguulú] 

shift from lexical L penult to ultima

There is a possible resolution to all three types of unexpected behaviour: it is clear from (254-256) that the two L feature instantiations behave distinctly from one another. This would appear to constitute evidence for a second instantiation of L; in other words, there exists L_{lex} and L_{gram}, just as in Chapter 6 there was evidence that lexical and grammatical Hs (H_{lex} and H_{gram}) behave distinctly. If this is the case here with L tones too, then we can indicate distinct behaviour of the two L tones (lexical consonant-triggered L vs. grammatical L), as given in Tableau 19 (257).

Tableau 19: Lexical L vs. Grammatical L

<table>
<thead>
<tr>
<th>LD reflects these properties</th>
<th>Lexical L (L_{lex})</th>
<th>Grammatical L (L_{gram})</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSA-LF (L) (depression anticipation)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>L causes depressor shift</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>EXPRESS_L &gt;&gt; EXPRESS_H(μ) (rising tone on the penult)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>depressor block (from left)</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>L creates pitch downstep</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>LD Head expressed H</td>
<td>no (unless penult rising H)</td>
<td>yes</td>
</tr>
<tr>
<td>L triggered by consonant</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>L triggered by grammatical paradigm requirements</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>
All constraints proposed prior to the present negative paradigm which involve L can be rewritten as $L_{LEX}$; the basic alignment and expression of $L_{GRAM}$ outranks these constraints (258).

(258)  $L_{LEX}$ vs. $L_{GRAM}$ ranking

$BA-Lf (L_{GRAM}), Express_{L_{GRAM}} \gg Express_{Edge} \gg Head_H \gg Express_{L_{LEX}} \gg WSA-Lf (L_{LEX})$

7.8.1.5. L insertion only on toneless/low stems

I propose, thus, that the toneless/low class stems (in paradigms such as the present negative) require presence of a grammatical L in their outputs (259). Triggering this grammatical LD constitutes an instantiation of grounding-initiated grammatical enhancement (cf. discussion to follow in §7.8.2), since the grammatical L domain enhances the morphological category of low (argued here as tonelessness).

(259)  $L$-insertion ($\pi$)  (first version)

(Low stem)$_\pi \Rightarrow L_{GRAM}$

A toneless/low stem($\pi$) invokes a grammatical L feature.

Either this constraint exists demonstrably for paradigms where it is visibly active, such as in the present case (present negative), or it is reranked in other paradigms such that it has no visible PR effect.

The first option for this L manifestation is reflected in (259) above, according to paradigm-specific requirements; this is not possible in a strict, classical OT architecture, since all constraints are always present and uniquely ranked in a single grammar. Rather, the tone-insertion constraint is specified only for certain paradigms ($\pi$)$^{148}$.

But we also need to identify why the $L_{GRAM}$-insertion fails for H stems in paradigms where it is demonstrably active in non-H stems. The principled solution is fundamentally clear, even if the mechanism is not: L-insertion in H stems would never enhance the stem tone category. That is, the operation of (259) in H stems would be an ungrounded constraint. And yet the most

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$^{148}$ This is the first usage of paradigm-specific ($\pi$) subcategorisation in a constraint, but not the first use of $\pi$ to indicate paradigm-specific rankings (Chapter 6 §6.2.2.1, §6.2.2.2, §6.2.2.3, §6.3.3.1); also cf. Chapter 5 §5.6.2 for level $\lambda$-specific rankings.
unmarked form of the insertion constraint would attempt to redundantly insert \( L_{\text{gram}} \) in all \( \pi \)-stems, both toneless/low and H. The insertion constraint can be brought in line with other parse constraints by the reconfiguration in (260).

\[
(260) \quad \text{L-INSERTION (}\pi\text{)} \quad \text{(final version)}
\]

\[
\begin{align*}
\text{Max } L_{\text{gram}} (\pi) \\
\text{Parse a grammatical L tone (in } \pi \text{ paradigms where it is invoked)}^{149}.
\end{align*}
\]

The conditional insertion of L subject to the general grounding conditions rejecting a L/H combination, is articulated here as a ban on the cooccurrence of lexical H with grammatical L in the same stem (261)^150.

\[
(261) \quad \text{*StemClash}
\]

\[
* (H_{\text{lex}}, L_{\text{gram}})_{\text{stem}}
\]

Do not parse a lexical H and grammatical L in the same stem domain.

This amounts to a Dep effect, forcing the unparsing of grammatical L, if the potential parse (Max) domain already contains lexical H. The constraint interaction must be as in (262), with a notional Dep_L constraint providing the general counterpoint to gratuitous \( L_{\text{gram}} \) insertion.

\[
(262) \quad \text{*StemClash } \gg \text{ Max } L_{\text{gram}} (\pi) \gg \text{ Dep L}
\]

It would be preferable to avoid the ungrounded configuration contraindicated in (261) through ranking the full set of Max and Express constraints which refer to tone features H and L (262), rather than through yet another cooccurrence restriction constraint (261); but this is not possible, since the parsing of grammatical L, as construed in this section, never forces

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149 The parse site for \( L_{\text{gram}} \)—the penult—is further considered in §7.8.2, to be presented as a right-aligned DAP (depression accent projection) foot.

150 There is an alternative: \( L_{\text{gram}} \) is inherent in every toneless/low stem. The problem, of course, is that this would only be evident in certain paradigms (e.g. present negative), and would need suppression everywhere else. This does not appear to offer any analytic advantage (although a richness-of-the-base line of analysis would assume \( L_{\text{gram}} \) comes with all stems, ‘H’ or ‘L’). The general discussion—alluded to in respect of quasi-depressed OPs in §7.6.3.2—is resumed in the conclusion to this chapter, §7.10, and in Chapter 8 §8.3.8.
underparsing or underexpression of grammatical or lexical H. If L_{GRAM} merely achieves tonal depression of the entire H domain in which it is located (and blocks H shift at its left edge), without the other cluster of depression effects, as I have argued, then the failure of MAX L_{GRAM} (π) can never be achieved through any ranking of parse and express constraints.

This is made clear in (263): H_{GRAM} and L_{GRAM} both parse in (263a)\(^{151}\); only H_{GRAM} parses in the structurally nearly identical—but categorially distinct—(263b)\(^{152}\); similarly, H_{GRAM} and L_{GRAM} both parse in (263c); H_{LEX} and H_{GRAM} parse in (263d), but not (L_{GRAM}).

(263) \(L_{GRAM}\) never forces underparsing or underexpression of another H or L

a. aká-liími \(\text{a[ká]-[\{líí\}]_{GRAM\text{mi}}\) s/he doesn’t cultivate
   \(*\text{a[ká]-[líí]_{HGRAM\text{mi}}\) \(L_{GRAM}\) must parse in low stem

b. aká-bóóni \(\text{a[ká]-bóó}_{HGRAM\text{ni}}\) s/he doesn’t see
   \(*\text{a[ká]-[bóó]_{HGRAM\text{ni}}\) \(L_{GRAM}\) must not parse in H stem

c. aká-li’bátísíísi \(\text{a[ká]-li[báťí{síí}]_{GRAM\text{Si}}\) s/he doesn’t help delay
   \(*\text{a[ká]-li[báťísíí]_{HGRAM\text{Si}}\) \(L_{GRAM}\) must parse in Low stem

d. aká-sébétsíísi \(\text{a[ká]-sébétsíí}’{síí]}_{GRAM\text{Si}}\) s/he doesn’t work intensively
   \(*\text{a[ká]-[sébétsíí]_{GRAM\text{Si}}\) \(L_{GRAM}\) must not parse in H stem

The clash configuration of lexical H and grammatical L cannot be demonstrated to fall out of the independent ranking of constraints. Rather, this shows that the \(^{*}\)L/H clash effect (anti-expression reflecting gestural antagonism) is manifest in yet another variation through this morphologically specified phonological ban\(^{153}\).

The only impossibly H/L lexical/grammatical feature cooccurrence that emerges here is \(^{*}(H_{LEX}, L_{GRAM})\), that is, as already articulated by \(^{*}\)STEMCLASH. All other combinations occur.

\(^{151}\) It is certainly H_{GRAM} and not H_{LEX} that parses, given the rankings argued for in Chapter 6 §6.2.1.1 (20a), also demonstrated in §6.2.2.1 (28).

\(^{152}\) Not even H_{LEX} parses here; see previous footnote.

\(^{153}\) Final discussion on the range of L/H clash patterns is provided in Chapter 8 §8.3.4.
7. 8. 1. 6. OCP effect on L insertion

The insertion of grammatical L in the present negative for toneless/low stems is further subject to an OCP effect: if the target toneless/low stem already contains an instance of lexical L inside the maximum potential scope of H for this paradigm, then grammatical L insertion fails (there is no audible depression on the penult), as in (265, 266, 269, 270, 272, 274); in other cases, grammatical L insertion succeeds vacuously (masked by lexical depression on the penult), as in (264, 268, 271).

Present negative: toneless (low) stems, lexical depression in σ1

(264) 2σ stem
a. aká-válí s/he doesn’t close penult is lexically depressed
b. aká-vúlí s/he doesn’t open penult is lexically depressed

(265) 3σ stem
a. aká-vu’léli s/he doesn’t open for penult is not grammatically depressed (stem σ1 is lexically depressed)
b. aká-dzi’tééli s/he doesn’t bury penult is not grammatically depressed (stem σ1 is lexically depressed)

(266) 4σ stem
a. aká-dza’kálíisi s/he doesn’t injure penult is not depressed (stem σ1 lexically depressed)
b. aká-dzi’tújli s/he doesn’t dig up penult is not depressed (stem σ1 lexically depressed)

Toneless (low) stems: lexical depression in σ2

1σ stems: no examples

(267) 2σ stem
a. aká-ládzí s/he doesn’t fetch penult is grammatically depressed; (ultima is lexically depressed)
b. aká-'máábhi s/he doesn’t hold penult is grammatically depressed; (ultima is lexically depressed)

(268) 3σ stem
a. aká-ladzeélí s/he doesn’t follow penult is depressed (lexical)
b. aká-mabheééli s/he doesn’t forgive penult is depressed (lexical)

(269) 4σ stem
a. aká-ladzéélí s/he doesn’t pursue penult is not grammatically depressed (stem σ2 is lexically depressed)
b. aká-mabheééli s/he doesn’t delay (smn) penult is not grammatically depressed (stem σ2 is lexically depressed)

(270) 5σ stem
a. aká-ladzéélísí s/he doesn’t line (sth) up penult is not grammatically depressed (stem σ2 is lexically depressed)
b. aká-yadzulúúki s/he doesn’t become larger penult is not depressed (stem σ2 is lexically depressed)

Toneless (low) stems: lexical depression in σ3

(271) 4σ stem
a. aká-limeééli s/he doesn’t cultivate indiscriminately for penult is lexically depressed
b. aká-hlabageééli s/he doesn’t stab indiscriminately for penult is lexically depressed
(272) 5σ stem

a. aká-limagelísi
   s/he doesn’t help cultivate
   indiscriminately for
   penult is not depressed
   (stem σ2 is lexically depressed)

b. aká-hlabagelísi
   s/he doesn’t help stab
   indiscriminately for
   penult is not depressed
   (stem σ2 is lexically depressed)

**Toneless (low) stems: lexical depression in σ4**

(273) 5σ stem

a. aká-patalageéli
   s/he doesn’t pay
   indiscriminately for
   penult lexically depressed

b. aká-tamisageéli
   s/he doesn’t stir
   indiscriminately for
   penult lexically depressed

(274) 6σ stem

a. aká-patalageéli
   s/he doesn’t help pay
   indiscriminately for
   penult not grammatically depressed
   (stem σ4 is lexically depressed)

b. aká-tamisageéli
   s/he doesn’t help stir
   indiscriminately for
   penult not grammatically depressed
   (stem σ4 is lexically depressed)

The penult syllables in (265, 266, 269, 270, 272, 274) should all be depressed. Since none are, and since these stems each contain a lexically depressed syllable preceding the penult inside the stem domain, we are led to conclude that the correlation is significant: no toneless/low stem seems capable of supporting both L_{gram} and L_{lex} simultaneously.

The OCP constraint instantiated in (275) covers this condition on successful parsing of grammatical L.

(275) *AE (L_{lex}, L_{gram}) (π) (*AE (L_{L/G}))
     *AE [H_{gram-\cdots}(L_{lex}, L_{gram})\cdots]H_{gram-\pi}, π
     L_{lex} and L_{gram} cannot cooccur inside a grammatical H domain of paradigm π.
(Up to this point, $\pi$ refers only to the present negative; the convention of interpretation for this particular constraint, $\ast$AE ($L_{L,G}$) $\pi$, is that the offending adjacency refers to ($L_{\text{LEX}}$, $L_{\text{GRAM}}$), that is, one of each of the two L tone types).

This is exactly parallel to Swati, which grammatically depresses the penult in certain paradigms (present negative, perfective negative, imperative; cf. Rycroft (1980b:10-14)), but fails to do so if there is a pre-penult stem syllable which is depressed.

But the $\ast$AE ($L_{L,G}$) constraint in (275) is apparently different than the $\ast$AE(H) constraint motivated in Chapter 5 §5.1—and the analogous $\ast$AE(L) constraint proposed in §7.7.2.4 to account for non-default disjoint H verb data being implemented as non-disjoint—because the offending configuration does not necessarily involve strict syllable adjacency. Rather, the configuration violates $\ast$AE ($L_{L,G}$) if the two Ls are anywhere adjacent inside $H_{\text{GRAM}}$ domain. Yet, the constraint is only apparently different from $\ast$AE(H): non-locally adjacent L syllables are still adjacent on the L tone tier, assuming a version of autosegmental feature tiers, and assuming underspecification of L (and H) on segments for which these tones are not defined (e.g. most consonants), and for which they are not active (e.g. on toneless vowels)\textsuperscript{154}.

It is necessary to stipulate the $H_{\text{GRAM}}$ domain as relevant to the application of $\ast$AE ($L_{L,G}$) in (275), because thus far the $\ast$AE ($L_{L,G}$) effect is attested only in this environment.

It is necessary in (275) to stipulate that the $\ast$AE ($L_{L,G}$) constraint applies to the specific L subtypes, $L_{\text{LEX}}$ and $L_{\text{GRAM}}$, because there is no such underparsing OCP effect on the cooccurrence of two lexical Ls inside a grammatical HD, as demonstrated in (276).

(276) No underparsing OCP effect on two $L_{\text{LEX}}$ (L) tokens

a. aká-\text{vuúgi}  
\[a[ká]-\{\text{vu}\}_L\{\text{ú}\}_H\{\text{gi}\}_L\]  
\text{s/he doesn’t agree}

b. aká-\text{vugíísí}  
\[a[ká]-\{\text{vu}\}_L\{\text{gi}\}_L\{\text{i}\}_H\{\text{si}\}\]  
\text{s/he doesn’t cause to agree}

c. aká-\text{vugélísí}  
\[a[ká]-\{\text{vu}\}_L\{\text{ge}\}_L\{\text{líf}\}_H\{\text{si}\}\]  
\text{s/he doesn’t cause to allow}

d. aká-\text{vuláági}  
\[a[ká]-\{\text{vu}\}_L\{\text{láá}\}_H\{\text{gi}\}_L\]  
\text{s/he doesn’t open indiscriminately}

\textsuperscript{154} I also assume, as indicated in footnotes 22 and 23, that L and H are privative features.
e. aká-vulagiísi  
a[ká]-{vu|la{gi}l|f}ísi  
s/he doesn’t help open indiscriminately

In none of these examples can there be underparsing of either of the two \( L_{lex} \) tokens which are parsed inside the grammatical \( H \) domain, neither when the two \( L_{lex} \) tokens are adjacent (276b,c) — which one might argue indicates fusion — nor when they are non-adjacent (276e). This is reflected in (277a). Further, the anti-insertion OCP constraint in (275) must outweigh the parse-requiring \( \text{Max} \) constraint motivated in (257) above — given again in (277b) — in order to force underparsing.

(277) OCP rankings
a. \( \text{Max } L_{lex} \gg \ast \text{AE } (L_{lex}, L_{gram}) \) (\( \pi \))
b. \( \ast \text{AE } (L_{lex}, L_{gram}) \) (\( \pi \)) \( \gg \) \( \text{Max } L_{gram} \) (\( \pi \))

There is a second possible response to \( \ast \text{AE } (L_{lex}, L_{gram}) \) (\( \pi \)), that is, to the OCP effect on \( L \) domains (275): fusion (this option is explored in §7.8.1.7).

7. 8. 1. 7. Fusion and anti-fusion: a typology of fusion inhibition

It is clear from the data provided at the beginning of this section (§7.8.1) in (227-230, 247) that \( H \) stems demonstrate fusion of adjacent HDs. In two distinct instances, \( H \) stems display fusion effects through absence of downstep, whereas toneless/low stems do not fuse (and do display downstep effects): (a) the NegSP \( H \) fuses with the lexical \( H \) in stem \( \sigma_1 \), schematised in (278a-b); this only apparently fails in (278c), due to ultima downstep invoked by a Register Domain on the ultima (cf. Chapter 5 §5.5.4). Fusion is exemplified in (278c-f, 279); (b) the same NegSP will fuse with the OP in the present negative paradigm (283).

(278) Prefix+stem-\( \sigma_1 \) fusion: \( H \) stems (vs. toneless/low stems)

\[ \{ \text{SP} \} - \{ \text{stem} \} \]

a. \( \sigma[\sigma] - [\sigma]\{\sigma...\}\sigma \) default (conservative) unfused structure, repeated from (231)

\[ H \quad L_{lex} \quad L_{gram} \]

b. \( \sigma[\sigma - \sigma \sigma...\sigma]\sigma \) proposed configuration: all adjacent HDs are fused

\[ H \quad L_{lex} \quad L_{gram} \]
c. aká-’phí s/he doesn’t give (fusion; ultima downstep assigned by *aká-phi) Register Domain Principle C)\textsuperscript{155}

d. aká-bóóni s/he doesn’t see (no downstep at antepenult-penult)

*aká-bóóni

e. aká-sébééti s/he doesn’t work (no downstep evident\textsuperscript{156})

*aká-sébééti

f. aká-sébéétiísi s/he doesn’t use (no downstep evident)

*aká-sébéétiísi

The crucial datum above is 2-σ (278d), where we expect to see downstep if there is no fusion. Yet fused aká-bóóni contrasts with unfused, downstepped aká-’líími, suggesting that the entire set of SP+stem data (that is, H-H, for H stems) in the present negative is fused.

This fusion/downstep distribution is most surprising in light of fusion (or downstep failure) that occurs elsewhere only in phrase-medial forms such as the present indicative (‘short’) form (Mpapa dialect), and the present indicative reduplicative short form (Mpapa). Phrase-mediality has been shown to remove penult length, thus precluding the trigger conditions for the conjoined constraint (\textit{AVOIDPROM} \& \textit{CRISPSTEM}) to apply, thus failing to allow downstep to be implemented at the antepenult-penult boundary\textsuperscript{157}.

\textsuperscript{155} This pattern where the short H stem fails to express as toneless/low on the surface (repeating (226) above)—despite Chapter 5 §5.4, where the 1-σ H stem surfaces as toneless/low in the OP+Stem sequence—confirms the present negative is a grammatical paradigm, and that the ultima tone is H_{\text{GRAM}} not the stem H_{\text{LEX}}, as shown by the toneless/low stem in (221): akáa-tí. Cf. discussion of Register Domains in Chapter 5 §5.5.6, and to follow in §7.9 (here: (326)).

\textsuperscript{156} We can safely assume that there truly is no downstep here, because even though pre-antepenult downsteps are rare, they are visible, e.g. in the unfused post-shift effect to be seen in (299b-e) below. It may be that pre-antepenult downstep is visible only in the unfused post-shift environment; but no further light can be shed on such a claim, because it is presently untestable.

\textsuperscript{157} The fusion failure in aká-bóóni is only marginally less surprising given that there are other phrase-final forms that also fail to fuse at the antepenult-penult boundary (e.g. perfective long form, infinitive long form, both given in Chapter 5 §5.2.1). Such paradigm-specific suspension of the antepenult-penult downstep requirement is deeply problematic. It would appear to reduce the predictability of downstep to zero, but as long as it is maintained that these cases are exceptional, the downstep hypothesis can continue. And whatever problems there may be elsewhere, they apply to all tone classes in the paradigm, unlike the present negative, where only the H stems are affected by fusion (downstep failure).
Phrase-finally, according to the present negative phrase-final forms just cited, the SP and stem domains should fail to fuse, thus *aká-bóóni, aká-líími, which is incorrect for H stems; phrase-medially, SP and stem domains should unproblematically fuse, thus aká-bóóni..., *aká-líími..., which is also incorrect, this time for toneless/low stems. Fusion and anti-fusion across this SP+stem boundary (including antepenult-penult forms) takes place, for all H stems, regardless of phrase-mediality or -finality, and never takes place, for toneless/low stems (at least for toneless/low 2-σ stems). In these 2-σ stems, there is never fusion; but then the penult of such stems (which in the 2-σ forms in (278d) occurs at the SP+stem boundary) is depressed; and depression interrupts fusion.

Generally, we can observe that fusion occurs between (strictly) adjacent H domains (279a) unless a depressed syllable commences at the downstep site158, as with toneless/low stems, cf. L_{gram} in (279b), L_{lex} in (279c). A test for the H stem fusion domain comes in the form of H stems with a depressor consonant in stem σ1 (or later in the stem). We expect the H SP and H stem not to fuse, if the fusion site contains a depressor; this is born out (279c,e), for two reasons: (1) the H SP is never expressed low; if there were fusion across a depressed stem σ1, we might expect that the SP would express as L, since it would anticipate the depression of stem σ1 (279d,f), via the implementation of WSA-L_{F} (L)159; (2) the post-depressor stem H is downstepped relative to the SP H160.

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158 This condition on fusion occurring unless an instance of depression commences at the fusion site is crucial to understanding why fusion is tolerated in §7.8.1.9 below (where there are depressed prefixes, but their left edges precede the fusion site).

159 I proposed in §7.3.2 of this chapter that WSA-L_{F} (L)—the leftward realignment of the L domain left-edge—is sensitive to the stem boundary; I achieved incomplete realignment (that is, failure to reach the word left-edge), in the general case, by CRISP(L), which bans the intrusion of a morphological (macro)stem boundary inside a (realigned) L domain. I assumed in §7.3.1 that HDs do fuse at the prefix+stem boundary even if L realignment does not align with the newly fused left-edge. I did not relate depression anticipation to the location of the HD left-edge. Although this matter is not entirely resolved, the evidence for non-fusion related to the presence of L seems sufficient, based on (279b). The fusion typology presented in (292) below will confirm that the two HDs in (279b) are never expected to fuse, due to the anti-fuse effect of *L-IN-H (which evaluates LD tokens in HDs). For the current grammatical paradigm, we will see immediately below that optional fusion of SP and OP does occur, suggesting that L realignment can ignore certain (non-stem) morphological boundaries. In addition, we will see that adjacent L domains (depressed negative prefix, followed by depressed stem σ1) do provide evidence of SP+Stem fusion.

160 A depressed H (short rising), or post-depression H, is always expressed lower than the
Fusion and non-fusion: the role of depressors

a. aká-bóóni  a[ká-bóó]ni  s/he doesn’t see  fusion btw SP & OP
b. aká-ľíími  a[ká]-{ľíí}mi  s/he doesn’t cultivate  no fusion with stem σ1
c. aká-vúúni  a[ká]-{vú}ú]ni  s/he doesn’t harvest  no fusion (stem σ1 depressed)
d. *aka-vúúni  *a[ká-{vú}]ú]ni  (fusion)
e. aká-lagaáti  a[ká]-{laga}á]ti  s/he doesn’t wish  no fusion (σ2 depressed)
f. *aka-lagaáti  *a[ká-{laga}]á]ti  (fusion)

The fuller set of data reflecting the unfused SP+stem H domains (where stem σ1 is depressed) is provided in (280).

Present negative: NegSP + H stems, σ1 = depressor

Prefix+stem-σ1 fusion: H stems; depressor syllables = σ1

a. aká-ľíí  a[ká]-{ľíí}  s/he doesn’t eat
b. aká-vúúni  a[ká]-{vú}ú]ni  s/he doesn’t harvest
   162
c. aká-vúnúisi  a[ká]-{vú}níi]si  s/he doesn’t help harvest
   d. aká-višísísi  a[ká]-{vi}ísíí]si  s/he doesn’t understand
   e. aká-vušéllíísi  a[ká]-{vú}élé]líí]si  s/he doesn’t help renew

The second instance of fusion in this paradigm concerns the SP and OP, the two pre-verb stem prefixes: a fused domain structure is proposed in (281b), reflecting the absence of downstep at the SP-OP boundary, which downstep would crucially fall out of the non-fused domain preceding HD, although there is some variability in the expression of a H that has been depressor-shifted, which typically expresses ‘extra H’ (cf. discussion in §7.9, under Register Domains).

Sigxodo Phuthi reveals optionally alternative patterns to Mpapa Phuthi, where the structures in (279d, f) are also legitimate surface forms, suggesting that Sigxodo Phuthi tolerates optional fusion and then L realignment across the negative SP.

161 This rising H tone on a lexically depressed penult contrasts clearly with the level H grammatically depressed penult in aká-ľíími.
structure in (281a). The short stem in (282a) is fused, but this is only evident from the SP-OP boundary (not the OP+stem boundary, which succumbs to the word-final anti-expression constraint); Fusion operates for all (pre-stem) morpheme boundaries, as anticipated, attested to by (282b-d).

(281) **SP-OP fusion: High stems (vs. toneless/low stems)**
   a. $[\sigma \sigma_{SP} - \sigma_{OP} - [\sigma \sigma \sigma] \sigma]$  
      default (conservative) structure
      
      \[\begin{array}{llll}
      H & H & H_{LEX} & H_{GRAM} \\
      \end{array} \]
   b. $[\sigma_{SP} - \sigma_{OP} - [\sigma \sigma \sigma] \sigma]$  
      revised configuration: adjacent HDs are fused
      
      \[\begin{array}{llll}
      H & H & H_{LEX} & H_{GRAM} \\
      \end{array} \]

Present negative: H NegSP + H OP + H stems

(282) **SP-OP fusion: H stems**
   a. aká-báá-phi $\Rightarrow$ a[ká-báá-phi]  
      s/he doesn’t give them
   b. aká-bá-bóóni $\Rightarrow$ a[ká-bá-bóóni]  
      s/he doesn’t see them
   c. aká-bá-bónúísi $\Rightarrow$ a[ká-bá-bónúísi]  
      s/he doesn’t show them
   d. aká-bá-bónísíísi $\Rightarrow$ a[ká-bá-bónísíísi]  
      s/he doesn’t see them clearly

All things being equal, we expect the OP to be underlingly H but surface-L, as shown in Chapter 5 §5.4. But I note for the forms in (282) that the OP here is remarkably *surface*-H, as found only in certain limited other paradigms (e.g. present indicative phrase-medial short form, cf. Chapter 5 §5.4; past subjunctive, cf. §7.6.3.2), which surface-H expression contrasts with the lexical tenses where the OP systematically sponsors a H, but fails to surface as H in all but the monosyllabic H stems (and the 1-σ and 2-σ toneless/low stems). The OP anti-express constraint *EXPRESS_OP must thus be cophonologically reranked below EXPRESS_H(σ) in this present negative paradigm (but only if the surface forms are from non-depressor-bearing prefixes and stems, as we will see in §7.8.1.9 below), suggested in (283a), vs. general OP underexpression (or anti-expression), as in (283b).

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163 (279a,b) above do not display all available HD tokens: their stems are too short to contain both lexical and grammatical stem Hs (the lexical H is ‘missing’).

164 Throughout the examples in (282), ‘them’ is represented by the Class 2 OP, -ba-.
(283) **Reranking of *EXPRESS_OP**

- **a.** \text{Express}_H(\sigma) \gg *\text{Express}_\text{OP} (\pi) \quad \text{better to express every syllable in a HD as H rather than to underexpress the OP as H (\pi includes the \{present negative\})}

- **b.** *\text{Express}_\text{OP} (\pi) \gg \text{Express}_H(\sigma) \quad \text{general OP anti-expression (Chapter 5 \S5.4)}

Alternatively, *\text{EXPRESS}_\text{OP} must be redefined to apply to a narrower range of morphological paradigms than before.

This fusion data from H stems in (282) above contrasts with the equivalent non-fused toneless/low stems (284), where non-fusion is saliently signalled by the downstep in (284a-b), and, by hypothesis of paradigmatic uniformity, in (284c-d).

**Present negative: H NegSP + H OP + toneless/low stems**

(284) **SP-OP fusion: toneless/low stems**

- **a.** aká-\text{-búu}-nyi \quad a[ká]-[búu]-nyi \quad s/he doesn’t excrete it
  \hspace{1cm} \text{a[ká]-[{búu}]-nyi (alternative structure)}^{165}

- **b.** aká-tí-\text{-líí}mi \quad a[ká-tí]-[líí]mi \quad s/he doesn’t cultivate them

- **c.** aká-bá-li\text{-múí}si \quad a[ká-bá]-[múí]si \quad s/he doesn’t help them

- **d.** aká-bá-li\text{-bátíí}si \quad a[ká-bá]-[bá-tíí]si \quad s/he doesn’t delay them

(284a-b) fail to fuse the SP-OP H and OP+stem H, respectively, not because of the conjoint constraint (**AVOID**PROM \_CRISPSTEM), which is now ranked too low, but because two HDs do not fuse where the second HD contains a depression domain, as we will see in (292d),

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165 Two alternative domain encodings for the monosyllabic stem appear possible in (284a): the first achieves downstep between the two unfused H domains simply by failing to fuse, as predicted by the conjoined constraint (**AVOID**PROM \_CRISPSTEM), motivated in \S4.3.3); the second analyses -\text{búu} as depressed, in other words, penult depression in toneless/low stems is thus defined across the macrostem—that is, \{OP+stem\}—in which case the penult is the OP itself. There is clear evidence to follow in (290e) that the OP with a toneless/low stem is optionally truly depressed, as it blocks rightwards depressor shift off the depressed 1ps SP -\text{gi}-. This pattern will suggest that the depressed OP is the correct analysis here.

166 Downstep is (redundantly) marked preceding \(\sigma\) in these 2+\(\sigma\) stems (284c-d), to emphasise that these HDs are lower than the prefix HD, contra H stems which lack downstep.
thanks to the anti-fusion effect of the anti-nesting *L-in-H constraint. (284c-d) fail to fuse because the two HDs are not adjacent, and hence not eligible candidates for fusion.

7.8. 1.8. Lexical tone category conflation by LD fusion: depressor-bearing stems

I will proceed to lay out fusion data from several configurational combinations in the present negative paradigm, then propose a constraint that prevents LD adjacency (288), then present a fusion typology for HD and LD interaction, in (292).

In the present negative {OP+stem} configurations in (282-284) where the stem is non-depressor-bearing, and in earlier simple SP+stem configurations (279a-b), where the stem is also non-depressor-bearing, the lexical H and toneless/low stem categories remain distinct from each other, maintained—it has been shown—by the invocation of $L_{\text{GRAM}}$ in L stems. CONTRAST between stem tone paradigms (toneless/low vs. H) continues to be highly valued. But we are about to see that where the H stem or the toneless stem contains a lexically depressed $\sigma_1$, the tone category distinction is conflated (285-286), and paradigmatic contrast is lost.

Just as we have seen a depressed stem $\sigma_1$ interrupting the fusion of adjacent HDs in toneless/low stems, so a depressed OP (the only candidate is 1ps -gi-) can have the same anti-fusion effect for H stems\footnote{There is, as yet, insufficiently documented variation across dialects, registers and styles.}: a HD is not fused with a successive HD whose left edge coincides with a LD left edge (to be confirmed in 292d). In this case, however, there is additionally depression anticipation from the depressed OP leftwards to its preceding SP, suggesting that the lexically triggered L on the OP realigns leftwards via WSA-L$_{\text{F}}$ (L). This phenomenon is limited to the Sigxodo Phuthi dialect (285b,d,f); in Mpapa Phuthi (285a,c,e) there is no such lowering of the SP H.

One important implication of the absence of surface H on the depressed 1ps OP is that this OP must be fusing its HD and LD with the lexically depressed stem $\sigma_1$, resulting in ...[/OP-$\sigma_1$/$\sigma_2$.../$\sigma$. If there were no LD fusion, then HD fusion could not occur (cf. 292d, below); if no HD fusion occurs, then the surface-L OP would violate highly ranked CONTRAST_HD as ...[/OP]/-[/$\sigma_1$/$\sigma_2$... (for 2-$\sigma$ stems) or ...[/OP]/-[/$\sigma_1$/$\sigma_2$... (in the case of 3+$\sigma$ stems); I have argued earlier (Chapter 5 §5.4.1.5) that CONTRAST_HD is essentially undominated throughout the language.
Significantly, this H stem data (285) will pattern identically with the toneless/low stems to follow in (286), with reference to LD fusion: the SP will remain H (both Mpapa and Sigxodo dialects), and the LD from the depressed OP crucially fuses with the stem LD, conflating the toneless/low {OP+stem} pattern with that of the H stems just seen in (285). The fusion analysis is provoked by the complete absence of surface H on the OP, even in the 2σ form (286a vs. non-existent 286b); this contrasts with the present indicative (i.e. lexical paradigm), where the OP is H before a toneless 2-σ stem, as opposed to all longer forms (cf. Chapter 5 §5.4.1.1 (90a-b), repeated as (286g-h)).

LD fusion between the lexical LDs on the OP and in stem σ1 in (285)—and (286) to follow—is crucial because we do not otherwise expect the OP HD to fuse with the depressed stem σ1: as will be confirmed in (292d), a HD does not fuse with a successive HD that contains a nested LD. While this works just fine for (286a), it produces a slightly strange effect in (286c,e).

168 The subscript diacritics used in this section are as follows: Hx or Hy indicates a distinct HD (without distinguishing lexical from grammatical H); L (or Lx or Ly) indicates a lexical LD; ‘G’ indicates a grammatical LD. Where space permits, L_<text>LEX</text> and L_<text>GRAM</text> are used for lexical and grammatical LDs, respectively.

169 Speculating, the pattern seems to be that at least either the SP or OP should be surface-H.

170 As might be expected, it is possible to elicit an alternatively H depressed 1ps OP, in both dialects, but often only under contrastive emphasis (and in both dialects only for stems longer than 2σ). The social and stylistic distribution of these varying possible surface patterns is not properly resolved.
where HD₁ (H₁) and HD₂ (H₂) fuse across the stem σ₁, which syllable is not ‘supposed’ to be inside a HD at all. For the first time, here, we see a domain plateau effect abstractly forced by the requirements for LD and HD fusion.

Present negative: H NegSP + H OP + toneless stems (depressor-bearing)

(286) Depressed OP triggers LD fusion, interrupts HD fusion in toneless/low stems (SgxPhuthi)

a. aká-ɡɪ-bheéki a[ká]-[HₓHy{Lₓ,Lyɡɪ}Lₓ,Lyɛ]Hₓ,Hₙ₂ki s/he doesn’t look at me

b. *aká-ɡɪ-bheéki *a[ká]-[Hₓ{Lₓɡɪ}Lₓ]-[Hᵧ{Lᵧbhe}Lᵧɛ]Hᵧ₂ki

c. aká-ɡɪ-vulééli a[ká]-[HₓHy{Lₓ,Lyɡɪ-vu}Lₓ,Lyɛɛ]Hₓ,Hᵧli s/he doesn’t open for me

d. *aká-ɡɪ-vulééli *a[ká]-[Hₓ{Lₓɡɪ}Lₓ]-[Hᵧ{Lᵧvu}Lᵧɛɛ]Hᵧ₂li

e. aká-ɡɪ-dzakálíísi a[ká]-[HₓHy{Lₓ,Lyɡɪ-dz}Lₓ,Lyɛɛɛ]Hₓ,Hᵧ₂si s/he doesn’t injure me

f. *aká-ɡɪ-dzakálíísi *a[ká]-[Hₓ{Lₓɡɪ}Lₓ]-[Hᵧ{Lᵧdza}Lᵧɛɛɛ]Hᵧ₂si

g. si-ya-tí-liima si-ya-[tí]-liima we cultivate them (Cl. 10)
h. si-ya-yí-yeeta si-ya-[yí]-yeeta we make it (Cl. 9)

Similarly, a non-depressor 2-σ toneless/low stem with depressed 1ps OP typically does not have a surface-H OP (287b), suggesting that this requires OP+stem LD fusion in order to facilitate OP+stem HD fusion, so that very highly ranked CONTRAST_HD (argued for the OP with present indicative (and other) stems in Chapter 5 §5.4) will not be violated for the OP. A non-depressor 2σ High stem with depressed 1ps OP behaves identically on the surface, but reflects a structurally distinct overlapping HD configuration, resolved into a single fused HD (287f).

171 (286a-c) contains odd-looking configurations because the stem HD and LD are coextensive; the first two lexical LDs have fused {-ɡɪ-vu-}; there is no evidence for or against fusing these lexical LDs to the grammatically depressed penult LD, which LD tolerates both depression and simultaneous surface H-ness.
Present negative: H NegSP + H OP + toneless stems (depressor-bearing)

(287) OP+stem LD and HD fusion

a. aká-gí-nyí  a[ká]-[Hx,Hy{gí}-nyi]Hx,Hy s/he doesn’t excrete me

b. aká-gí-’hláábi  a[ká]-[Hx,Hy{L,G}hláá}Hx,Hy]bi s/he doesn’t stab me

c. aká-gí-’lbááli  a[ká]-[Hx{L}l]báá}Hx,Hy]li s/he doesn’t forget me

d. aká-gí-’lbáátíísi  a[ká]-[Hx{L}lbáá}Hx,Hy]si s/he doesn’t delay me

e. aká-gí-í-phi  a[ká]-[Hx,Hy{L}í-phi]Hx,Hy] s/he doesn’t give me

f. aká-gí-’bóóni  a[ká]-[Hx,Hy{L}bóó]}Hx,Hy]ni s/he doesn’t see me

g. aká-gí-’bóóníísi  a[ká]-[Hx,Hy{L}bóóníí]}Hx,Hy,Hy]si s/he doesn’t show me

h. aká-gí-’sébétíísi  a[ká]-[Hx,Hy,Hy{L}sébétíí]}Hx,Hy,Hy]si s/he doesn’t use me

The data in (287) confirms the constraint proposed in (275), that is, that there is a ban on the sequence of L\_LEX (L) and L\_GRAM (G), which ban causes L\_GRAM to be fused with L\_LEX in the case of toneless/low stems (287a-d), and causes L\_GRAM to be underparsed in the case of H stems (287e-h).

The LD fusion data in (286-287) has suggested that adjacent LDs are fused in response to a general OCP constraint on adjacent lexical L tokens (288)—as already proposed in its general schema in §7.7.2.4 (214).

(288) \[ \text{*AE (L}_{LEX}, L_{LEX})} \]

\[
\sigma \sigma_{x+1} \\
\text{| |} \\
\text{* (L}_{LEX}\alpha L_{LEX}\beta)_{MStem}
\]

There cannot be two adjacent L\_LEX tokens within a macrostem (OP+stem) domain.

---

172 As semantically unlikely as this may seem, in a literary world of fairytales, this phrase is elicited as plausible.

173 There is a second option for successful domaining of this data: a[ká]-[\{gí\}-[bá],ó,ni, where the depressed 1ps OP causes shift onto the H stem penult syllable, which in turn can only parse its stem H sponsor on the 2nd mora (unincorporation). While there is no surface difference between the fusion and H shift approaches here, there is no reason for fusion not to take place, as will be confirmed in the typology presented in (292) below, obviating any need to appeal to the unincorporation strategy.
This OCP constraint refers explicitly to *lexical* L, since the OCP effect on grammatical L (275) serves only to prevent insertion where lexical L is already present anywhere in the same stem. Thus, L_{\text{GRAM}} is sensitive to any cooccurrence within a stem domain, whereas L_{\text{LEX}} is sensitive only to strict tone adjacency (indicated by syllables $x, x+1$ in 288). As with HD adjacency, the response to the L_{\text{LEX}} OCP effect is fusion; deletion (underparsing) of a L_{\text{LEX}} is never a possibility, hence the ranking in (289).

(289) **LD fusion ranking**
Max $L_{\text{LEX}} \gg *AE (L_{\text{LEX}})$

This ranking articulates precisely the opposite of the OCP effect on grammatical L given in (277) above, where underparsing of L_{\text{GRAM}} does occur (that is, failure to insert L_{\text{GRAM}} in the toneless/low stem).

7. 8. 1. 9. LD Minimality

The present negative offers a second instance of L domain minimality (the first was in the copulative, cf. §7.5). This new LD minimality—again, a single extension of a LD rightwards—will appear to contradict the evidence just presented in §7.8.1.7 (282, 284) where the OP has just been shown to surface H in the present negative paradigm; in the present negative data to follow, on the other hand, the OP surfaces predictably as H in the toneless/low stems in (290) (failure of successful LD-M_{\text{IN}}) but as toneless/low in the H stems in (291) (successful LD-M_{\text{IN}}).

Nevertheless, the OP can be shown to remain lexically (that is, domain-configurationally H throughout these examples, thus confirming that the OP is indeed H in the present negative paradigm.

In (290a-e) there are three distinct surface forms with the 1-$\sigma$ stem\textsuperscript{174}, reflecting five analytic possibilities. First, in (290a) the OP *búú* is H both underlyingly and on the surface (both penult moras are H); it serves to tolerate a rightwards unincorporated HD from the preceding depressed 1ps SP. Second, in (290b-d)—the same surface form with varying underlying representations—the OP displays only the first mora as H, meaning that the OP is

\textsuperscript{174} It is a given that the 1-$\sigma$ stems are notoriously variable, and somewhat unstable, but there is no reason to assume that the full range of HD and LD constraints are suspended here. Indeed, they appear not to be.

684
underlyingly H, but would be surface-toneless because the HD is fused rightwards with the H-expressing stem ultima, except that the H shifted off the depressed 1ps SP now occupies (only) the first surface mora of the penult; in (290c) the OP is still lexically H, unfused with the ultima, but only realising the first mora as H, because of the Register Domains effect on the penult-ultima sequence (cf. Chapter 5 §5.5); in (290d) the OP is toneless, thus easily allowing the depressed 1ps SP to shift its H rightwards onto the first mora of the non-H penult. Given the consistency of analysis being pursued here, (290d) seems uninsightful because the OP would have to be reassessed as lexically toneless; rather, (b) is adequate\textsuperscript{175}, and (c) might be a possible alternative. Third, in (290e), the penult (here = OP) must be depressed, because the H on the depressed 1ps SP displays the blocking effect: it fails to shift its H rightwards onto the OP. Of the three alternatives here, (290a,e) are the commonest; (290b=c=d) is an alternative, under certain discourse conditions.

**Preseng negative: 1ps NegSP + OP + toneless/low stems**

(290) Toneless/low stems: OP is surface H

a. \texttt{agi-búú-nyí} \quad a\{\{\texttt{gi}\}\text{-bú}\}_{y,z\text{-nyí}}_{y,z} \quad \text{I don’t excrete it}\textsuperscript{176} \quad \text{OP is lexically H, expressed as H inside fused OP+Stem HD, on penult 2nd mora; stem is expressed toneless, since CONTRAST\_HD is satisfied.}

\textsuperscript{175} There is just one analytic wrinkle that presents itself with (290c): fusion across the penult-ultima was used (Chapter 5 §5.4.1.6) to explain why a short H 1-σ stem can surface as toneless, when preceded by a H OP: CONTRAST\_HD is not violated for the now fused penult-ultima HD; there, the failure to express the 1-σ stem ultima was motivated by a register domain constraint: *EXPRESS\_ULTIMA. Here, however, it is the ultima that surfaces H, and the penult which fails to. Some additional constraint would need to create the conditions for this. It may well have to do with register and style: ultima H syllables in short stems are rare, and typically only occur under discourse conditions of contrastive emphasis.

\textsuperscript{176} The reader is reminded that the OP used here is -\texttt{búú}- (and not, say, -\texttt{báá}-) purely for subcategorisation and semantic reasons (the object of the 1-σ stem ‘excrete’ cannot typically be animate, such as the OP -\texttt{báá}- entails).
b.  agí-'búu-nyí  
\[a_{\{x,y\}}-\{búu\}_x-u-\{nyí\}_y,z\]  
*OP is lexically H, expressed toneless (on penult 2nd mora) because of ultima downstep; depressed SP H forces shift onto OP, and unincorporation of OP, which fuses with stem (ultima) HD.*

c.  a\[x,\{gi\}]_{-bú}_x-[\{nyí\}_y,z]  
*OP is lexically H; OP is not grammatically depressed; penult-ultima is contoured by Register Domains requirement*

d.  a\[x,\{gi\}]_{-bú}_x-u-[\{nyí\}_y,z]  
*OP is lexically toneless; OP is not grammatically depressed*

e.  a\[x,\{gi\}]_{-búu-nyí}  
*penult (= OP) is depressed*

f.  a\[x,\{gi\}]_{-tí-\{líí\}_x,y}mi  
*I don’t cultivate them*

g.  a\[x,\{gi\}]_{-bá-\{líí\}_x,y}si  
*I don’t help them cultivate*

h.  a\[x,\{gi\}]_{-bá-\{tíí\}_x,y}si  
*I don’t delay them*

One possibility is that the OPs in (290f-h) are lexically H (as configured in the middle column), either where the H shifted off the depressed 1ps prefix is expressed as H on the OP (and the OP H is parsed in the first mora of the penult in (290f) through unincorporation, as motivated for other paradigms in §7.7.1)\footnote{Because the SP and OP uncontroversially fuse in (290f-h), unincorporation in (290f) is less transparent in terms of domain structure (and could in fact be avoided altogether). What has been configured as HD\(_y\) could be subsumed into a fused HD\(_{x,y}\) even in (290f) as: \[a_{\{x,y\}}-{\{gi\}}_{-tí\{líí\}_x,y}mi\] where post-fusion -tí- coexpresses the SP H and its own H. But in (290g-h) unincorporation cannot succeed because stem σ1 is toneless, and is thus unable to fulfil the domain-parsing requirement of the OP (there would be a locality violation of the OP sponsor tried to parse its unincorporated HD commencing on stem σ2). In these cases, SP-OP fusion is crucial.}, or where the SP and OP HD are simply fused, in (290g-h).

Another possibility is that the OPs in (290f-h) are lexically toneless, where the OP is only surface H through depressor shift off the depressed 1ps SP.

It would, however, be analytically incoherent to claim that the OPs are lexically toneless here, given that they are H in the non-depressed SP data seen above (282, 284). Consistency of
analysis suggests that the first strategy is correct: OPs are lexically H throughout this paradigm. That is, LD-MIN fails (for OCP reasons, cf. (297) below), and the SP-OP HDs fuse.

In the longer toneless/low 3-σ to 4-σ stems (290g-h), there is no question of HD fusion, because the HDs are not adjacent. But in the 2-σ stem (290f), the OP and stem σ1 are adjacent, yet fail to fuse; if they did, we would expect *agi-tí-lúmi $a_l_{yz} \{gi_{x} \} - tì-{lií} \}_yz mi$, where the right edge of HD$_{xyz}$ reflects the right edge of the single fused HD (fused from HD$_{x}$, HD$_{y}$, and HD$_{z}$). The obvious cause of this failure to fuse across the antepenult/penult boundary is that the stem penult -lií- is (grammatically) depressed; I have already argued that fusion fails if there is a LD left edge at the fusion site, as there is here.

Data from the H stems appears, at first, to contradict the general OP-as-H pattern in this paradigm, since in all but the shortest stems (291a-c), the OP surfaces as toneless (291d-f). The most straightforward analysis of why the OP fails to be surface-H in this data is that the LD on the 1ps SP successfully extends rightwards by one syllable, onto the OP (as configured here in the middle column), in order to satisfy LD minimality (motivated in §7.5 above), unless OP is also the penult (291a).

### Preseng negative: 1ps NegSP + OP + toneless/low stems

(291)  **H stems: OP is (mostly) surface low.**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>agí-báá-phi</td>
<td>a[⟨gi⟩-bá⟩y, yz ā-phi⟩y, yz</td>
<td>I don’t give them</td>
</tr>
<tr>
<td>b.</td>
<td>*agi-baá-phi</td>
<td>*a[⟨y, z, x⟩gi-⟨ba⟩ā-phi⟩x, y, z</td>
<td>I don’t see them</td>
</tr>
<tr>
<td>c.</td>
<td>*agi-baa-phi</td>
<td>*a[⟨x, y, z⟩gi-ba a-phi⟩x, y, z</td>
<td>I don’t see them clearly</td>
</tr>
<tr>
<td>d.</td>
<td>agí-ba bóóni</td>
<td>a[⟨gi-⟨ba⟩⟩-bóón⟩ni</td>
<td>I don’t see them</td>
</tr>
<tr>
<td>e.</td>
<td>agí-ba bóónísi</td>
<td>a[⟨gi-⟨ba⟩⟩-bóónís⟩i</td>
<td>I don’t see them clearly</td>
</tr>
<tr>
<td>f.</td>
<td>agí-ba bóónísísi</td>
<td>a[⟨gi-⟨ba⟩⟩-bóónísí⟩si</td>
<td>I don’t see them clearly</td>
</tr>
</tbody>
</table>

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178 It is worth noting that the surface-low OPs with H stems here (291d-f) cannot be argued to be low (or toneless) for the same reason that OPs are generally surface-toneless for H stems in the lexical paradigms (e.g. present indicative, cf. Chapter 5 §5.4). The anti-expression *EXPRESS _OP constraint is invoked in the general instance, for lexical paradigms; here in the present negative, the distinction between low and high OPs corresponds to lexical tone class, and would be lost by such a blanket anti-express requirement.
LD minimality (LD-MIN) must fail in (291a), where the output is not rising H on the penult—indicative of membership in a L domain (291b)—but level H, and where the output is also not a level low penult, with a H lexical stem tone on the ultima (291c). Given that the LD extended from the SP is not a grammatical L (this is not a toneless/low stem), the OP penult must fail to be parsed as L. This reconfirms the analysis in section §7.5 where LD-MIN was argued not to operate over the antepenult-penult boundary (AVOIDPROMLD >> LD-MIN).

The configured outcomes in these toneless/low and H stems where the 1ps is depressed are now accounted for\(^{179}\). Adjacent SP-OP are both inside the LD, but fail to violate CONTRAST_HD because their HD fuses rightwards with the stem HD beginning on stem \(\sigma_1\) (cf. 292c below). HD fusion across the OP+Stem boundary still takes place in (290e, 291a,d-f) because in each case the fusing HDs do not contain a fresh instance of LD left-edge at the fusion site (that is, not at the left edge of the fused HD); rather, the LD nested inside the first fusing H domain—HD\(_x\)—is always at the left edge of the fused HD. This is made clear in the fusion typology laid out in (292a-f), where all potentially fusible adjacent HDs are considered.

\[\text{[turn to the next page for (292) ‘Fusible HD structures (reflecting all possible nested LDs)’]}\]

\(^{179}\) There is a further fact to account for: LD minimality generally—but not for monosyllables—forces depression extension from SP to OP for H stems (291b-d), but not for toneless/low stems (290f-h). I return to address this asymmetry after considering the patterns from toneless/low and H stems which bear lexical (consonantal) depressors in (293-296) below.
Fusible HD structures (reflecting all possible nested LDs)

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $[x...],_x [y...]_y$</td>
<td>$[x,y... ...]_{x,y}$</td>
<td>two adjacent HDs, no depressed syllables (cf. Chapter 5 §5.2): fusion.</td>
</tr>
<tr>
<td>b. $[x{...}..._x [y...}..._y$</td>
<td>$[x,y{...}... ...]_{x,y}$</td>
<td>two adjacent HDs, depressed $\sigma$s at left-edge of HD$_x$ (cf. §7.8.1.8 (287)): fusion.</td>
</tr>
<tr>
<td>c. $[x...{...}]_x [y...}_y$</td>
<td>$[x,y...{...} ...]_{x,y}$</td>
<td>two adjacent HDs, depressed $\sigma$s at right edge of HD$_y$: HD$_y$/HD$_x$ domain fusion subsumes any form of successful or failed unincorporation (cf. §7.8.1.9, (290f-h)).</td>
</tr>
<tr>
<td>d. $[x...}_x [y{...}...}_y$</td>
<td>$[...]{...}<em>x [y...]</em>{y}$</td>
<td>two adjacent HDs, depressed $\sigma$s at left-edge of HD$_y$: no fusion (cf. §7.8.1.7, §7.8.1.8, §7.8.1.9, including (290e): SP fails to fuse with depressed OP).</td>
</tr>
<tr>
<td>e. $[x...}_x [y{...}...}_y$</td>
<td>$[...]{...}<em>x [y...]</em>{y}$</td>
<td>two adjacent HDs, depressed $\sigma$s at the right edge (head) of HD$_y$ (cf. (303)): no fusion.</td>
</tr>
<tr>
<td>f. $[x...{...}]_x [y...]_y$</td>
<td>$[x...{...} \sigma]_x [y...]_y$</td>
<td>two adjacent HDs, depressed $\sigma$s at right of HD$_x$: possible fusion.</td>
</tr>
</tbody>
</table>

Of the five possible LD/HD nesting configurations (292b-f), the patterns in (292e-f) have yet to be encountered. (292e,f) have two potential instantiations each: in the case of L$_{GRAM}$, there is no realignment of LD to the stem left-edge; otherwise, an L$_{LEX}$ always realigns to the left edge of the stem (often the initiation site for a HD too), by depression anticipation (§7.3). The hypothesis here is that just as fusion fails in (292d), so it would in (292e) by virtue of the second HD in the sequence containing a LD (which realigns leftwards in depression anticipation, or which triggers depression of the whole domain in situ in the case of L$_{GRAM}$). Fusion failure in (292e) is illustrated by (293a,294b,295b,296b) immediately below; the fused (perfect overlap) pattern in (292f) has exemplars to come in the following section §7.8.1.10 (308), where the output will be ambiguous for fusion status.

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180 This input notation is informal: domains are in fact regarded not to be part of the phonological underlying representation (cf. Chapter 3 §3.3); they are surface indicators of underlying and ‘spread’ tone location, and the possible scope of (re)alignments. These input ‘domain’ edges merely signal the left and right edges of (a series of adjacent) H tone ([, ]) and L tone ({, }) sponsors. The fusion typology is in part refined in §7.8.1.10 (307) below.

181 There are permutations on the given input patterns that have a toneless syllable between HD$_x$ and HD$_y$, including $[...{...}]_x \sigma[y...{...}..._y$ and $[...{...}]_x \sigma[y...]_y$. It is not clear that data is available to test the potentially distinct outputs of $j_{x,y} \sigma$, vs. $j_{y} inputs.
The fundamental observation from the typology summarised in (292) is that a sequence of two High domains—HD<sub>x</sub>, HD<sub>y</sub>—does not fuse if the second HD contains a depression domain in any position (292d-e). Conversely, the two HDs do fuse if there is no LD nested at any position inside HD<sub>y</sub>, regardless of the presence or absence of a LD inside HD<sub>x</sub>. This distribution is predicted by the *L-IN-H constraint proposed for the depression blocking account given in §7.4.3.3 (91) above. For the present discussion, a fused HD<sub>xy</sub> domain is worse if fusion entails acquiring the presence of an additional LD inside the fusing HD<sup>182</sup>.

Turning back to the analysis of the OP as H in (290-291), we see that this is confirmed by data from stems containing lexical depressors where the OP persists in surfacing as H on toneless stems (293-294); even though this H OP could solely because of the depressor-shifted H off the 1ps SP, the H OP here is certainly coexpressing the ‘shifted’ SP H inside a fused SP-OP HD.

**Present negative: 1ps NegSP + OP + toneless/low stems**

(293) Post-1ps OP surfaces as H in toneless/low stems (σ1 = depressed)

a. agi-tú-<var>vuúli</var> a[({gi}]-tú-{vu}úlli I don’t open them

b. agi-bá-<var>vlééli</var> a[({gi}]-bá-{vu}[léé]li I don’t open for them

c. agi-bá-dżazakálíísi a[({gi}]-bá-{dza}[kálíí]si I don’t help them injure

(294) Post-1ps OP surfaces as H in toneless/low stems (σ2 = depressed)

a. agi-bá-<var>lázzi</var> a[({gi}]-bá-{láz}[LGRÁM]dzi I don’t fetch them

b. agi-bá-ladżeéli a[({gi}]-bá-{ladżeé}li I don’t follow them

---

<sup>182</sup> There is a problem, however. The effect derives from fusion being assessed left-to-right: HD<sub>x</sub> (with nested LD) can fuse with HD<sub>y</sub> (with no nested LD), as if the LD count inside HD<sub>xy</sub> is not worsened; but HD<sub>x</sub> (with no L) cannot fuse with HD<sub>y</sub> (with L), because then the LD count inside HD<sub>xy</sub> is worsened. Hence, the LD count inside HD<sub>x</sub> carries primacy. And yet, a fused domain HD<sub>xy</sub> with one HD edge nonlocal to each HD instantiation must count each *L-IN-H violation for each HD, thus failing to achieve the directional fusion effect on its own (cf. footnote 200, for Tableau 20). There must be a higher ranked HD/LD expression constraint forcing a depression-bearing HD<sub>x</sub> to extend rightwards (and, thus, fuse) into a non-depression bearing HD<sub>y</sub>. It is an open question what exactly this higher ranked HD/LD constraint might be: I suggest the following conjoint constraint: (EXPRESS<sub>L</sub> & EXPRESS<sub>H</sub>). Also see §7.8.1.10 below, footnotes 199 and 200. And cf. comments on this fusion ambiguity for apparent *L-IN-H violation assessment in §7.5.1 footnote 81.
The present negative 1ps OP persists—apart from the usual exception of 1-σ stems (295a)—in surfacing as toneless/low with H stems, because adjacent LDs—SP and OP and stem-initial LD, where applicable—fuse (295-296), as proposed above in (275) and (288); H expression for the fused OP+stem domain HD is rescued by being expressed on at least one mora (295b, 296b) of the post-σ1 (pre-ultiima) stem HD.

**Present negative: 1ps NegSP + OP + H stems**

(295) Post-1ps OP surfaces as low in H stems (σ1 = depressed)

a. \( \text{agi-ú-dli} \) \( \text{a[gi]-ú-[d lî]} \) I don’t eat them

b. \( \text{agi-ba-vúúsì} \) \( \text{a[gi-ba-vú]úsì} \) I don’t wake them up

c. \( \text{agi-ba-vüúúísì} \) \( \text{a[gi-ba-vú]úísì} \) I don’t help them harvest

d. \( \text{agi-ba-vísísísì} \) \( \text{a[gi-ba-ví]ísísísì} \) I don’t understand them

\( \text{L}_{\text{gram}} \) is indicated in (294a) only because this is the sole exemplar of a grammatical L domain in this data set; in all longer stems, the penult is lexically L (294b-c) or not low at all (294d).

It is worth noting again that fusion here between SP and OP domains is crucial. But in (290e-f) earlier (1-σ and 2-σ stems), I pointed out (footnote 177) that one could still entertain unincorporation as a possible strategy for handling the SP-OP+stem data. In (293-294) above, however, as with the remaining data earlier (290g-h), unincorporation cannot be resorted to, for the simple reason that there is a toneless mora between OP H and stem H. The configuration in (293-294) where a HD is only one syllable long was simply not addressed in the unincorporation treatment of §7.7.1.
The LD minimality effect across SP and OP is asymmetrical for toneless/low and H stems: minimality forces depression extension from SP to OP only in the H stems (291d-f), not for toneless/low stems (290f-h). This fact remains hitherto unaccounted for. I propose that the asymmetry reflects an OCP effect on L domains: L on the 1ps SP $gi$- cannot extend rightwards if that extension would violate an OCP ban on adjacent LDs, that is, if the stem commences with a LD (either in situ, or by depression anticipation). But the nature of this OCP effect is messy (an analysis is suggested, but the effect is not unambiguously resolvable here).

Initially, the effect seems straightforward for lexical depression in (293-294), to be repeated—after the OCP rankings in (297) below—as (298a-d), by *AE (L$_{LEX}$), which bans two adjacent lexical LDs (from 289 above), whether the two lexical LDs are adjacent in situ (293b=298a,b), or whether adjacent by depression anticipation (realigned left-edge), as in (294=298c,d); second, the effect in short 2$\sigma$ non-depressor-bearing toneless/low stems (290f repeated as 298e,f) seems tractable by *AE (L$_{GRAM}$) which bans a L$_{LEX}$-L$_{GRAM}$ sequence (proposed in (275) above), to prevent insertion of L$_{GRAM}$ where a L$_{LEX}$ is already contained in the grammatical HD stem domain. Now, the *AE (L$_{GRAM}$) constraint was shown to outrank parsing the grammatical H (277=297a). It must now also outrank LD minimality (297b), but where parsing is preferable to satisfying LD minimality (297c). Similarly, the *AE constraint on adjacent lexical LDs outranks LD-Min (297e), but not the underparsing of a lexical L (297f); and LD-M$_{IN}$ cannot force underparsing of a lexical LD (297g)$^{183}$. The ranking interactions are summarised in (297d,h).

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$^{183}$ But see the discussion on fusing adjacent lexical LDs commenced in (288) and continued in §7.8.1.10 below; also the discussion in earlier footnotes 63 (§7.4.3.3), 81 (§7.5.1), 159 (§7.8.1.7), and the previous footnote (182) in this section.
(297) OCP effect on LD-Min
a. *AE (L_{LEX}, L_{GRAM}) (\pi) >> \text{Max} L_{GRAM} (\pi) \quad \text{L_{GRAM} OCP forces underparsing of L_{GRAM}}
b. *AE (L_{LEX}, L_{GRAM}) (\pi) >> \text{LD-Min} \quad \text{L_{GRAM} OCP prevents LD extension}
c. \text{Max} L_{GRAM} (\pi) >> \text{LD-Min} \quad \text{L_{GRAM} cannot be underparsed by extended LD}
d. *AE (L_{LEX}, L_{GRAM}) (\pi) >> \text{Max} L_{GRAM} (\pi) >> \text{LD-Min}
e. *AE (L_{LEX}, L_{LEX}) (\pi) >> \text{LD-Min} \quad \text{L_{LEX} OCP prevents LD extension}
f. \text{Max} L_{LEX} (\pi) >> *AE (L_{LEX}, L_{LEX}) (\pi) \quad \text{L_{LEX} OCP cannot force underparsing of L_{LEX}}
g. \text{Max} L_{LEX} (\pi) >> \text{LD-Min} \quad \text{L_{LEX} cannot be underparsed by extended LD}
h. \text{Max} L_{LEX} (\pi) >> *AE (L_{LEX}, L_{LEX}) (\pi) >> \text{LD-Min}

This account is insufficient, however, for longer 3σ-5σ toneless stems (290g-h)—repeated as (298g-j)—because no form of the LD OCP would be violated, even if both 1ps SP and OP were depressed (that is, L). Worse, if *AE (L_{LEX}) does hold, then there should be no LD minimality effect in H stems which commence with a LD, as in (295-296) above, repeated as (298k-n), that is, the depressed 1ps SP should not extend its LD onto the OP preceding a depressor-bearing H stem.

In other words, despite this new clutch of LD OCP constraint variations (297), the OP facts in parts of the present negative (298g-j, k-n) are still incompletely accounted for.

(298) LD minimality fails only in toneless stems, by an OCP effect on L
a. \text{agi- bé- vu'lééli} \quad a\{\text{gi- bá-}{\text{vu'lééli}}} \quad *AE (L_{LEX}) \text{ bans } L_{LEX}^{L_{LEX}}
b. *\text{agi- ba- vu'lééli} \quad *a\{\text{gi-bá-}{\text{vu'lééli}}} \quad *AE (L_{LEX}) \text{ is violated}
c. \text{agi- bá- ladzeéli} \quad a\{\text{gi- bá-}{\text{ladzeéli}}} \quad *AE (L_{LEX}) \text{ bans } L_{LEX}^{L_{LEX}}
d. *\text{agi- ba- ladzeéli} \quad *a\{\text{gi- ba-}{\text{ladzeéli}}} \quad *AE (L_{LEX}) \text{ is violated}
e. \text{agi- tí- líími} \quad a\{\text{gi- tí-}{\text{líími}}} \quad *AE (L_{GRAM}) \text{ bans } L_{LEX}^{L_{GRAM}}
f. *\text{agi- tí- líími} \quad *a\{\text{gi- tí-}{\text{líími}}} \quad *AE (L_{GRAM}) \text{ is violated}
What is clear from this data set is that LD minimality across the SP-OP sequence must fail only in toneless/low stems, and in all toneless/low stems, irrespective of any lexical (consonantal) depressors they may bear; on the other hand, LD minimality must succeed for all non-1σ H stems, and even H stems that commence with a depressor consonant, and in the case of a realigned (anticipated) depressor domain.

In an attempt to patch this failure of the constraint grammar as it currently stands, I suggest, first, a controversial edge-projection ‘resolution’ to the toneless/low stem configuration, that will turn out quickly to be unimplementable. Rejecting this, I will concede that the simplest way to handle this data is to assume the operation of some form of paradigm uniformity, and morphological Contrast Stem Tone constraint.

The LD configurations in (298k,m) are given ‘prior’ to LD fusion of the OP+stem domain.

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184 The LD configurations in (298k,m) are given ‘prior’ to LD fusion of the OP+stem domain.
It may seem, at first, that the grammar requires a relativised anticipation effect at the stem left-edge of the $L_{\text{GRAM}}$ that is parsed in toneless/low stems. That is, every toneless/low stem appears to weakly project a LD left-edge coinciding with the toneless/low stem left-edge (even though I have argued above that the grammatical L is unrealigned leftwards off the penult\textsuperscript{185}).

This weak projection of grammatical LD left-edge is schematised in (299a)\textsuperscript{186}, and ensures that the $L_{\text{GRAM}}$ OCP effect is respected (299b,c).

\begin{enumerate}
\item[(299)] Toneless/low stems: weak projection of LD Lf edge to stem Lf edge
\begin{enumerate}
\item a. \ldots - $\{x, \sigma \ldots \{x, \sigma\}x \sigma \#$ penult $L_{\text{GRAM}}$ weakly projects Lf edge to stem Lf edge
\item b. $\{\sigma_\text{SP}\} \sigma_\text{OP} - \{x, \sigma \ldots \{x, \sigma\}x \sigma \#$ *AE ($L_{\text{GRAM}}$) is respected; LD-Min is violated.
\item c. $\{\sigma_\text{SP} \sigma_\text{OP}\} - \{x, \sigma \ldots \{x, \sigma\}x \sigma \#$ *AE ($L_{\text{GRAM}}$) is violated; LD-Min is respected.
\end{enumerate}
\end{enumerate}

The longer toneless/low stems in (298g,i,k,m) could now somehow be accounted for by the weakly projected grammatical LD left-edge which prevents LD-M\textsubscript{IN} from extending depression off the SP onto the OP\textsuperscript{187}.

\textsuperscript{185} This putative weak projection of LD left-edge prefigures the same would-be configurational claim to be made in §7.8.1.10, where such a projection could prevent HD fusion across the prefix+stem boundary in toneless/low stems. In that instance, too, this weak projection will be rejected as incoherent.

\textsuperscript{186} No further structural conditions can be offered to preserve toneless/low stems from the LD minimality effect on the SP-OP sequence, until the Paradigm Uniformity constraint in (300-301). But cf. Appendix A, paradigm H, footnote 55, for LD-M\textsubscript{IN} success even in toneless/low stems, there claimed to correspond to the suppression of the toneless/low-vs.-H lexical verb tone contrast; cf. also paradigm J (data sets III, V) for LD-M\textsubscript{IN} effect across SP-OP.

\textsuperscript{187} This would-be nonlocal edge projection of grammatical L finds what appears to be an exact analogue in a Phuthi grammatical tone paradigm: in the perfective negative, presented in Chapter 6 §6.3.2.2 (150-153,159), the grammatical H in the stem appears to project a HD left-edge nonlocally at the edge of the stem, even for toneless/low stems, even though stem $\sigma_1$ is not surface-\textsubscript{H}. The projection there would explain the failure of HD-M\textsubscript{IN}. (There is an alternative, though less appealing, explanation: the tense/aspect marker -\textit{ta-} has a left edge opaque to H realignment (‘spread’)). Additionally, there is a close analogue to this nonlocal projection in Zulu, where a noun prefix H tone is prevented from extending into a noun stem not for anti-right-edge reasons, but because there is already a H sometime in the noun stem; that is, Zulu seems to project a HD left-edge nonlocally at the stem left-edge, e.g. underlying $\sigma\sigma\#\sigma\sigma\sigma$ should be realised as $*\sigma\sigma\#\sigma\sigma\sigma\sigma$, but in fact surfaces as $[\sigma\sigma]\#\sigma\sigma[\sigma]_2$ (cf. Khumalo 1982:110); in these configurations, # indicates the prefix-stem boundary.
But, in truth, what exactly this morphologically aligned weak LD left ‘edge projection’ would actually mean is not clear: does the grammatical L parsed on the penult of toneless/low stems now have two left edges? If so, the first is at the stem left-edge, which forms part of the trigger condition for the OCP effect on adjacent lexical L tones (*AE (L_{LEX})), the second at the left edge of the sponsor position (penult), delimiting the locus of a general register-lowering effect.

For the same reason that a single H sponsor cannot project two right edges (rejected as a pseudo-resolution to the disjoint HDs in §7.7.2.3), so a single L cannot project two left edges. Simply put, the grammar would lose all predictability related to domain edges (e.g. edges needed for reference by Basic-Alignment, by any OCP constraints, by any (anti)edgeness effects). And even if (299a) were feasible, it would still not allow a complete account of the lexical L-L adjacency (that is, apparent OCP violation): (294k-n), however, remains unaccounted for unless *AE (L_{LEX}) is suspended in order to allow the SP LD to extend to the OP, without being hindered by a lexical depressor initial to the H stem.

It might be construed that the LD-MIN failure effect in these data sets can be accounted for solely by *AE (L_{GRAM}), but this is not possible, if indeed the toneless/low stems fail to parse grammatical L on their penults when they contain a lexical L earlier in the stem HD domain (294a-d)\textsuperscript{188}.

Fundamentally, toneless/low stems would need to encode the proposed weakly projected L_{GRAM} left-edge, even if on the surface there were no penult L_{GRAM} on the penult\textsuperscript{189} (when *AE(L_{GRAM}) forces underparsing of a penult L_{GRAM}). This is clearly an untenable strategy.

Rather, it seems that the toneless/low stems and the H stems do two things: (a) each stem length in each stem tone category (toneless/low or H) behaves the same (paradigm uniformity)\textsuperscript{190};

\textsuperscript{188} Immediately below in §7.8.1.10 (302), I will claim that the idea of weakly projecting the left edge of grammatical L (even when there is no surface evidence of L_{GRAM} realignment) is utterly untenable. This suggests that L_{GRAM} is serving chiefly to mark the lexical tone category Low (or toneless), that is non-High. In other words, L_{GRAM} serves to maintain contrast, at any expense. The entire range of paradigm effects in this section (§7.8.1) can be reanalysed as a (somewhat finessed) instantiation of Contrast maintenance, along with Paradigm Uniformity.

\textsuperscript{189} While this would seem to be akin to the OP (Chapter 5 §5.4.1.4, § 5.4.1.5) which projects a HD left-edge even though it only rarely surfaces as H itself (the OP HD left-edge only becomes evident when another HD immediately precedes the OP), there really is no parallel: the OP requires a single HD left-edge, albeit frequently not saliently expressed; the present negative toneless/low stems would require a double instantiation of a grammatical LD left-edge.

\textsuperscript{190} This pattern excludes 1-σ stems, which are obviously (and frequently) exceptional: the
(b) the toneless/low stems systematically contrast tonally with the H stems (contrast preservation of lexical stem tone class). That is, every toneless/low stem has a H OP where every H stem (except the 1-σ aberration) has a toneless/low OP.

An analysis of these OP configurations would be built, then, on these two observations: paradigm uniformity (PU) and contrast preservation of lexical stem tone class. Referring back to earlier data, all toneless/low stems—1-σ (290a-d), 3-σ (290g), 4-σ (290h), and longer—would be paradigm-uniform with the 2-σ stems (290f), as achieved by the PU constraint in (300), together with a specific instantiation of CONTRAST (301), resulting in the distribution in (302).

(300) **PU Present Negative Tone** (PU NegTone)

<table>
<thead>
<tr>
<th>PU OP-#Stem (π), τ</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the present negative paradigm (π), syllables at the boundary (#) between the OP and stem must be tonally uniform (τ) for all stems in the same tone class (toneless/low, High).</td>
</tr>
</tbody>
</table>

(301) **Contrast_StemTone π (Present Negative)** (Contrast_NegTone)

<table>
<thead>
<tr>
<th>Contrast StemParadigm (toneless$<em>{\text{pres}</em>\text{neg}}$, High$<em>{\text{pres}</em>\text{neg}}$), τ</th>
</tr>
</thead>
<tbody>
<tr>
<td>The toneless and High stems in this π paradigm (present negative) must contrast.</td>
</tr>
</tbody>
</table>

(302) **Distribution of tone at stem boundary**

a. toneless/low stems: \(-σ_{\text{OP}}-σ_{\text{stem}}\ldots\)
b. H stems: \(-σ_{\text{OP}}-σ_{\text{stem}}\ldots\)

(300-301) are not the most satisfactory way of achieving (302), because the solution is no longer phonologically explanatory, but rather declarative (at a morphological paradigm level). Given, however, that the OP is H in the UR here (cf. discussion in this section above, and earlier in §7.6.3.2), and given that no other configuration of LD constraints pertaining to one or more forms of the toneless/low stems seems able to achieve the right output, this morphological (300) and lexical (301) constraint seems the most articulate statement of the distribution\(^{191}\).

OP is (mostly) invariably H with 1-σ stems from either tone paradigm (toneless/low or H).

\(^{191}\) Self-evidently, (301) and (302) are overridden in the case of 1-σ stems. The details of such an analysis are not provided, because nothing follows from this.
7. 8. 1. 10. Shift, fusion, anti-fusion, pseudo-anti-fusion

There is a last instance of domain fusion which does not fall out of any of the constraints or constraint interactions motivated so far. When a depressed 1ps H prefix (in the present negative) \(-gi\) shifts its H rightwards into a non-depressor bearing stem, the shifted H fails to fuse in the case of toneless/low stems (303b-e)\(^{192}\), as attested by the downstep diacritic [\(\downarrow\)]; the shifted, overlapping HD \textit{does} fuse in the case of H stems, where no downstep interrupts the level H pitch across the entire \(\sigma_1\)-to-penult domain (304b-e), but for these H stems, the H shifted off the SP is expressed on stem \(\sigma_1\) and the lexically H stem \(\sigma_1\) sponsor is unexpressed; anti-fusion, even if desirable for some reason, is thus unavailable for selection (the shifted H is effectively masked by the stem H).

We have seen SP+Stem data displaying this anti-fusion effect already in §7.8.1.2 (235-239, 240-244), reexcerpted as (303-304). The crucial and surprising data is (303c-e) for toneless/low stems vs. (304c-e) for High stems: in the toneless/low stems (303), we expected to see the two adjacent HDs fuse because there is no lexical depression in these stems, yet they do not fuse; in the High stems (304), likewise, we expect HD fusion (inasmuch there will be seen to be any evidence for fusion at all), and we find fusion, or at least we find no downstepping.

**Present negative: H 1ps NegSP + toneless/low stems**

(303) \textit{Non}-fusion across SP+stem boundary in toneless/low stems

\begin{itemize}
\item a. \textit{agi}-\textit{tí} \quad I don’t come
\item b. \textit{agi}-l\textit{tí}ími \quad I don’t cultivate
\item c. \textit{agi}-l\textit{bááli} \quad I don’t forget
\item d. \textit{agi}-l\textit{bátíísi} \quad I don’t delay
\item e. \textit{agi}-l\textit{bátíísiísi} \quad I don’t delay intensively
\end{itemize}

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\(^{192}\) The 1-\(\sigma\) form (303a) fails to show fusion due to the general phrasal condition that requires a separate Register Domain on the ultima, cf. discussion in Chapter 5 §5.5.6. Similarly for H stems, the 1-\(\sigma\) form (304a) fails to fuse.
Present negative: H 1ps NegSP + H stem

(304) Fusion across SP+stem boundary in H stems

a. agí-i-phí I don’t give
b. agí-bóóní I don’t see
c. agí-sébééti I don’t work
d. agí-sébéétíísi I don’t use
e. agí-sébéétísísí I don’t work intensively

The crucial data (303c-e) tests for fusion of two HDs which do not ‘start out’ as adjacent, but acquire a shared edge through depressor shift at the right edge of the first HD, where the second HD also contains a Head (right edge) which is grammatically (L_{GRAM} or just L_{G}) depressed; this data then demonstrates anti-fusion, as attested by the downstep at the stem σ1-σ2 boundary in this toneless/low paradigm, as shown by the proposed domain interaction in (305a,c), as opposed to the would-be (but ill-formed) fusion data in (305b,d).

Present negative: H 1ps NegSP + toneless stems

(305) HD fusion failure if HD₁/HD₂ adjacency results from shift in HD₁ into depressed HD₂

a. agí-li'bááli a[{gi}-lí]{báá}{Li}i I don’t forget
b. *agí-li'bááli *a[{gi}-lí]{báá}{Li}i HD fusion: ill-formed
c. agí-li'bátíísi a[{gi}-lí]{báá}{tíí}{Li}si I don’t delay
d. *agí-li'bátíísi *a[{gi}-lí]{báá}{tíí}{Li}si HD fusion: ill-formed

For H stems, there is (unsurprisingly) perfect fusion of the lexical stem σ1 H and the grammatical σ2-to-penult H as configured in (306a,d); failure to fuse the stem σ1-σ2 here is not an option (306c,f). Whether the depressed SP, in turn, is fused to this (fused) stem HD domain (a,d), or not (b,e), is a moot point, as there are no testable tone expression implications. If there is no fusion, then the H on the depressed SP must shift into stem σ1 position (306b,e), in which case the lexical H sponsored in stem σ1 position is unincorporated in its own domain, which
stem domain perforce commences on $\sigma_2$ (and is fused with the grammatical H domain which commences on $\sigma_2$)\textsuperscript{193}. If however there is fusion of the SP+stem domain sequence, then a triply fused single domain ($\text{HD}_{x,y,z}$) is expected (306a,d).

**Present negative: H 1ps NegSP + H stems**

(306) Possible HD fusion at SP-H stem boundary

a. \textit{agi-šébééti} $a[x,y,z\{gi\}_{x}-\text{šé}_{y}\text{bétúsi}]}_{x,y,z},$ti I don’t work

b. \textit{-} $a[x\{gi\}_{x}-\text{šé}_{y}y,z\text{bétúsi}]_{y,z},$ti \textit{moot fusion failure: SP+stem}

c. *\textit{agi-šé\'bééti} $a[x,y\{gi\}_{x}-\text{šé}_{y}y,z\text{béé}]}_{x,y,z},$ti $\sigma_1-\sigma_2$ HD unfused: ill-formed

d. \textit{agi-šébééti} $a[x,y,z\{gi\}_{x}-\text{šé}_{y}\text{bétúsi}]}_{x,y,z},$si I don’t use

e. \textit{-} $a[x\{gi\}_{x}-\text{šé}_{y}y,z\text{bétúsi}]_{y,z},$si \textit{moot fusion failure: SP+stem}

f. *\textit{agi-šé\'bééti} *$a[x,y\{gi\}_{x}-\text{šé}_{y}y,z\text{béé}]}_{x,y,z},$si $\sigma_1-\sigma_2$ HD unfused: ill-formed

In (292) above, all fusible HD structures were considered. Just above, (305a,c) instantiate (292c), that is: HD$_x$ fails to fuse with immediately following\textsuperscript{194} HD$_y$ if HD$_y$ contains a nested LD in any position. This configuration is repeated as (307a). (306a,c) instantiate (292f) above, repeated as (307b), where a depressed sponsor (=head) syllable in a domain HD$_x$ forces the unincorporation of that sponsor with its sponsored domain (that here intrudes on HD$_y$, become overlapped (and possibly fused) through depressor shift from HD$_x$ into HD$_y$.

[turn to the next page for (307) ‘Fusible HD structures, redux’].

\textsuperscript{193} An unfused, unshifted, surface-low HD$_x$ is not possible, however, as the HD contrast would be lost completely. I have argued in Chapter 5 §5.4.1.5 that CONTRAST_HD is maintained at all costs.

\textsuperscript{194} The HD adjacency is only evident ‘after’ depressor shift from HD$_x$ has taken place.
Fusible HD structures, redux

a. \([\ldots\{\ldots\}]_x\sigma[\ldots\ldots]_y \Leftrightarrow [\ldots\{\ldots\}][\ldots\ldots]_y\]
   - two HDs with a toneless syllable between them
   - depressed \(\sigma\) at the right edge (head) of HD\(_x\), HD\(_y\)
   - shift from HD\(_x\) into toneless (domainless) syllable
   - no fusion between HD\(_x\) and HD\(_y\)

b. \([\ldots\{\ldots\}]_x[\ldots\ldots]_y \Leftrightarrow [\ldots\{\ldots\}]_x[\ldots\ldots]_y\)
   - two adjacent HDs\(^{195}\)
   - depressed \(\sigma\) at right edge (head) of HD\(_x\)
   - shift from HD\(_x\) onto HD\(_y\) sponsor syllable, causing unincorporation of HD\(_y\) sponsor.
   - fusion is not determinable: possibly, in the third form, HD\(_x\) fuses with HD\(_y\).

The problem with HDs that become adjacent through depressor shift and fail to fuse (303c-e, 305a,c, 307a) does not appear to be connected to the manner in which the HDs become adjacent, but, crucially, to the fact that this toneless/low paradigm contains a phonological property which inhibits fusion. It has been argued above that these toneless/low stems reflect a grammatical L tone, that is, HD\(_y\) contains a LD\(_{\text{GRAM}}\). Although I have argued that this grammatical L does not realign to the left edge of the grammatical HD in a present negative stem, the presence of this L anywhere inside the target domain area for grammatical tone (stem \(\sigma_2\)-to-penult) is sufficient to prevent fusion\(^{196}\). This confirms the anti-fusion configuration given in (292c) above, which continues to be covered by the \(*L\)-in-H constraint proposed earlier in §7.4.3.3 (91), and invoked again for the patterns in §7.8.1.9 (292) above.

On the other hand, it might be argued again (cf. §7.8.1.9 (299)) that the grammatical penult L has the anti-fuse properties associated with the left edge of a LD (where left-edge in toneless/low stems is the stem \(\sigma_2\) position). The prefix HD is able to ‘see’ that there is a (grammatical) LD inside the stem domain, even if it is non-local to the stem left-edge itself. This anti-fusion property would be conceptualised as the ability of L\(_{\text{GRAM}}\) to prevent two HDs from

\(^{195}\) The full ‘sequence’ of fusion and shift in (307b) is as follows (what has been schematically labelled HD\(_y\) in (307b) is here HD\(_y\)/HD\(_z\)):

\([\ldots\{\ldots\}]_x[\ldots\ldots]_z \Rightarrow [\ldots\{\ldots\}]_x[\ldots\ldots]_{y,z} \Rightarrow [\ldots\{\ldots\}][\ldots\ldots]_{y,z} \Rightarrow [\ldots\{\ldots\}][\ldots\ldots]_{y,z} \Rightarrow [\ldots\{\ldots\}][\ldots\ldots]_{x,y,z}\)

That is: (i) there are three adjacent HDs (SP-OP-Hstem); (ii) HD\(_x\) and HD\(_z\) (OP and stem) fuse; (iii) depressed head of HD\(_x\) shifts H into HD\(_y\), causing overlap; (iv) possibly (but it is not entirely clear), shifted HD\(_x\) fuses with HD\(_z\), giving a single fused HD\(_{x,y,z}\).

\(^{196}\) Cf. footnote 187, where two analogues are provided to the non-local anti-fusion properties indicated here: (a) a nonlocal grammatical HD left-edge effect in Phuthi; (b) the Zulu nonlocal effect of probing for H inside a noun stem.
fusing across the $\sigma_1$-$\sigma_2$ boundary, by weakly and nonlocally projecting the LD left-edge at the $\sigma_1$-$\sigma_2$ position. But there is no point in even considering this as a viable alternative: the double projection of any domain edge guts the domain representation of predictive power. The $^*\text{L-IN-H}$ analysis suffices to preclude SP+stem fusion in toneless/low stems for this paradigm.

Finally, for this present negative paradigm, we encounter a ‘pseudo-anti-fusion’ pattern in data from the stem boundary of both toneless/low stems (308a-b) and H stems\(^{197}\) (308c-d), where there is a depressed stem $\sigma_2$; this entirely uncontroversial fusion failure is triggered by the left edge of every lexical LD (that is, every depressed syllable), which interrupts any H pitch contour by downstepping it (cf. discussion of Register Domains (RDs) begun in Chapter 5 §5.5.6, to be continued in §7.9). Each data line is given in three forms: without HD structure (left column); with RD structure and unfused (right column); with RD structure and fused (second line). The RDs in (308b,d) are incoherent. Glosses are (308a,b) ‘I don’t follow’, (308c,d) ‘I don’t sell’.

\begin{itemize}
  \item[(308a)] Pseudo-anti-fusion: register domain restarted by lexical depression overrides HD fusion
    \begin{enumerate}
      \item a. $\text{agī-lá’dZe\text{\texteacute}li}$ (low stem) $\text{a[\{gi\}-l \{dZe\}l\text{\texteacute}li}$ (no fusion; downstep)
          $\text{a[\{gi\}-l\{dZe\}l\text{\texteacute}li}$ (fusion; downstep)
      \item b. $\text{*agī-lá’dZe\text{\texteacute}li}$ $\text{*a[\{gi\}-l\{dZe\}l\text{\texteacute}li}$ (no fusion; no downstep)
          $\text{*a[\{gi\}-l\{dZe\}l\text{\texteacute}li}$ (fusion; no downstep)
      \item c. $\text{agī-tshē\{gi\}ṣi}$ (H stem) $\text{a[\{gi\}-tshē\{gi\}l\ṣi}$ (no fusion; downstep)
          $\text{a[\{gi\}-tshē\{gi\}l\ṣi}$ (fusion; downstep)
      \item d. $\text{*agī-tshē\{gi\}ṣi}$ $\text{*a[\{gi\}-tshē\{gi\}l\ṣi}$ (no fusion; no downstep)
          $\text{*a[\{gi\}-tshē\{gi\}l\ṣi}$ (fusion; no downstep)
    \end{enumerate}

I term this pseudo-anti-fusion because although fusion fails for toneless/low stems here, it is only because the fusable/unfusible distinction that correlates with toneless/low vs. High stems is obliterated by the presence of \textit{lexical} depression in the stem (in $\sigma_2$ position). Lexical

\textsuperscript{197} The data here reflects the effect where overlap is rated highly enough to force non-fusion of adjacent SP and stem LDs and of stem $\sigma_1$ and $\sigma_2$ HDs.

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depression forces the restarting of a distinct register domain (a depressor segment always triggers a new Register Domain, cf. the Register principles summarised below in §7.9). Thus, the anti-fusion that emerges in (308) is not because of HDs that are per se grammatically fusible or unfusible in the lexically neutral case, but purely because of a particular lexical depression property. Register domains always create a new (lower pitch) level of H realisation, overriding any HD structure.

In Tableau 20 (310), I exemplify all the major combinations of SP (non-depressor, and depressed H 1ps -gi-), OP (non-depressor, and depressed H 1ps -gi-), stem class (H or toneless/low), stem type (non-depressor or (lexical) depressor-bearing), as follows: (310a-c) toneless/low 2-σ stem, where presence of grammatical L prevents fusion at the SP+stem boundary; (310d-g) toneless/low 2-σ stem, where grammatical L left-edge repels depressed prefix H from shifting a H into the penult; (310h-k) H 2-σ stem, where there is no grammatical L to prevent fusion; (310l-n) H 2-σ stem, where there is no grammatical L in the stem to prevent the shifted H off the depressed SP from entering the penult, which shifted H (most likely) overlaps with the stem σ1 lexical H (in coexpression); (310o-q) H 2-σ stem with lexically depressed σ1, where the depressed SP H enters the stem, only to be expressed on the penult, because LD fusion is so highly rated; (310r-t) toneless/low 2-σ stem with non-depressor OP; (310u-w) H 2-σ stem with non-depressor OP; (310x-z) depressed H SP + non-depressor OP (with possible SP-OP HD fusion) + toneless/low stem; (310aa-cc) depressed H SP +

There are constraints that cannot be reflected on this tableau, for space reasons that are relevant here, e.g. fusion on the optimal output candidate (310h) should be overridden by an anti-fusion effect at the antepenult-penult boundary, but this effect is paradigm-specific, and fails to do so in the case of the grammatical present negative paradigm.

There is a problem with suboptimal candidate (310n): it clearly violates depressor shift requirements, but \textsc{Express} \_L \gg \textsc{Express} \_H is ranked below \*L-in-H, according to which (310n) appears to be better than optimal (310l). Some kind of (perhaps conjoined) constraint, e.g. \textsc{Express} \_L \&_\textsc{Express} \_H, is at work further up the constraint hierarchy, to force depressor shift; similarly, if the SP in (310ff) were expressed H inside the LD, depressor block must be forced:

\[ *a[[kā-gi]]-\{[lū\_L]\}_i \]mi \quad \text{(This particular candidate is not evaluated in (310dd-ff))} \]

Although this satisfies \textsc{Contrast} \_HD, -gi- must be forced to be H (and thus to trigger shift) in its own HD, which HD must not fuse with preceding -ka-; and \*\{-kū-\} must be eliminated as a possible candidate by some form of \textsc{Express} \_L constraint (hence the conjoined constraint proposed just above).
non-depressor OP (with possible SP-OP HD fusion, and OP+stem fusion) + H stem; (310dd-ff)
non-depressor SP + depressed H OP + toneless stem; (310gg-ii) non-depressor SP + depressed H
OP + H stem.

The constraint subset invoked in Tableau 20 below is the one motivated in this section
(§7.8.1), along with motivated rankings from earlier sections of the chapter (309).

(309) Present Negative constraint interactions
a. *StemClash >> Max L\textsubscript{GRAM} (\pi) (from 262)
b. *AE (L\textsubscript{LEX} , L\textsubscript{GRAM}) \pi >> Max L\textsubscript{GRAM} (\pi) >> Dep L (from 277)
c. Max L\textsubscript{LEX} >> *AE (L\textsubscript{LEX}) (from 289)
d. Max L >> *L\textsubscript{in}-H (from 123b)
e. *L\textsubscript{in}-H >> Express\_L >> WSA-Lf (L) (from Constraint Summary 3 (130),
from (123); Constraint Summary 6 (217), from (185)
f. Crisp L >> WSA-Lf (L) (from Constraint Summary 2: (63),
from (61))
g. LD-Min >> Express\_H (from Constraint Summary 4: (152))
h. Express\_H (\sigma) >> *Express\_OP (\pi) (from 283)
i. Contrast\_HD>>(Express\_L & Express\_H)>>*L\textsubscript{in}-H (from footnotes 182, 199, 200;
not reflected in Tableau 20)

[turn to the next page for (310) ‘Tableau 20: Present Negative paradigm’].
Tableau 20: Present Negative paradigm

<table>
<thead>
<tr>
<th>/ aká- + -líími /</th>
<th>Contrast HD</th>
<th>Max L_lex</th>
<th>*Stem Clash (L_lex)</th>
<th>*AE (L_lex)</th>
<th>Max (L_gram)</th>
<th>Max H</th>
<th>*L-in-H</th>
<th>Crisp L</th>
<th>Express L</th>
<th>WSA-Lf (L)</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Express H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) a[x;ká]-{líí}[x]mi</td>
<td>0,*</td>
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<tr>
<td>(b) a[sx{ka-líí}]-y[mi]</td>
<td><em>!,</em></td>
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<td>*</td>
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<tr>
<td>(c) a[x;ká-líí]-y[mi]</td>
<td>*!</td>
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</tbody>
</table>

I don’t cultivate

<table>
<thead>
<tr>
<th>/ agí’líími /</th>
<th>Contrast HD</th>
<th>Max L_lex</th>
<th>*Stem Clash (L_lex)</th>
<th>*AE (L_lex)</th>
<th>Max (L_gram)</th>
<th>Max H</th>
<th>*L-in-H</th>
<th>Crisp L</th>
<th>Express L</th>
<th>WSA-Lf (L)</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Express H</th>
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<tbody>
<tr>
<td>(d) a[x;gí]-{líí}[x]mi</td>
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<td>(e) a[x;gí]-{líí}[x]mi</td>
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<td>(f) a[x;gí]-{líí}[x]mi</td>
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<td>(g) a[x;gí]-{líí}[x]mi</td>
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[Tableau 20 continues on the following page]

200 The evaluation of anti-fusion candidates in this tableau requires a convention for interpreting domain constituency: every ‘original’ (pre-fusion) LD remains a counted LD for the purposes of *L-in-H. If one of two adjacent HDs contains a LD, and the two HDs fuse, then each HD instantiation in the fused domain violates *L-in-H twice (thus, the identity of both (coincident) fused HDs remains evident). If two adjacent HDs fuse, and each contains a LD, then the fused HD violates *L-in-H twice for each HD instantiation. Thus, HD fusion is prevented in an example such as (310gg) vs. (310ii), where the first candidate must not worsen its prefix HD by fusing it with following depressed 1ps OP LD:

(gg) a[x;ká]-{líí}[x]-bóó[y]ni vs. (ii) *a[xy;ká]-{gí}]-bóó[y]ni

In (gg), *L-in-H is violated once for HDx, once for HDy. In the second form, *L-in-H is violated once for HDx, once for HDy, once for HDz, making this a worse candidate. Double-underlined vowels in this table (310h-q, u-w, aa-cc, gg-ii) indicate moras sponsored as H both lexically (in terms of verb root category) and grammatically (as required by the present negative paradigm). This is in keeping with the practice established in Chapter 6 §6.3.1.4, footnote 43 referring to Table 13 (124). For perspicacity, data adduced through the course of this chapter (and the previous one) has not been supplied with the double-underlining, however.
akábóóni ‘s/he doesn’t see’

<table>
<thead>
<tr>
<th>/ aka-  + -bón-i /</th>
<th>Contrast HD</th>
<th>Max $L_{lex}$</th>
<th>*Stem Clash</th>
<th>*AE $(L_{lex})$</th>
<th>*AE $(L_{gram})$</th>
<th>Max $L_{gram}$</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
<th>WSA -Lf (L)</th>
<th>LD -Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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</thead>
<tbody>
<tr>
<td>(h) a[ká - bόó]ni</td>
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<td>(i) a[ká - bόó]ni</td>
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<td>(j) a[ká]-[bόó]ni</td>
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<td>(k) a[ká]-[bόó]ni</td>
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agibóóni ‘I don’t see’

<table>
<thead>
<tr>
<th>/ agi-  + -bón-i /</th>
<th>Contrast HD</th>
<th>Max $L_{lex}$</th>
<th>*Stem Clash</th>
<th>*AE $(L_{lex})$</th>
<th>*AE $(L_{gram})$</th>
<th>Max $L_{gram}$</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
<th>WSA -Lf (L)</th>
<th>LD -Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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<tbody>
<tr>
<td>(l) a[gi - bόó]ni</td>
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<td>(m) a[gi]-[bόó]ni</td>
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<tr>
<td>(n) a[gi]-[bόó]ni</td>
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</table>

- See footnote 199 for comment on evaluating candidate (310n), apparently preferable to (310l). (310n) would satisfy CONTRAST HD, but violates a putative conjoined constraint (EXPRESS L & EXPRESS H), which needs to force depressor shift, that is: Contrast HD >> (Express L & Express H) >> *L-in-H.

agivuúni ‘I don’t harvest’

<table>
<thead>
<tr>
<th>/ agi-  + -yun-i /</th>
<th>Contrast HD</th>
<th>Max $L_{lex}$</th>
<th>*Stem Clash</th>
<th>*AE $(L_{lex})$</th>
<th>*AE $(L_{gram})$</th>
<th>Max $L_{gram}$</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
<th>WSA -Lf (L)</th>
<th>LD -Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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</thead>
<tbody>
<tr>
<td>(o) a[gi-vu]ni</td>
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<tr>
<td>(p) a[gi]-{vu}ni</td>
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<tr>
<td>(q) a[gi]-{vu}ni</td>
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</tbody>
</table>

[Tableau 20 continues on the following page]
### Table 20

#### akátílími ‘s/he doesn’t cultivate them’

<table>
<thead>
<tr>
<th>/ aká- + -tí-lijim-i /</th>
<th>Contrast HD</th>
<th>Max Llex</th>
<th>*AE (Llex)</th>
<th>*AE (Lgram)</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press Lf (L)</th>
<th>WSA-Min</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
</tr>
</thead>
<tbody>
<tr>
<td>(r) a[ká-tí]-{{lííi}}mi</td>
<td></td>
<td></td>
<td>0,*</td>
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<td></td>
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<tr>
<td>(s) a[ká-tí]-{{lííi}}mi</td>
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<td>* <strong>!</strong></td>
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<tr>
<td>(t) a[ká-tí]-{{lííi}}mi</td>
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<td>* <strong>!</strong></td>
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<td>**</td>
</tr>
</tbody>
</table>

#### akábábóóni ‘s/he doesn’t see them’

<table>
<thead>
<tr>
<th>/ aká- + -ba-boon-i /</th>
<th>Contrast HD</th>
<th>Max Llex</th>
<th>*AE (Llex)</th>
<th>*AE (Lgram)</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press Lf (L)</th>
<th>WSA-Min</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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</thead>
<tbody>
<tr>
<td>(u) a[ká-bá-bóó]ni</td>
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<tr>
<td>(v) a[ká-bá]-{{bóó}}ni</td>
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<td>* <strong>!</strong></td>
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<tr>
<td>(w) a[ká-bá]-{{bóó}}ni</td>
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</tbody>
</table>

#### agitílími ‘I don’t cultivate them’

<table>
<thead>
<tr>
<th>/ agí- + -tí-liim-i /</th>
<th>Contrast HD</th>
<th>Max Llex</th>
<th>*AE (Llex)</th>
<th>*AE (Lgram)</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press Lf (L)</th>
<th>WSA-Min</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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<tbody>
<tr>
<td>(x) a[gi]-{gí}-tį-lįi,{lįi},mi</td>
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<td>* <strong>!</strong></td>
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<td>(y) a[gi]-{gí}-tį -{lįi},mi</td>
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<tr>
<td>(z) a[gi]-{gí}-tį-lįi,{lįi},mi</td>
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</tbody>
</table>

[Tableau 20 continues on the following page]
### agibabóni ‘I don’t see them’

<table>
<thead>
<tr>
<th>/ agi- + -ba-boon-i /</th>
<th>Contrast HD</th>
<th>Max L\text{_LEX}</th>
<th>*Stem Clash</th>
<th>*AE (L\text{_LEX})</th>
<th>Max L\text{_GRAM}</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
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<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
</tr>
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<tbody>
<tr>
<td>(aa) a[xyz{gi}-ba]-bóó]xyzni</td>
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<td>(bb) a[xyz{gi}-bá-bóó]xyzni</td>
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<td>(cc) a[xyz{gí}-bá-bóó]xyzni</td>
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</tbody>
</table>

### akágilúní ‘s/he doesn’t cultivate me’

<table>
<thead>
<tr>
<th>/ aká- + -gi-liim-i /</th>
<th>Contrast HD</th>
<th>Max L\text{_LEX}</th>
<th>*Stem Clash</th>
<th>*AE (L\text{_LEX})</th>
<th>Max L\text{_GRAM}</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
<th>WSA-Lf (L)</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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<tr>
<td>(dd) a[ká]-[{gi - líí}o]mi</td>
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<td>(ee) a[{ka-gí - líí}o]mi</td>
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<td>(ff) a[{ka-gí} - {líí}o]mi</td>
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</table>

### akágibóni ‘s/he doesn’t see me’

<table>
<thead>
<tr>
<th>/ aká- + -gi-boon-i /</th>
<th>Contrast HD</th>
<th>Max L\text{_LEX}</th>
<th>*Stem Clash</th>
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<th>Max L\text{_GRAM}</th>
<th>Max H</th>
<th>*L-in -H</th>
<th>Crisp L</th>
<th>Ex press L</th>
<th>WSA-Lf (L)</th>
<th>LD-Min</th>
<th>*AE (H)</th>
<th>Ex press H</th>
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<tbody>
<tr>
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<tr>
<td>(hh) a[xyz,ká-{gi}-bóó]xyzni</td>
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<tr>
<td>(ii) a[xyz,ká-{gi}-bóó]xyzni</td>
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7. 8. 1. 11. Reinterpreting the lexical stem contrast as H vs. L

The present negative paradigm examined in the preceding sections adds weight to the case that the underlying lexical distinction in the verb system is between H and L stems, that is, that non-H stems are specified as L (where L is understood as a grammatical tone: L\text{\_GRAM}), rather than as toneless. Paradigms where L\text{\_GRAM} plays an active role, including the present negative above
§7.8.1, and also the past subjunctive (presented in §7.6.2), allow the paradigm of L stems to be ‘unmasked’, that is, to display the effects of being L. Elsewhere (which is in the majority of paradigms), wherever there is no evidence for L_{GRAM}, or there is evidence that L_{GRAM} is definitely inactive (e.g. the present participial, cf. Chapter 6 §6.2.1.1), we would continue to need the anti-parse *Max-L constraint (motivated in §7.6.2.1 (163) above).

While there is a certain elegance in the H-vs.-L typology of verb stems, we need to retain the caveat from the earlier discussion (§7.6.2.1) that it does not appear useful to argue that the OP morpheme is, in general, lexically L (even though it is frequently expressed as toneless on the surface), since it never displays depressor shift effects. In other words, there is no analytic advantage (rather, there is some disadvantage) in claiming that all toneless morphemes (including affixes such as the OP) are, in fact, L.

The matter is not resolvable with any of the data yielded from Phuthi in this dissertation.

7. 8. 2. Lexical vs. Grammatical Depression

I turn now from a very detailed examination of one grammatical paradigm—the present negative—to consider further instantiations of lexical depression, but where the insertion of the depression feature is conditioned prosodically and segmentally in three possible ways: (a) the optimal insertion site is the stem penult, a possibility already seen in the lengthy discussion in §7.8.1 (most saliently in §7.8.1.1, §7.8.1.2 (232)); (b) the insertion site optimally contains a segmentally sonorant (glide/liquid/nasal) onset; (c) depression insertion on prefixes may also be constrained morphologically to lexical sets (‘strong’ noun classes). Factors (a-b) will be examined in §7.8.2.1, factor (c) will be examined in §7.8.2.3.

7. 8. 2. 1. Prosodic conditioning on L-insertion: penult prominence

Non-consonant-triggered lexical depression (that is, depression which is also breathy voiced, but which appears to have no historically breathy/depressor segmental sponsor)—as

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201 This claim is based on comparative data from other Nguni languages, to be given in footnotes 204 to 215 accompanying the data. Note: the orthography in these footnotes used for the Xhosa and Swati data is not quite the standard orthography for either language (penult lengthening is not usually marked; neither, of course, is tone sponsor status, depression or surface tone).
opposed to the paradigm-specific grammatical depression just examined in §7.8.1 (not saliently breathy voiced)—is quite rare in Phuthi. Nevertheless, the data in (311-312) contains a range of items where the penult\textsuperscript{202} (almost invariably lexically H) is the target insertion site.

(311) **Insertion of Lexical L on specific lexical items\textsuperscript{203}**

a. kú-\textit{yaála} to refuse verb (H)\textsuperscript{204}

b. kú-\textit{ruúsa} to rust verb (H)\textsuperscript{205}

c. kú-\textit{hoóla} to roll up verb (H)\textsuperscript{206}

\textsuperscript{202} This observation may appear, at first, to be trivial. The non-derived stem shape in most Bantu languages is canonically \{-\textit{σσ}\}. The pattern may simply be targeting stem \textit{σ}1 in (311), confirmed by the 1-\textit{σ} stem in (311d). But the stems in (312) do seem to suggest that the penult is the target site: no lexeme has its \textit{antepenult} as potential target, or its \textit{ultima} (unless \textup{\textbf{LEXEME}}=\textit{1σ}).

\textsuperscript{203} Depression (breathiness) in these items is reflected in the spelling with an \textit{<h>}, except for (304k) where \textit{<th>} would be misleading, since \textit{<th>} would signify an aspirated alveolar stop; the \textit{<h>} has no separable phonological status in these words.

\textsuperscript{204} Cf. Xh. \textit{ákw-ála} ‘to refuse’, Sw. \textit{kw-áála} (second mora of the penult seems breathy). To this otherwise Nguni vowel-initial stem, Phuthi prothesises the glide \textit{<y>} (here, and preceding all non-round vowels)—elsewhere a \textit{<w>} is prothesised to \textit{o-} or \textit{u-} initial stems—to create well-formed CV onsets. (This contrasts with the regionally unstable -\textit{e-} / -\textit{o -} excrescent vowels in Nguni, which do not appear at all in Phuthi, cf. Chapter 2 §2.2.4.4). Proto-Phuthi-Swati —perhaps Proto-Tekela (cf. discussion of regional language classification in Chapter 1 §1.1.7)—had already innovated depression enhancement in this stem. Generally, the inserted glides are \textit{not} depressors (that is, not breathy), e.g. \textit{kú-wótela}, cf. Xhosa \textit{uk-ózela}, ‘to become drowsy’. Thus, \textit{<yh>} in (311a) is depressor-enhanced, not borrowed, nor inherited (beyond Proto-Phuthi-Swati).

\textsuperscript{205} This stem must be borrowed from Afrikaans \textit{roes} [\textit{rús}], ‘rust’. Although it cannot be certain that the Afrikaans source sonorant was depressed (breathy) at the time of the loan, Afrikaans stressed syllables—if they commence with a sonorant onset—are typically slightly breathy (and depressed); this stressed=breathy pattern has diffused to several varieties of South African English, and—as data in §7.6.2 (past subjunctive), §7.8.1 (present negative) and §7.8.2 (this section) shows—may be slowly coming to characterise the prominence position (penult syllable) in Nguni languages such as Phuthi and Swati.

Herbert (1987) proposes that segment release properties (ejectives, aspirates) cutting across Bantu, Khoisan and Afrikaans are pan-regional. Interestingly, the choice of the Phuthi superclose vowel [\textit{u}] (as opposed to [\textit{u}]) to substitute for the Afrikaans vowel suggests that at the point of loan the Afrikaans vowel was already fronting its [\textit{u}], as Phuthi [\textit{u}] has very salient narrowed lip rounding. In contemporary Afrikaans this vowel is more like centralised [\textit{u}].

\textsuperscript{206} Borrowed from Afrik. \textit{rol} [\textit{ról}] ‘roll’. It is not known whether the Afrikaans source sonorant was breathy at the time of the loan (contemporary Afrik. sonorants are often breathy).
d. líi-whá cave noun (H)

e. lhákhaá over there, yonder demonstrative (adverbial): H (ante)penult

f. lháákho there demonstrative (adverbial): H penult

g. lháákha here demonstrative (adverbial): H penult

h. -mhaáti wet adjective: H penult

i. nheéti only adverb: H penult

j. -nyheéti many adjective (underived stem): H penult

k. é-taási down adverb: H penult


208  This 3rd position (superdistal) demonstrative reflects depressor shift, confirming the status of the first syllable as depressed. Cf. Xhosa (a)pháyáa, ‘over there, yonder’, Swati lapháyáa.

209  This 2nd position demonstrative has a rising penult, confirming its depressed status; similarly, cf. Swati lhaápho ‘there; but cf. non-breathy Xhosa áápho ‘there’.

210  This 1st position demonstrative has a rising penult, confirming the depression status. Cf. Swati lhaápha; but cf. non-breathy Xhosa áápha ‘here’.

211  This stem could conceivably be eliminated from the list, as it is a morphologically complex copula base certainly derived from émaatí ‘water’ (though the tones seem muddled). The copula morpheme here the breathy voicing (cf. §7.5). But such a stem is certainly lexified. If it were assembled synchronically, it would require a segmental copula -g- to be prefixed to the (pre)prefix Noun Class 6 vowel e-, thus -g-em-áatí, literally ‘(which) is water’. Interestingly, this example provides evidence that the é- (pre)prefix in Class 6 is not etymologically original. If it were, we would expect the adjectival base to be the full -gemáa-tí.

212  Borrowed from Afrikaans net [net] ‘only’. It is not clear whether the Afrikaans source sonorant was depressed (breathy) at the time of the loan.

213  This is an original (Tekela) Nguni stem, though not depressed (breathy) in its cognate σ1 forms, cf. Swati -nyénti, Xhosa -níŋzi.

214  Cf. Xhosa é-záántsi ‘down’; but Tekela Nguni (chiefly, Swati and Phuthi) do not retain breathiness where they have /tl/ cognate to Zunda Nguni /zl/. But cf. Swati Swati é-taánsi, which suggests that breathiness was innovated—as in many other cases—before the Swati/Phuthi split. Cf. also footnote 220.
Quantitative, enumerative stems

a. -ôôhle all\(^{215}\) Quantitative-1 (cf. Chapter 2 §2.2.1.1 (46))

b. g-ôôhle, wh-ôôhle, s-ôôhle, lh-ôôhle, b-ôôhle, yh-ôôhle, hh-ôôhle, t-ôôhle, k-ôôhle \(^{216}\)

c. -eêdzi / -ôôdzi alone, each\(^{217}\) Quantitative-2 (cf. Chapter 2 §2.2.1.1 (46))

d. gi-ôg-eêdzi, ú-ô-wh-eêdzi, á-ô-yêdzi, sî-s-ôôdzi, lí-l-ôôdzi, bá-b-ôôdzi, á-ô-wh-ôôdzi, fê-ôôdzi, á-ô-hh-ôôdzi, tî-t-ôôdzi, bû-b-ôôdzi, kû-k-ôôdzi \(^{218}\)

The penult is unambiguously a depressed H in the non-verbs (311f-k); in (311e) the third position (superdistal) locative pronoun is derived (perhaps through cliticisation) from second position (distal) in (311f)—the non-derived locative ‘stem’—where the penult is derived; in (311d), there is no stem penult in the monosyllabic stem (the only available stem syllable is depressed and H); in the verbs in (311a-c), the basic verb stem (coextensive with the full segmental word in the imperative mood) has a depressed H penult. Similarly, the penult stem syllable in both (312a,c) is depressed and H.

The pattern that emerges from this small set of lexical items is tonally clear: Phuthi selects certain lexical stems and assigns both lexical depression (L\(_{LEX}\)) and lexical H tone (H\(_{LEX}\)) to the penult syllable\(^ {219}\). In fact, for almost all examples in (311), the penult is also the stem-initial

\(^{215}\) The stems in (312) are transparent loans from Sotho /-ôôle/ (with Sotho tense mid vowels) and /-ôôsi/. Sotho lacks breathiness altogether (also no depression in Swati -ônkhe, Xhosa -ônke). It may be that, in some typological (and paradigm-uniform) sense, even the vowel-initial stems /ôôle/ and /ôôzi/ would be closed by a (now unexpressed) glide if there were no agreement morpheme prefixed to them, in which case they, too, would be depressable, and candidates for depression insertion. Or it may be that because these lexical stems contain a stem-initial (penult) syllable that is onsetless, the vowel nucleus is also defaultly available for depression insertion. Or, simply, because in the assembled word forms, 5 out of 9 forms in (312b) and 7 out of 12 forms in (312d) contain depressable sonorant onsets in the penult (stem-initial) position. Thus, they are natural targets for depression enhancement.

\(^{216}\) In sequence: 1ps; 2ps/3ps/Class1/Class3; 1pp/Class7; 2pp/Class5; 3pp/Class2/14; Class4/9; Class6; Class8/10; Class15. Cf. §7.2 footnote 3: [b] in b-ôôhle may be not breathy.

\(^{217}\) Cf. Xhosa -éôwa / -ôôwa, Swati -ôôywa / -ôôywa ‘alone, each’.

\(^{218}\) In sequence: 1ps; 2ps; 3ps/Class1; 1pp/Class7; 2pp/Class5; 3pp/Class2; Class3; Class4/9; Class6; Class8/10; Class14; Class15. This enumerative construction contains a non-indicative (subjunctive/participial) SP + enumerative prefix + stem.

\(^{219}\) In Chapter 8 §8.3.4 and §8.3.11, I consider the phonological and lexical implications of
syllable. But the pattern of depression insertion identified for the present negatives makes it clear that the word penult is the depression site; even though 2-σ verbs can become 3+ σ, their canonical length remains 2-σ. Lacking evidence to the contrary for the lexical items in (311-312), I maintain that the locus is set up with respect to the word right-edge, that is, on the penult.

For the items in (311-312), there is, additionally, conditioning according to onset sonorancy: (311a-j) all contain a sonorant onset in the penult, from the set of \([m n l r j w]\). It seems no small coincidence that all lexical stems deploying depression on the penult (except 311k\(^{220}\)) commence the depressor syllable with a consonant that is intrinsically voiced (sonorant) and thus also intrinsically depressable. (312a-d) are vowel-initial stems, and thus are exempted from any generalisation about onset sonorancy (but cf. footnote 215).

Finally, I propose that a set of stems such as in (311-312) is selected for depression insertion, because those penults are already predisposed to depression through their sonorant onset status. I speculate that the reason for such depression insertion is one of enhancement: tonal depression enhances the lowness already present in the voicing of sonorant onsets, effectively by making such onsets ‘ultra-voiced’. Yet if the reason for depression enhancement were purely phonological, then in all lexical items where both the penult is H and the onset is sonorant the penult should be depressed. But this is not the case, as (313)\(^{221}\) makes clear.

\(^{220}\) As seen in footnote 214, (311k) has a partial explanation: Phuthi \(\text{é-}t\text{ádisi}\) corresponds to Zunda Nguni \(\text{é-}z\text{ántsisi}\), with depressor fricative \([z]\) in the depressed syllable, systematically replaced in Phuthi by undeepressed—and undeepressable, pace Ní Chiosáin & Padgett (1997, 2001)—voiceless stop \(\text{[t]}\), cf. Swati \(\text{é-}n\text{t\'ádisi}\). Why other Phuthi \([t]\)-commencing syllables corresponding to Zunda \([z]\) are not also depressed, e.g. Ph \(\text{mú-}t\text{áádi}\) vs. Xh \(\text{úm-z\'aáli}\) ‘parent’, would remain unexplained. One may speculate that there is a correlation between the high-frequency locative adverbial form \(\text{é-}t\text{ádisi}\) and the prosodic use of penult depression which serves a pragmatic goal of speaker emphasis or focus (cf. discussion in Chapter 8 §8.1.4).

\(^{221}\) I have said that not all eligible items have a depressed penult, and I can say more explicitly that the majority of items with potentially eligible sonorant-commencing syllables appear to lack the depression feature because they fail on one criteria or another, e.g. the basic stem is longer than two syllables, hence the target is not in penult position (e.g. \(\text{kú-yārūula}\) ‘to change’), the stem is lexically toneless and not H (e.g. \(\text{kú-}\text{yeeta}\)), or both (e.g. \(\text{kú-}\text{yámúkeela}\) ‘to
Speculating outside the phonology, depression enhancement in the examples in (311-312) may signal a discourse need for speaker emphasis, or reflect high frequency of usage.

7.8.2.2. Tone/depression foot

Up to this point, no specific proposals have been made for locating the lexically depressed syllable on the penult, yet the penult position is the one selected in almost all instances for depression insertion (311-312). The only instance where non-consonant-triggered depression arises elsewhere than the penult is when it occurs on the ultima, and this only in short 1-σ stems (where the penult lies leftwards of the stem boundary\(^{222}\)).

The proposal then is that Phuthi targets the penult through a binary, right-aligned left-headed foot, much as was suggested for making the penult prominent through weight-accent projection (WAP) in Chapter 4 (§4.1.4.5). Exactly the same set of deconstructed metrical constraints would target the penult (that is, the head of a single right-aligned trochee) for depression insertion here, except that depression enhancement in this case is sensitive to sonorancy and H-ness (314); we might term the foot a Depression Accent Projection (DAP), in the vein of WAP and TAP (tone-accent projection\(^{223}\)).

\(^{222}\) There is also morphologically specific depression insertion, to be treated in the following section (§7.8.2.3), which insertion is tied to the associative and enumerative morphemes, irrespective of syllable position.

\(^{223}\) The Tone Accent Projection (TAP) trochee is sensitive to extrametricality, thus targeting the antepenult in a phrase-final lexical paradigm (since the ultima was seen to be extrametrical), whereas the Weight Accent Projection (WAP) trochee is sensitive only to the phrase right-edge (in a phrase-final word), since it identifies the penult as the locus for weight (length) projection, I would maintain. The Depression Accent Projection (DAP) foot is distinct from both TAP and WAP: it does not care about phrase-finality at all, nor extrametricality; it simply targets the word right-edge (regardless of phrase position).
(314) **Depression Enhancement** (Depression Accent Projection)
Align (L\textsubscript{LEX}, Lf, WAP, Head\textsubscript{H, [son] onset})
Align the left edge of a lexical L tone with the head of the trochaic weight-accent-projection (i.e. the left edge of this projection), where the trochee head coincides with the combined properties of a tonally H syllable with a sonorant onset.

(314) can be nuanced to include stem-edge sensitivity in order to include short 1-σ stems.

7. 8. 2. 3. Lexical / morphological conditioning on L-insertion

There is a final set of grammatical items in Phuthi that attract lexical depression, but not necessarily to the penult: they are prefixes where depression parsing appears conditioned by two distinct factors: (a) sonorant voicing, as already seen in (311), and (b) lexical noun class category membership (this second criterion will be seen to outweigh the first).

A brief foray into affix morphology is necessary as background. Bantu languages typically divide their noun classes into two morpholexical sets—‘strong’ vs. ‘weak’—based largely on prefix morphology (but including nuanced distinctions for derivative noun classes such as 1a/2b, which invariably pattern with classes 1 and 2). Weak classes are also referred to as ‘nasal classes’ because they typically contain a nasal consonant in their noun class prefix (Meinhof (1932:40-41); Doke (1954:65))\textsuperscript{224}. Among other potential distinctions, strong classes have a CV-shaped SP, weak classes have a V-shaped SP, most likely because their initial, reconstructed *g- has deleted since Proto-Bantu (e.g. Class 1 *gu- > u-, Meinhof (1932:41)).

As presented in Chapter 2 §2.2.1.1 (48), the set of noun class prefixes found in Phuthi can be subdivided into strong vs. weak (315a-b). Strong (non-nasal) noun classes lack any nasal consonant in the noun class prefix (315a). Bantu weak classes in general include Class 1a as an extension of Class 1—even though the Class 1a prefix never contains a nasal consonant (315b)—because Class 1a is certainly derived from Class 1 (Meeussen (1980), Guthrie (1967-1971)). ‘Nasal’ is thus a subset of ‘weak’; but the crucial division for most Bantu languages is between ‘strong’ and ‘weak’.

\textsuperscript{224} Meinhof (1932)—the English translation of Meinhof (1899), revised in the second edition in 1910—and Doke (1954) both comment on the distribution of prefix shapes relating to class prefixes that contain or lack a nasal consonant (though not explicitly naming the split ‘strong’ and ‘weak’). By the late 1960s, this lexical class division is routinely referred to as strong vs. weak in the teaching literature of Southern Bantu languages (e.g. the Lumko Xhosa course: Riordan et. al. (1969)).
In Phuthi, ‘weak’ and ‘nasal’ are even more non-coextensive than the expected Class 1/1a wrinkle because Class 9 (i-) bears no nasal consonant at all (contra the more general Bantu *(yi)N- shape). The Phuthi Class 9 prefix has lost the homorganic nasal still found in most other Nguni languages (and found in syllabic form prefixed to 1-σ stems in the Sotho/Tswana languages), that is, Proto-Nguni *i-N- > Phuthi i-Ø-.

Nevertheless, the weak class category necessarily includes Classes 1, 3, 4, 6, 9 (for which we see evidence in (316) to follow below); the language ‘remembers’ that it has two lexical sets of noun class prefixes, as given in (315a) vs. (315b).

(315) Strong vs. weak / nasal noun classes in Phuthi
a. strong (non-nasal) classes: eba- (2), li- (5), si- (7), ti- (8), ti- (10), bu- (14), ku- (15)
b. weak classes: mu- (1, 3), Ø- (1a), mi- (4), ema- (6), i- (9)
c. nasal classes: mu- (1, 3), mi- (4), ema- (6)

Each noun class has sets of class-specific prefixes that fulfil various grammatical roles, as presented in detail in Chapter 2 §2.2.1.1 (45-50), including grammatical agreement (concord), anaphoric reference (pronominalisation), time and space deixis. These concords are built off the noun class prefix, in some paradigms transparently, in others moreopaquely. I have made frequent use of especially two such prefixes—subject and object (SP, OP)—throughout this work.

Other types of prefix include the associative (labelled ‘possessive’ in the southern African literature on Bantu languages in the tradition of Doke (1926, 1954)) and enumerative, given in (316) below, both of which are relevant for the discussion around lexical depression assigned to

225 Remarkably, throughout the languages where this strong/weak division applies, Class 10 is grouped with the strong (non-weak, non-nasal) classes, even though its NC prefix sometimes includes a nasal consonant, e.g. Swati ti(N)-, Xhosa i(zi)N-. This is because Class 9 and 10 are indistinguishable morphologically from each other in Proto-Bantu (Meeussen 1980), where they are both reconstructed as *N-. The Southeastern Bantu (iz)ti(N)- (Zunda Nguni) / ti(N)- (Tekela Nguni) / di(N)- (Sotho/Tswana) Class 10 prefix is in fact a pre-prefix, built onto the Class 9/10 N-. Class 11 (u)lu- (Zunda Nguni) / lu- (Tekela Nguni, Tswana) is strong too, but is entirely absent from Phuthi (and Sotho), and from the northern Xhosa dialects contiguous to the Phuthi-speaking regions. All other upper noun classes found in Southeastern Bantu (e.g. the extended set in Venda) are strong too, cf. Chapter 2 §2.2.1.1 footnote 107. The full set of 13 strong/weak distinctions in Phuthi is given in §2.2.1.1 (49).
grammatical prefixes. All weak classes in Phuthi deploy the associative\textsuperscript{226} prefix as both H and depressed; weak classes deploy the enumerative prefix as depressed, but not H. All strong classes fail (for both paradigms) to deploy any such depression on their associative and enumerative prefixes.

(316) Nominal prefixes: weak (1, 1a, 3, 4, 6, 9) vs. strong (2, 2b, 5, 7, 8, 10, 14, 15, 17)

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<th>Enumerative prefix</th>
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<td>ku-</td>
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</table>

\textsuperscript{226} The associative prefix is introduced and exemplified in Chapter 2 §2.2.1.1 (46), §2.2.2.2.

\textsuperscript{227} Cf. Chapter 2 §2.2.1.4 (60) for discussion of ka- ‘chez-locatives’.
The associative prefixes are exemplified in (317-318), with a Class 1a possessor noun (ŋtaaté ‘father’), with domain structure added to select items in (319).

(317) **Associative prefixes: weak possessee classes are H, depressed**

a. Class 1 mú-tfwána wa-ŋtaaté child of father
   NC1-child AP1-father

b. Class 1a ŋtaté wa-ŋtaaté father of father

c. Class 3 mú-nwána wa-ŋtaaté finger of father

d. Class 4 mú-nwána ya-ŋtaaté fingers of father

e. Class 6 émá-nyáwu a-ŋtaaté feet of father

f. Class 9 í-yéto ya-ŋtaaté deed of father

(318) **Associative prefixes: strong possessee classes are H, not depressed**

a. Class 2 ébá-tfwána bá-ŋtaaté children of father
   NC2-children AP2-father

b. Class 2b bó-ŋtaaté bá-ŋtaaté fathers of father

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228 The words used in this example set are, in isolation, as follows (phrase-medial provided first, reflecting the extension of H tone by WSA-Rt to a penult target; phrase-final form with long penult is given in parentheses; only the noun singular is given, when the stem is used twice): mú-tfwána... (mú-tfwáana) ‘child’, ŋtaté... (ŋtaaté) ‘father’, mú-nwána... (mú-nwaana), ‘finger’, lé-nyáwu... (lé-nyaawu) ‘foot’, í-yéto... (í-yetto) ‘deed’, sí-tjhába... (sí-tjhaaba) ‘tribe’, bú-tfu... (búú-tfu) ‘humanity’, kú-liima... (kú-liima) ‘to cultivate / cultivating’, k-o-ná (k-o-ná) ‘there’.

229 Class 1a possessor nouns allow the absence of any overt segmental morphology, with the result that the effect of H spread and depressor shift is salient. For all other AM-NC-STEM sequences (where NC is not 1a), a templatic AM vowel -e- is required; this is a hallmark of the Tekela Nguni languages: Phuthi, Swati and the others; cf. Chapter 2 §2.2.1.1 (49ix), §2.2.2.2-§2.2.2.3 for discussion of morphological associatives.

230 This sequence should perhaps be segmented as mú-tfwána wa-Ø-ŋtaaté, where Class 1a has a Ø prefix:
   NC1-child AM1-NC1-father
The morpheme structure is identical through (317-318), and is not repeated on every line.

231 Alternatively, the Class 6 form is attested (in Mpa pa) as: h-ŋtaaté, that is, with a breathy segmental onset to the associative (cf. Sotho non-breathy ha-).
Examples (317a, 318a) are given with domain structure in (319). In addition, the same pattern with the $2\sigma$ Class 1a noun $\eta$má is provided, which manifests depressor shift from antepenult to penult (319c), and the failure of HD-MIN (minimality) satisfaction through $^*$AE (OCP) satisfaction.

(319) Domained associatives
c. [mú-tfwá]na [\{wa\}-mí]:[má] child of mother
d. [ébá-tfwá]na [bá]-mí:[má] children of mother

The data in (317-318) above has made it clear that for certain categories of prefix (associative, enumerative), Phuthi opts to display lexical depression as a morphosyntactic category diacritic. It is also clear, however, that it is not strictly the status of prefixes as nasal-bearing or not that is crucial, but rather it is the morphological set of what were

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232 The Class 17 phrase is not strictly a possessee-possessor sequence, though it was likely reinterpreted from that into an apparently headless associative form (the possessor/modifier alone: ‘father’s’); the wrinkle is that such an associative prefix ká- is secondary, that is, it replaces a primary prefix (of a noun in one of the people classes: 1, 1a, 2, 2b). Cf. Chapter 2 §2.2.2.1 for discussion of absolute pronouns like k-o-ná.
Proto-Bantu nasal-bearing prefixes (‘weak’ classes) that is crucial, whatever may have been the fate in this particular Bantu daughter language of the proto-nasal in these class prefixes.

As far as the conditioning of depression by sonorancy, all weak associative prefixes commence with glides \(wá, yá\) except for Class 6 \(há, á\); the Class 6 prefix suggests that while sonorancy may be a very salient factor in the triggering of depression insertion, it may not be fully sufficient as it stands\(^{233}\). And yet in both Mpapa and Sigxodo Phuthi, for some speakers, Class 6 associative prefix can alternatively be \(wá\), as it can also be for the Class 6 OP (cf. Chapter 2 §2.2.1.1 (46). If we regard the glide-initial Class 6 prefix as canonical, and the onsetless \(á\)-prefix to be an innovation, then the sonorancy conditioning on depression insertion can be maintained, and the conditioning factor of ‘(weak) noun class’ can be abandoned.

7.8.3. Depression Enhancement Reflects Salience

We have seen several configurations of depression in this chapter, summarised in (320) below. We have seen that depression can be either lexical or grammatical. Lexical depression is triggered on any syllable with a breathy onset, as given in §7.2.1.1 (1). The successful parsing of consonant-triggered lexical depression is not contingent on prosodic location in a word of the depressed onset, e.g. \(kú-dzakáala\) ‘to become injured’ (320a).

We have seen in §7.8.2.1 that lexical depression is inserted, possibly as an enhancement feature, on a H depressed penult with sonorant onset, e.g. \(kú-yhaála\) ‘to refuse’ (320b). We have also seen in §7.6.2 that lexical depression is instantiated on OPs but only in certain paradigms, including the past subjunctive (cf. §7.6.3.2, and Chapter 2 §2.2.4.9). We have seen lexical depression triggered on certain nominal prefixes: (a) the noun copula prefix (§7.5.1), irrespective of onset voicing (320c); (b) the associative and enumerative prefixes (§7.8.2.3), both of which tend to have sonorant onsets (320d).

Finally, we have seen grammatical depression (§7.8.1) triggered in a verb paradigm at the same prosodic locus as for lexical enhancement (the penult), but without any condition on onset sonorancy (320e). In this depression instantiation, only a subset of phonological depression

\(^{233}\) One could attempt to conflate the depressable segmental onsets for the associative morpheme (two glides \([j, w]\), glottal fricative \([ɦ]\)), according to shared features: they share just \([-\text{consonantal, +voice}]\)—although \([ɦ]\) is considered to be \([+\text{sonorant}]\) in some analyses.
properties accompanies the depression: depressor block preceding the penult is manifested, but not depressor shift off the penult; an anti-fusion effect at the left edge is displayed, but no leftwards realignment of L.

Thus, whatever the specific domain realignment properties (shift, block, anticipation, minimality), it is clear that Phuthi invokes two distinct types of depression: lexical depression, which appears to coincide with audible breathiness, and grammatical depression, which does not.

The set of depression environments other than consonant-triggered lexical depression seems slightly baffling, and perhaps unconfatable. But I propose that both sets of environments could be unified under a single abstract category, ‘salience’, defined as ‘phonologically/morphologically salient for speaker or for hearer, or for both’, summarised in Tableau 21 (320); the bolded syllable is the target of the depression in each case. If this disjunctive set of trigger environments can be unified, then depression insertion can be reduced to the simple observation: ‘depression targets salience’. Such conflation remains necessarily speculative.

(320) Tableau 21: Depression Typology

<table>
<thead>
<tr>
<th>Depression type</th>
<th>Salience conditions</th>
<th>strong/weak relevance?</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>penult</td>
<td>H</td>
<td>sonorant onset</td>
</tr>
<tr>
<td><strong>Lexical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) consonant-triggered (inherent)</td>
<td>no(^{234})</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>(b) lexical enhancement</td>
<td>yes</td>
<td>yes</td>
<td>yes (mostly)</td>
</tr>
<tr>
<td>(c) noun copula prefix</td>
<td>no</td>
<td>yes</td>
<td>yes (Sgx: all classes; Mp, Sgx: weak classes)</td>
</tr>
<tr>
<td>(d) associative prefix</td>
<td>no</td>
<td>yes</td>
<td>yes (except Cl.6)</td>
</tr>
<tr>
<td>(e) past subjunctive OP</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td><strong>Grammatical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) pres negative / remote past</td>
<td>yes</td>
<td>(yes)</td>
<td>no</td>
</tr>
</tbody>
</table>

\(^{234}\) In the ‘penult’ column of this tableau, ‘no’ indicates ‘not necessarily’. 

721
(320c) indicates that for one dialect (Sigxodo) there is a copulative prefix ʃ́- (with sonorant onset), which not only serves as the general predicator for three noun classes (Classes 2b,4,9), but which can preprefix any segmental copula from any noun class.

(320f): ‘yes’ is in parentheses for the H tone column, since although the penult in the present negative is H because this paradigm targets the penult as the rightwards extent of the grammatical H, in very short stems (1σ) there is no penult, and the ultima is not H.

The phonetic phenomenon of breathiness has not been investigated in this work, but it is likely more nuanced than the phonological observations suggest. Depression and breathy voice may extend across a range of spread glottis configurations. Traill (1990) has made it clear from careful instrumental work that whatever the phonological facts of Swati adduced in Rycroft (1981b), the two types of depression claimed in that language—the first breathy, the second depressed (with lowered, or lowered and rising pitch) but not breathy—are not the same phonetic phenomenon; Traill has identified five distinct phonetic types.

The implications of the tone/voice clash effects and phonological contrast in the Phuthi grammar are taken up in Chapter 8, where a depression cline is proposed (§8.3.10).

7.8.4. CONCLUSION

The purpose of the lengthy exposition of the Phuthi present negative in §7.8.1 has been to show that a single grammatical paradigm displays a remarkable range of tone/voice (here: H/L) interactions, deploying both lexical and grammatical instantiations of both tones, realigning both tones, fusing both types of tone domains under certain conditions, invoking the left edge of both types of tone domain (lexical and grammatical) as a downstep trigger.

I have presented a wide range of empirical tone behaviour, requiring a range of analytic strategies (and on occasion, as yet incompletely successful solutions). No patterns from this verb paradigm have been passed over. The central observation is that in all but one instance, the toneless/Low paradigm remains tonally distinct from the High paradigm; this is achieved, chiefly, by the parsing of an abstract grammatical L tone feature, whose left edge displays depression block (§7.8.1.1-§7.8.1.2) and anti-fusion properties, but which also lacks depression shift properties. This unalignable L tone (§7.8.1.3) suggests that there are two distinct instantiations of L—one lexical, one grammatical—just as there are of H (§7.8.1.4). But the properties of the two instantiations of grammatical tone are distinct: although parsed distinctly,
lexical and grammatical H reflect the same domain properties; lexical and grammatical L, however, do not (cf. Tableau 19 (257), for a summary of the distinct characteristics).

The behaviour of toneless/Low stems suggests that these stems are underlyingly L (§7.8.1.5, §7.8.1.11), which grammatical L is subject to an anti-clash effect for H stems (allowing us to maintain a richness-of-the-base line of analysis, with respect to H stems), and various OCP effects (§7.8.1.6). Tonelessness is, thus, a derivative of the (paradigm-specific) anti-parse effect on a Low stem L feature.

This data set has allowed us to establish a general typology of HD fusability (§7.8.1.7-§7.8.1.10), where the key observation is that no HD will fuse onto a successive HD which partially or completely overlaps with a LD. That is, the recent data from this paradigm confirms the relentless theme of the present chapter: L (and LD) is antagonistic to H (and HD). Shift data in this paradigm make it clear that pre-antepenult downstep in Phuthi is empirically possible (§7.8.1.10), and thus confirms that all data is reliably testable for HD constituency: absence of downstep explicitly implies fusion (as claimed first—for fused HDs—in Chapter 5 §5.2).

In §7.8.2, the second part of this preceding lengthy discussion of a single paradigm, a range of non-consonant triggered lexical depression has been adduced, and grouped under the general abstract property of ‘salience’: depression is claimed to enhance salience (§7.8.3). The redundant adding of depression is triggered lexically by a set of prosodic (penult syllable, H tone) and segmental (sonorant) properties.

7. 8. 5. Constraint Summary

I summarise the new rankings (321), and the entire tone/voice constraint set in the present chapter (322), with the dominance relations visually sketched in (323). This final dominance relations figure is rather crowded, but accurately reveals the staggering complexity of the voice/tone relationships in Phuthi. The set of relationships among tone and voice properties is reviewed in Chapter 8 §8.3.8 and §8.3.10 (especially the cline of depression patterns to follow in §8.3.10 (101)).
Constraint set (tone/voice), version 7: new rankings

a. BA-Lf (L_{GRAM}), Express_{LGRAM} >> Express_{Edge} >> Head_H >> Express_{LEX} >> WSA-Lf (L_{LEX})
   (from 258)

b. *StemClash >> Max L_{GRAM} (\pi)  
   (from 309, from 262)

c. Max L_{LEX} >> *AE (L_{LEX}, L_{GRAM}) (\pi) >> Max L_{GRAM} (\pi)  
   (from 309, from 277)

d. Max L_{LEX} >> *AE (L_{LEX})  
   (from 309, from 289)

e. Contrast_HD >> (Express_L & Express_H) >> *L-in-H
   (from footnotes 63, 81, 182, 199, 200)

Total constraint summary (tone/voice, partial): version 7

- Resolving CLASH
  a. BA-Lf (L), BA-Rt (L)
  b. Express_L >> Express_H
  c. Max-H, Max-L >> Express_L >> Express_H >> *Rise

- Anticipating L
  a. Crisp(L) >> WSA-Lf (L) >> BA-Lf (L)
  b. BA-Rt (L) >> WSA-Rt (L)

- Shift
  a. Head_x = (*AE_x >> NonFin (\pi_x) >> HD-Min_x >> AvoidProm(\pi_x) >> WSA-Rt(\pi_x) >> BA-Rt_x)
  b. Express_{Edge} >> Head_H >> Express_L >> Express_H

- Block
  a. Express_{Edge}, Max-L, Head_H >> *L-in-H >> Express_L, WSA-Lf (L)

- L Minimality
  a. NonFin, AvoidProm >> LD-Min
  b. LD-Min >> Express_H
  c. *Overlap(L) >> LD-Min
  d. *Overlap(L), NonFin_{LD}, AvoidProm_{LD} >> LD-Min >> Express_H >> NonFin_{HD}, AvoidProm_{HD}

- Masked and quasi-depression
  a. *Max-L (\pi) >> Max-L  \quad \pi = past subjunctive
  b. (Express_H >> Express_L) (\pi)  \quad \pi = past subjunctive

- Unincorporation
  a. Express_{Edge} >> Incorporate
  b. Contrast_HD >> Incorporate
  c. Express_{Edge} >> Express_L
  d. Max_H, Max_L >> Incorporate
  e. Max-L >> *L-in-H
  f. Express_{Edge}, Max_L >> *L-in-H >> Express_L >> WSA-Lf (L) >> Incorporate
• Disjoint $H$
  a. Express_Edge $>>$ Express_L
  b. Express_L $>>$ Express_Prefix
  c. Express_Prefix $>>$ WSA-Lf (L)
  d. Contrast_HD $>>$ Express_Prefix
  e. Express Edge vs. Contrast_HD
  f. Contrast_HD $>>$ Express_L
  g. Express_Edge, Contrast_HD $>>$ Express_L $>>$ Express_Prefix $>>$ WSA-Lf (L)

• Selecting disjoint $H$ or non-disjoint $H$
  a. *AE (L) $>>$ Express_Prefix ($\zeta$)
  b. Express_Prefix $>>$ *AE (L) ($\zeta$)

• Reranking of *OVERLAP
  a. *Overlap, $>>$ everything ($x$ = H, L, any other feature)

• Grammatical $L$
  a. BA-Lf ($L_{\text{GRAM}}$), Express.$L_{\text{GRAM}}$$>>$Express_Edge $>>$ Head_H $>>$ Express.$L_{\text{LEX}}$$>>$ WSA-Lf ($L_{\text{LEX}}$)
  b. *StemClash $>>$ Max $L_{\text{GRAM}}$ ($\pi$)
  c. *AE ($L_{\text{GRAM}}$) $\pi$ $>>$ Max $L_{\text{GRAM}}$ ($\pi$) $>>$ Dep L
  d. Max L $>>$ *AE ($L_{\text{LEX}}$)
  e. Contrast_HD $>>($Express.L & Express.H$)>>$*L-in-H

[turn to the next page for (323) ‘Constraint rankings (tone/voice), version 7: dominance orderings’]
Constraint rankings (tone/voice), version 7: dominance orderings

*Overlap
  | Max L_{LEX}
  | *AE (L_{LEX})
  | *AE (L_{GRAM}) (π)

*StemClash
  | BA-Lf (L_{GRAM})
  | Express _L_{GRAM}
  | *AE_x
  | Express_Edge
  | Head H
  | NonFin (π)_x
  | HD-Min_x
  | AvoidProm(π)_x
  | WSA-Rt(π)_x
  | BA-Rt_x

Contrast_HD
  | Max-H
  | Crisp L
  | *L-in-H
  | Express_L_{LEX}
  | Align_Prefix
  | WSA-Lf (L_{LEX})
  | Incorporate
  | BA-Lf (L)
  | NonFin_{LD}
  | AvoidProm_{LD}
  | LD-Min
  | Express_H
  | *Rise
  | NonFin_{HD}
  | AvoidProm_{HD}
7.9. Register Domains

In Chapter 5 §5.5.6, I introduced the notion of an intonation phonological pitch domain—termed Register Domain—in addition to the H tone domain, in order to encode H tone downstep effects that do not necessarily fall out of shared H domain edges (antepenult/penult), but need to include reference to downstep at the morphological interface of the OP and stem boundary, and at the prosodic penult/ultima boundary.

The observation made there was that two adjacent H domains will fail to reflect distinct H feature tokens, unless something prevents them failing. That is, two such adjacent HDs will fuse—they will absolutely neutralise their distinctness—unless a constraint overrides the fusion requirement. This theoretical fusion forces two adjacent domains not to be (re)parsed to a new (lower) tone height midway through a H tone sequence. The only way we can know that fusion has failed is if there is a tone downstep between the two HDs. There is, thus, a binary choice between fusion and downstep: two adjacent HDs are either fused or the second is downstepped relative to the first. Register Domains are not needed for this general case of fusion.

However, two problems were encountered in Chapter 5: (a) the HD fused with an OP is downstepped relative to a preceding HD on the SP, even though the expressed H portion of the domain does not coincide with the HD left-edge because the OP is anti-expressed by the morpho-phonetic *EXPRESS_OP constraint (Chapter 5 §5.4); (b) downstep can also occur internal to a single unfused HD, in the case of the syllable boundary between long penult and ultima (termed ‘ultima downstep’, cf. §5.5.5-§5.5.6).

It was proposed in §5.5.6 that an additional domain type, a Register Domain (RD), be invoked at the level of intonational domain expression. In the default case, the RD initiation (indicated by ‘|’) corresponds precisely to a HD left-edge, to be articulated through Principle A below; in the non-default cases, the RD initiation is parsed by additional principles B, C, and, later, D below.

The first three principles are as follows:

Principle A: every HD left-edge implies a RD left-edge (324);
Principle B: the OP morpheme requires a RD to begin after the OP right edge (325);
Principle C: an ultima inside a HD requires RD initiation at the ultima left-edge (326).

---

It makes no sense that the first HD in any phrase be downstepped, since there is no earlier
RDs are not conceptualised as the same kind of theoretical entity as a HD or LD; rather, they are direct instructions to the pitch implementation device. As such they do not reflect phonological domain-construction principles (e.g. they do not need a right edge). Only one edge is critical (the left edge). The RD also has no unique parsing feature; in some sense it is a meta-domain, parasitic on HD edges, enriched by the other trigger features enumerated here.

I recapitulate here the general downstep case (324) and the two problematic downstep cases—OP downstep (325) and positional (ultima) downstep (326). Each example consists of a single word.

(324) **Principle A = general downstep: every HD left-edge \( \Rightarrow \) RD left-edge**

a. \(|\text{kú}-|\text{bóó}na\) to see
   H prefix *unfused* to H 2-\(\sigma\) stem at antepenult/penult boundary\(^{237}\)

b. *\(|\text{kú-bóó}na\)
   H prefix incorrectly *fused* to H stem at antepenult/penult boundary

c. \(|\text{bá-bó}na\)... they see...
   H prefix *fused* to H 2-\(\sigma\) stem phrase-medially

d. *\(|\text{bá}-|\text{bó}na\)... H prefix incorrectly *unfused* to H 2-\(\sigma\) stem phrase-medially

e. \(|\text{kú-sébéé}ta\) to work
   H prefix *fused* to H 3-\(\sigma\) stem pre-antepenult

f. *\(|\text{kú}-|\text{sébéé}ta\)
   H prefix incorrectly *unfused* to H stem pre-antepenult

g. \(|\text{bá}-\text{ya-}|\text{wáá-kha}\) they draw it (water)
   H OP *fused* to H 1-\(\sigma\) stem\(^{238}\), Contrast_HD >> *Express_OP

h. *\(|\text{bá}-\text{ya-}|\text{wáá}-|\text{khá}\)
   H OP incorrectly *unfused* to expressed H stem ultima

---

\(^{236}\) The short OP 1-\(\sigma\) stem conforms with downstep Principle A, because in this instance the OP itself is exceptionally expressed H, overriding the *Express_OP* constraint.

\(^{237}\) The data for fusion (as a response to the *in situ* OCP violation) in (324a-f) is taken from Chapter 5 §5.2.

\(^{238}\) The data for downstepping beyond the fused OP+stem domain (324g-h, 325a-d) is taken from Chapter 5 §5.4.
The data in (324) supports the claimed fusion of adjacent HDs (proposed in Chapter 5 §5.2): HD fusion correctly fails in (324a) because the HD boundary is at the antepenult-penult boundary, triggering the conjoined constraint \((\text{AVOID} \text{PROM} \& \_\text{CRISPSTEM})\); HD fusion correctly succeeds in (324c,e,g).

\[(325)\] Principle B = Object Prefix\(^{239}\) downstep: OP right edge \(\Rightarrow\) RD left-edge

a. \(\{\text{bá}\}-\text{ya-}{[\text{ba- l}\text{lf}]}\text{miisa}\) they help them cultivate \(\text{H OP with toneless/low stem}\)
b. \(\{\text{bá}\}-\text{ya-}{[\text{ba- l}\text{fá}]}\text{tiisa}\) they delay them \(\text{H OP with toneless/low stem}\)
c. \(\{\text{bá}\}-\text{ya-}{[\text{ba- l}\text{bólí}]}\text{sa}\) they show them \(\text{H OP fused to H stem}\)
d. \(\{\text{bá}\}-\text{ya-}{[\text{ba- l}\text{sébé}]}\text{tiisa}\) they use them \(\text{H OP fused to H stem}\)

\[(326)\] Principle C = positional downstep: HD ultima \(\Rightarrow\) RD left-edge

a. \(\ldots\text{ti-}{[\text{bó o l nó}]\text{vi}}\text{e}}\text{s}\) views \(\text{post-negative noun (no prefix H tone)}^{240}\)
b. \(\text{li}{[\text{mú l sá}]\text{help}}\text{c}}\text{ultivate!}\) imperative \(\sigma2\) grammatical \(\text{H, 3-}\sigma\text{ toneless/low stem}\)\(^{241}\)
c. \(\text{li}{[\text{bátí l sá}]\text{delay!}\) imperative \(\sigma2\) grammatical \(\text{H, 4-}\sigma\text{ toneless/low stem}\)
d. \(\text{li}{[\text{bólí l sá}]\text{show!}\) imperative \(\sigma1\) lexical \(\text{H (3-}\sigma)\text{ fused to }\sigma2\text{ grammatical H}\)
e. \(\text{li}{[\text{sébólí l sá}]\text{use!}\) imperative \(\sigma1\) lexical \(\text{H (4-}\sigma)\text{ fused to }\sigma2\text{ grammatical H}\)
f. \(\text{li}{[\text{kúu l khá}]\text{to draw (water)}\) fused prefix with H 1-\sigma stem

In addition to these downstep configurations, we can now add a fourth principle from the present chapter, in light of all the depression data considered in the preceding sections:

**Principle D**: every depressor inside a HD—that is, every LD right edge—is followed by a RD left-edge (327).

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\(^{239}\) The data for downstepping at the fused OP+stem domain juncture (324g-h,325a-d) is taken from Chapter 5 §5.4.1 (92-93), (106-107).

\(^{240}\) The data for downstepping at the ultima (326a-f) is taken from the discussion of penult shapes in Chapter 5 §5.3 (54f,g), Tableau 6 (79).

\(^{241}\) The data in (326b-e) is also taken from the discussion of the imperative in Chapter 6 §6.3.3.1.
I observe that Principle D—like Principle A—supports the fusion claim for adjacent LDs: if (327c,e) were unfused, we would expect two RD left edges to intervene between the left and right portions of the HD (327d,f). Yet there is no evidence to suggest that a sequence of depressed syllables has a greater tone depression effect on pitch than a single depressed syllable. The analytic advantage of RD left-edges is that downstep is now signalled in the theory by a single cue. The disadvantage is that downstep cannot be solely read off HD left-edges (though with some prosodic and morphological beefing up, the pitch implementation cues could probably be built off each HD left-edges).

We have now accounted for all varieties of downstep—that is, register lowering—in the language, through the Register Domain construct.

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242 The data for downstepping after a Low domain (327a-f) is taken from §7.2.2.
7.10. Conclusion

The chapter opened with a brief review of the tone/voice literature, with particular reference to Bantu and to the Nguni subfamily (§7.1). We then saw a wide range of tone/voice effects in Phuthi examined in the remainder of the chapter. It has been shown, centrally, that the phenomenon of tone/voice antagonism, widespread in Nguni, is also found in Phuthi, in the form of a set of consonants that tonally depress the syllables they are the onsets of, either by converting an otherwise expected H tone to be L (§7.2), with potential knock-on rightwards shift and block effects (§7.4), or by implementing a rapid LH rise on the depressed syllable (§7.2.5).

The H-domain right-edge expression requirements have been shown to force rightwards expansion of a depressed H in head (rightmost) position, that is, of linearisation of the conflicting L and H tones across the antepenult and penult syllables (depressor shift, in §7.4.1, §7.4.3), or a rising H tone in the form of blocked expansion off the HD head syllable, under conditions of the H being trapped (blocked) between depressed syllable onsets (§7.4.2, §7.4.3).

Further, it has been made clear that breathy voicing and tonal depression are not coterminous: tonal depression (but not breathy voice)—argued to be the presence of a L domain (LD) parsing a Low feature—has been seen to be anticipated (realigned) leftwards to a morphological stem edge (§7.3), and rightwards to satisfy LD minimality (§7.5); in addition, tone depression has been seen to be deployed lexically by the grammar to implement the grammatical copula construction, displaying a continuum of tone/voice interactions (§7.6); SPs and OPs in some paradigms offer a theoretically interesting problem of would-be domain-overlap (unincorporation) and disjoint instantiation of a single H feature (§7.7). Finally, tone depression has been seen to be deployed grammatically (distinct from lexical properties) to enhance the categorial lowness of toneless stems (§7.8), signalling a phonological distinction between lexical and grammatical L tone behaviour.

It has become manifestly clear that tonal depression causes significant interference with the expression of H-ness inside a H domain in the language, where this interference is not merely concretely phonetic, but is abstractly phonologised and extended away from the phonological trigger to a wider set of anti-parse and anti-express environments whose parameters require reference to both phonology and morphology.
We now turn, in Chapter 8, to examine the implications of all of the tone and voice patterns presented and analysed in the course of the substantive chapters of this dissertation, that is, from Chapter 4 (Lexical Tone I), Chapter 5 (Lexical Tone II), Chapter 6 (Grammatical Tone), and the present Chapter 7 (Tone, Breathiness and Depression).
Chapter 8

Conclusion

In this final chapter, I summarise and reflect on what has emerged in the preceding tone and voice chapters (Chapters 4, 5, 6, 7). First (§8.1), I summarise the wide range of tone and tone/voice patterns that have been discussed. Then (§8.2), I assemble tone and tone/voice patterns that together indicate theoretical insights not identifiable in isolated patterns earlier in the work. In particular, in section §8.2, I reflect first on the nature of phonological and morphological minimality effects (§8.2.1), then on the interaction of these effects with phonological prominence as implemented at two salient boundaries (the antepenult-penult, and the penult-ultima, cf. §8.2.2), and finally on a notion of metrical headedness as invoked by the prominence properties of putative tone feet in the instantiated tone/voice grammar (§8.2.3).

The properties of a Phuthi-type tone/voice grammar appear to pose a very significant problem for any constraint-based phonological grammar that rejects the analytic distinction between parse and express parameters, as proposed in Chapter 3 (and work cited there), and as then implemented in Chapters 4 through 7. But I confirm in this conclusion that the Phuthi tone/voice patterns do not challenge the strong universal claim of (relativised) locality in the phonologies of all languages. However, I do show that locality is respected in Phuthi only if the tone grammar is modelled in the parse/express architecture provided in Optimal Domains Theory (ODT). Given any of the competing architectures that fail to distinguish between parse parameters and express parameters (such as Optimality Theory without a formalised notion of parse/express domains), the Phuthi facts cannot be adequately modelled while respecting locality, unless significantly ad hoc strategies are resorted to (such as tone fission).

I then synthesise (§8.3) a range of remaining theoretical problems as they have emerged in the treatment given to tone and voice in this work: OCP and anti-expression (§8.3.1), downstep distribution (§8.3.2), cophonologies and paradigm-specific rankings (§8.3.3), explosion and multiple instantiation, focusing on tone/voice antagonism (§8.3.4), locality (§8.3.5), directionality (§8.3.6), unincorporated and disjoint HDs (§8.3.7), feature activity (§8.3.8), contrast maintenance through stem faithfulness (§8.3.9), the cline of depression effects.
8. 1. Implications of Proposals in Chapters 4 through 7

In Chapters 4 through 6, I have built a partial constraint grammar, indicated by the variety of tone patterns seen, both lexical (Chapters 4, 5) and grammatical (Chapter 6). The salient patterns and proposed constraints are recapitulated in sections §8.1.1 through §8.1.3 below. Additionally, I have amplified the tone grammar with tone/voice-related constraints (Chapter 7) which analytic insights are recapitulated in §8.1.4 below.

8. 1. 1. Chapter 4: Lexical Tone I

Lexical tone paradigms display the presence of lexical H tones only (and not grammatical H tones), that is, they manifest patterns involving but a single H token in the stem domain. These include the present indicative, perfective indicative, and reduplicated forms of both these tenses.

In the non-depression lexical tone grammar, simple H tone domains in Phuthi are characterised by left-alignment of a H tone in its sponsor position (the left edge of any prefix or stem sponsor syllable in noun stems; or the left edge of a H prefix, or of the lexically H verb stem). The more interesting rightwards alignment in lexical paradigms is to two possible targets: the antepenult in phrase-final paradigms (Chapter 4 §4.1), cf. (1) below; and the penult in phrase-medial paradigms (Chapter 4 §4.5), cf. (2). This general alignment and the right-edge misalignment is achieved by a wide-align constraint (WSA-R) and two anti-edge (anti-alignment) constraints (NONFIN, AVOIDPROM), ranked initially as in (3). No re-reranking of these constraints is required for the phrase-medial forms (2); AVOIDPROM becomes vacuous phrase-medially, as the penult is no longer prominent in non-phrase-final forms.

(1) Antepenult rightwards target: phrase-final
   a. si-ya-[bônísé]\lana we show for each other pres indic
   b. si-ya-[bôníbôní]\f\ansa we show each other now and then pres redup indic
   c. si-[sébétísí]\siyi we have used intensively perfective indic
   d. [bá-ýá-lím\làna they cultivate for each other pres indic
   e. [bá-ýá-lím\f\lím\í]laana they cultivate for e. o. now & then pres redup indic
   f. [bá-lébúkísi]\siyi they have thanked intensively perfective indic
(2) **Penult rightwards target: phrase-medial**
   a. si-[bónísélá]na... we show for each other... pres indic
   b. si-[bóníbónísá]na... we show each other now and then... pres redup indic
   c. [bá-límélá]na... they cultivate for each other... pres indic
   d. [bá-límálímélá]na... they cultivate for e. o. now and then... pres redup indic

(3) **Right-align constraint ranking I**
   NonFin, AvoidProm >> WSA-Rt

   Additions to these patterns include the requirement that H is parsed *in situ* (and neither underparsed, nor realigned leftwards of sponsor position) on short 2-σ and 1-σ stems (4), and a minimal length condition (Chapter 4 §4.2), cf. (5) below. The constraint set is amplified (6) with undominated Max-H and with HD-MIn, respectively, to reflect these amendments.

(4) **Parsing H in situ**
   a. si-ya-[bóó]na we see present indicative
   b. si-ya-[búú]ta we ask present indicative
   c. si-[phíí]ye we have given perfective indicative
   d. si-[khíí]ye we have drawn (water) perfective indicative
   e. si-yaa-[phá] we give present indicative
   f. si-yaa-[khá] we draw (water) present indicative

(5) **Minimality condition**
   a. si-ya-[bóníí]sa we show present indicative
   b. si-ya-[bútáá]na we ask each other present indicative
   c. si-[bóníí]ye we have seen perfective indicative
   d. si-[bútéé]ne we have asked each other perfective indicative

(6) **Right-align constraint ranking II**
   Max-H >> NonFin >> HD-Min >> AvoidProm >> WSA-Rt

   This simple set of alignment principles is further constrained by the failure of the minimality effect if that effect would entail extending the H domain both onto the long (phrase-final) penult *and* across a morphological stem boundary; compare minimally successful (7a-b) with minimally unsuccessful (7c-d). Termed ‘hedged minimality’ (Chapter 4 §4.3), this minimality failure is argued to instantiate local constraint conjunction of AvoidProm and a
constraint disferring a tone domain crossing a morphological stem boundary, CrispSTEM, ranked in (8).

(7) **Minimality success vs. failure**

a. [ébáá]+tfu people noun, Class 2
b. [bá-yáá]+ta they come present indicative
c. [mú]+tfwaana child noun, Class 1
d. [kú]+liima to cultivate noun, Class 15 = inf

(8) **Right-align constraint ranking III**

Max-H, (AvoidProm&CrispStem) >> NonFin >> HD-Min >> AvoidProm >> WSA-Rt

Finally, morphologically reduplicated stems (Chapter 4 §4.4) pose a difficult problem, though limited to a single pattern: there appears to be an overcopying effect: overapplication of WSA-Rt H realignment rightwards onto the base penult (9e) as if to obey a minimality requirement, and yet there is evidence of only one H per derived reduplicate stem (9a,c); that is, the reduplicate and the base do not seem to each parse a separate lexical H token. This is argued to be an output-output effect between base surface H domain pattern and the reduplicated stem pattern where both require minimality effects onto the penult. The effect can also be conceptualised as the weak presence of two H sponsors (H reduplicate sponsor, H base sponsor) in (9e), which contrasted with the shorter stems in (9b,d) where there can be no base sponsor on either the penult (9d) or ultima (9b)\(^1\).

(9) **Overapplication of minimality effect onto penult**

a. si-ya-[phá]-yii-pha we give now and then si-yaa-[phá]
b. *si-ya-phá-yii-pha
c. si-ya-[bóná]boona we see now and then si-ya-[bóóna]
d. *si-ya-bónábóóna
e. si-ya-[bóníbóníí]sa we show now and then si-ya-[bóníí]sa
f. *si-ya-bóníbóníísa

8. 1. 2. Chapter 5: Lexical Tone II

The alignment principles proposed in Chapter 4 (repeated above in §8.1.1) need further modification in light of the presence of a second H tone in the representation (introduced by a

\(^1\) Cf. §8.2.2.7: this is analysed as sponsor reduplication failure in the final (bisyllabic) foot.
prefix). Specifically, it becomes clear that the OCP (modelled here as \( \ast_{ADJACENT \ \text{EDGES}} = \ast_{AE} \)) has two roles: (a) the OCP keeps a potentially expanding H domain from merging two immediately successive H domains (Chapter 5 §5.1), cf. data in (10); and (b) the OCP forces morphologically adjacent H domains to fuse their domains (Chapter 5 §5.2), cf. (11) below, unless this would occur at the antepenult-penult boundary when the penult is heavy (long), in which case fusion fails, and the adjacent HDs are reflected as unfused by a downstep occurring in that position (12).

(10) **OCP anti-alignment**

a. \([b\acute{a}]\)-ya-[bútê]\lana they ask for one another
b. \([b\acute{a}]\)-ya-[sêbêt]siisa they cause to use
c. \([\acute{e}]\)baa-[fô] men
d. \([\acute{e}]\)baa-[râ] sons

(11) **OCP-induced fusion**

a. \([kû]-khûlûmê[\l]\]na... to speak on behalf of one another...
b. \([kû]-sêbêtisê]\l... to work intensively for...
c. \([kû]-bô]\na... to see...
d. \([kû]-bû]\ta... to ask...

So, downstep is expressed between any long high penult and a high ultima, even where these are reflexes of a single H feature (12), suggesting the discreteness of the two adjacent HDs.

(12) **Downstep at antepenult-penult juncture**

a. \([kû]-[bôn]\)na to see
b. \([kû]-[bûû]\)ta to ask

The constraint interaction in (13) models both the OCP relationships just exemplified:

(a) no adjacent HDs (fusion) >> minimality; (b) no fusion across antepenult/heavy penult boundary >> (no adjacent HDs) fusion >> adjacent separate H tokens.

(13) **Fusion failure:** fusion

(AvoidProm\_&\_CrispStem) >> \ast_{AE} >> HD-Min
If two adjacent H syllables occur across the penult-ultima sequence where the penult is heavy (long)—either in separate domains (14a-b) or in the same HD (14c-d)—the penult must be expressed as falling, that is as ôô (Chapter 5 §5.3), cf. (14).

(14)  **Falling penult-ultima H sequence**

a. kúú-phá  to give  *kúú-phá
b. báá-phá  they gave  *báá-phá
c. ...ti-bóó-ó  views  *...ti-bóó-ó, cf. -bóóna, ‘see’
d. libátísááná  delay one another!  *libátísááná

It is observed that there is a phrase-level intonation phonological requirement that every phrase end on low pitch (EndLow). In the general case, this is satisfied, but in final -HH sequences (that is, when the two rightmost syllables are both H), where the low pitch requirement appears to be violated as the weight structure is necessarily -µ(µ). I argue, however, that EndLow is in fact satisfied here too, albeit (minimally) misaligned leftwards into the penult, by the falling-high final sequence. The set of ranked constraints indicating the competing tone and pitch requirements that model these relationships is repeated in (15): (a) every syllable must express as H somewhere—Express_H(σ)—which can be satisfied by either of two H moras in a long (= bimoraic, effectively always penult) syllable; (b) Phuthi disfavors rising syllables (*Rise), as in many Bantu languages; (c) phrases must end at a low pitch (the crucial insight from the penult-ultima data in (14); (d) every mora in every syllable (that is, both moras in a long penult) must be expressed; (e) minimality; (f) no falling tones.

(15)  **Long penult fall shape preceding H ultima**

Express_H(σ) >> *Rise >> EndLow, Align_EndLow >> Express_H(µ) >> HD-Min >> *Fall

In Chapter 5 §5.4, it is shown that the morphological class of object prefixes (OP) is constituted by 1-σ prefixes, underlyingly H, which nevertheless remarkably reject surface expression as H (16a-b), unless the H feature they introduced would otherwise be fully neutralised (16c-d), suggesting a novel class of anti-express constraint that overrides default2 expression of every HD syllable as H (17).

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2 These anti-express constraints appear to be quite distinct from general phonological
(16) **OPs fail to express H in longer toneless stems**
   a. si-ya-[tĭ-lîmî]siisa we cultivate them intensively *si-ya-[tĭ-lîmî]siisa
   b. si-ya-[tĭ-lî]baala we forget them *si-ya-[tĭ-lî]baala
   c. si-ya-[tî]-liima we cultivate them *si-ya-[tî]-liima
   d. si-ya-[tû]-nya we excrete them *si-ya-[tî]-nya

(17) **OP anti-expression**
   *Express_OP >> Express_H

   Fusion occurs in all sequences of OP and H stem (18a-d), and the OP fails to express H in all except the 1-σ stem (18d), where there is a second anti-express constraint that forces the ultima not to express H (*EXPRESS_UlTIMA), though clearly not at the expense of losing the HD contrast altogether (CONTRAST_HD), cf. rankings in (19).

(18) **OPs fail to express H in all High stems except the ultima**
   a. si-ya-[tî-sêbê]tiisa we use them *si-ya-[tî]-sêbêtiisa
   b. si-ya-[tî-bônî]sa we show them *si-ya-[tî]-bônîsa
   c. si-ya-[tî-bôö]na we see them *si-ya-[tî]-bôöna
   d. si-ya-[tû]-pha we give them *si-ya-[tû]-pha, *si-ya-[tî]-pha

(19) **Ultima anti-expression**
   Contrast_HD >> *Express_UlTIMa >> *Express_OP >> Express_H

   The status of OPs is reconsidered later in Chapter 7 §7.6.3, where it is suggested that the OP may in fact be lexically depressed *ab initio* (which would provide a reason for the general failure of the OP to express as H). But it is concluded that, there that since a range of other anticipated depressor-related effects3 (shift, block) are absent, OPs are in fact not depressed *ab initio* (other than depressed 1ps OP -gi-); rather, these expression and anti-expression constraints are the closest we seem to be able to get to accurately modelling the behaviour of the morpheme category OP.

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3 But cf. the complete depression cline, provided in §8.3.10 below.

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In Chapter 5 §5.5, the full range of downtrends not triggered by depression is considered. Tonal downstep is automatically implemented by the left edge of every HD. Where there are spans of non-HD syllables between two HDs, the stepping down of the second HD relative to the first would generally be called downdrift. Phuthi also displays stepping down of one HD relative to an immediately preceding HD (with no intervening non-HD syllables), which instantiates catathesis (or true downstep). There are two types of non-downdrift downstep: (a) positional and (b) ultima downstep. Positional downstep occurs at the antepenult-penult boundary in lexical tone paradigms where the phrase-final penult is heavy, as seen in (12) above, repeated as (20a-b), with noun data included (20c-d); (b) ultima downstep occurs in phrase-final configurations internal to a HD where both long penult and ultima are H, in data such as (14) above, repeated with downstep indicated as (20e-h).

(20) **Downstep at antepenult-penult**
   a. [kú]-[bóó]na to see
   b. [kú]-[búú]ta to ask
   c. [lí]-[pháá]si country; earth
   d. [mú]-[táá]lí parent

**Downstep at penult-ultima**
   e. [kúu]-[phá] to give *'[kúu]-phá]
   f. [báá]-[phá] they gave *'[báá]-phá]
   g. ...ti-[bóó'n-ó] views *...ti-[bóó'n-ó], cf. -bóóna, ‘see’
   h. li[batísáa'ná] delay each other! *li[batísááná]

Downstep as ‘left edge of HD’ clearly fails for ultima downstep; the notion of Register Domains (RD) is introduced (21) which subsumes all cases of downstep, both at HD left-edge and not at HD left-edge (which includes ultima downstep given above here, and depressor downstep in Chapter 7 (§8.1.4 below). Data from (20) is given with RD structure in (21).

(21) **Register Domains**
   a. [ | kú] - [ | bóó]na
   b. [ | kúu] - [ | phá]
   c. ...ti-[ | bóó | nó]
Finally, in Chapter 5 §5.6, some nominal paradigm-specific properties are demonstrated: although (a) lexically toneless deverbative noun stems have precisely the properties anticipated (with right-edge widescope realignment to the antepenult, subject to minimality and the local conjunction stem-edge crisp (anti-minimality) effect (22a-b), it is more remarkably the case that (b) lexically H deverbative noun stems behave tonally as if two post-HD (that is, post-‘antepenult’) syllables were in evidence, making the entire stem domain eligible for WSA-Rt alignment effects; that is, there is no actual penult or ultima for the tone rules to avoid with respect to parsing, but the H deverbative stems behave as if there are (22c-d).

(22) Deverbative noun stems
   a. Toneless stem, 2-σ [f]-yeeto antepenult target (stem-edge >> minimality)
   b. Toneless stem, 3-σ [í]-wó|teelo antepenult target
   c. High stem, 2-σ [í]-[bó|onó] stem H wide-alignment to ultima
   d. High stem, 3-σ [í]-[sébéetó] stem H wide-alignment to ultima

Analytically, lexical/postlexical level-specific (λ) noun cophonologies are proposed (cf. §8.3.3), to capture the facts in (22c-d), with level-specific ranking of the right-edge align and anti-align constraints (23).

(23) Level-specific cophonological ranking
   a. derived stem-level alignment WSA-Rt >> AvoidProm, NonFin λ1
   b. postlexical phrasal alignment NonFin >> AvoidProm >> WSA-Rt λ2

8. 1. 3. Chapter 6: Grammatical Tone

In the non-depression grammar of grammatical tone, the tone domain properties just recapitulated in §8.1.1 and §8.1.2 from Chapters 4 and 5 are confirmed, while additional patterns emerge that override lexical tone pattern behaviour. Grammatical requirements in Phuthi—and Bantu generally—always override lexical requirements.

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4 These deverbative noun stems are non-agentive (§5.6.2, 186-187); agentive stems all function with the general tone properties as evolved in Chapters 4 and 5.
5 Glosses: (22a) ‘action, deed’; (22b) ‘drowsiness’; (22c) ‘scene’; (22d) ‘job’.
6 For example, grammatical paradigms may require alignment to the penult or even ultima (cf. patterns (29-30) in this section), despite the weight of the phrase-final penult syllable, thus overriding the antepenult alignment established in Chapter 4 (summarised here in §8.1.1).
Chapter 6 §6.1 lays out the full range of left- and right-edge HD alignment parameters. It becomes clear in this chapter that there are modifications that need to be made with respect to right-edge H domain possibilities. Claims to anti-alignment made in §8.1.2 (Chapter 5) can be overridden in paradigm-specific ways: a grammatical H frequently extends as far as the penult or ultima syllable.

§6.2 shows that there can be grammatical paradigm-specific requirements. All subject prefixes (SPs) may be required to be H (including non-3p prefixes: 1ps ɡí-, 1pp sí-, 2ps ú-, 2pp ʃ́-) such as in the participial (§6.2.1.1), in a paradigm that otherwise essentially displays lexical tone patterns (24) (cf. Appendix A, paradigm G for minor aditional information).

(24) Participial: all SPs must be H
   a. sí-liima  ...us7 cultivating
   b. sí-líbaala  ...us forgetting
   c. sí-libátiisa  ...us delaying
   d. sí-bó́óna  ...us seeing
   e. sí-bóníísa  ...us showing
   f. sí-sébétíisa  ...us using

Grammatical paradigms can require the presence of a paradigm-specific grammatical H tone in addition to any lexical H tone, always aligned to the word right-edge, such as the present relative -kó (25), and present subjunctive -é (26); these are two of the very few paradigms that completely neutralise the lexical tone class distinction between toneless (low) and H stems (Chapter 6 §6.2.2).

(25) Present relative: right-aligned grammatical H
   a. lá-taa-kó  (s/he) who comes  toneless stem
   b. lá-phaa-kó  (s/he) who gives  H stem
   c. lá-límma-kó  (s/he) who cultivates  toneless stem
   d. lá-bó́ona-kó  (s/he) who sees  H stem
   e. lá-líbáláa-kó  (s/he) who forgets  toneless stem
   f. lá-bónísaa-kó  (s/he) who shows  H stem

7 This is the oblique form of the English (1pp) pronoun, intended to indicate a non-finite English participial clause, e.g. ‘(with) us cultivating’—equivalent to a Latin ablative absolute construction—as is the gloss also used in the source data in Chapter 6 §6.2.1.1 (but in Appendix A, paradigm G, I use 2pp ‘lʃ́-’, glossed ‘you cultivating’). The oblique pronoun morphology is not intended to indicate a morphosyntactically object pronoun.
Present subjunctive: right-aligned grammatical H

a. áá-t-e ...that s/he comes toneless stem
b. áá-ph-e ...that s/he gives H stem
c. á-lúm-e ...that s/he cultivates toneless stem
d. á-bóón-e ...that s/he sees H stem
e. á-líbaal-é ...that s/he forgets toneless stem
f. á-bóniis-é ...that s/he shows H stem
g. á-líbátiis-é ...that s/he delays toneless stem
h. á-sébétiis-é ...that s/he uses H stem

The basic insight is that an anti-parse constraint (27) forces a lexical H not to surface at all in these data sets, that is, there is a paradigm-specific (π) requirement that completely neutralises the two tone classes.

Lexical tone class neutralisation
*Max-HLEX >> Max-HLEX (π) (π = {present subjunctive, present relative})

There are a variety of special interactions around short 2-σ and 1-σ stems, such as in (26a-b), where the optimal grammatical H pattern (two distinct grammatical Hs) is not evident. It is shown in §6.2.2 that these particular grammatical paradigms appear to mimic the ENDLOW (declination) requirements proposed to account for the falling penult in §8.1.2 above (and cf. Chapter 5 §5.3), but elevated to the syllable level. The set of constraints invoked to model all forms of the subjunctive (including the short stems) is given in (28).

Subjunctive alignment
Align HGRAM-Lf; EndLow-σ >> HD-MINSUBJUNCT >> Max-HGRAM >> Align_EndLow, Rt >> Align_(HGRAM, Rt)

This set includes very paradigm-specific constraints (such as HD-MIN SUBJUNCT), which is important for showing both how the general principles evolved in Chapters 4 and 5 continue to apply in these grammatical paradigms and also for showing that Phuthi (along with much of Bantu) requires a wide range of finessed, varied constraint instantiations to address tone phenomena in particular grammatical paradigms.

The largest set of grammatical tone paradigms (§6.3) involves a configuration where (a) the lexical stem tone contrast is maintained but only on stem σ1; (b) the grammatical tone is

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aligned to $\sigma_2$ at its domain left-edge; (c) the grammatical tone is aligned to one of two possible right edges: penult, or ultima. Short perfectives (29) exemplify the penult target (§6.3.1-§6.3.2); imperatives (30) exemplify the ultima target (§6.3.3-§6.3.4).

(29) $\sigma_2$ paradigms: penult target (short perfective)

a. si-limíye... we have cultivated... toneless stem: $\sigma_1$ empty
b. si-limísíye... we have helped cultivate... toneless stem: $\sigma_1$ empty
c. si-libátísíye... we have delayed... toneless stem: $\sigma_1$ empty
d. si-bőnýye... we have seen... H stem: $\sigma_1$ contains lexical H
e. si-sébětíye... we have worked... H stem: $\sigma_1$ contains lexical H
f. si-sébětíísíye... we have used... H stem: $\sigma_1$ contains lexical H

(30) $\sigma_2$ paradigms: ultima target (imperative)

a. liimá cultivate! toneless stem
b. libálá forget! toneless stem
c. libátísá delay! toneless stem
d. bóó nó see! H stem
e. bóó síi show! H stem
f. sé sé use! H stem

The $\sigma_2$ left-edge of these paradigms falls out of the faithfulness requirement keeping the two lexical tone paradigms (H vs. toneless) distinct: FaithLexTone⁸, ranked in (31).

(31) Tone paradigm faithfulness

Max-HˌLEX, FaithLexTone >> Alignˌ(HˌGRAM, Lf)

The antepenult/penult/ultima right edge falls out of the three possible rankings of the wide-align and anti-align constraints: (32a) is the cophonology for default lexical paradigms and some grammatical paradigms; (32b-c) are the cophonologies for the grammatical $\sigma_2$ paradigms.

(32) Grammatical paradigm right-edge variation: three cophonologies

a. NonFin >> AvoidProm >> WSA-Rt lexical (Ch. 4, 5); HˌGRAM paradigms with two Hs
b. NonFin >> WSA-Rt >> AvoidProm penult right-edge grammatical paradigms
c. WSA-Rt >> NonFin >> AvoidProm ultima right-edge grammatical paradigms

⁸ An alternative to the FaithLexTone constraint is discussed (but not adopted) in Chapter 6 §6.3.1.4, footnote 40, namely, a structural constraint—NonInitiality—that forces AnchorˌHˌLEX (Chapter 4 §4.1.3) to misalign off $\sigma_1$ to the $\sigma_2$ position. NonInitiality amounts to an expression of string-initial extraprosodicty.
8. 1. 4. Chapter 7: Tone, Breathiness and Depression

In this chapter the fundamental generalisation (§7.2) is that any (lexically) depressed syllable inside a H domain fails to express as H, but rather expresses low. This is seen to be true for almost\(^9\) all non-rightmost syllables in a canonical\(^{10}\) HD (33a-e). There are several aspects to the depression pattern, including these: (33a-d) ‘no simultaneous H and depression’; (33e-f) ‘serial depression has no upper limit’; (33g-h) ‘post-depressor HD syllables return to H’; (33i-j) ‘HD Lf-edge is not necessarily expressed H’; (33k-l) ‘HD-external depressors are phonologically\(^{11}\) irrelevan’t.

(33) Depression prevents proper H expression

a. [kú-
\_vulé]\laana to open for each other one H sponsor; 1 σ
b. [kú-
\_viš]\siisa to understand two H sponsors; 1 σ
c. [bá-
\_yá-vulé]\laana they open for each other one H sponsor; 1 σ
d. [bá]-ya-[viš]\siisa they understand two H sponsors; 1 σ
e. [kú-gudzjí-sé]\laana to help shear for each other one H sponsor; 2 σ
f. [kú-gudzgélá]\niisa to cause to shear indiscriminately for e.o. one H sponsor; 3 σ
g. [kú-gudzjí-sé]\laana to shear carefully for e.o. one H sponsor; 2 post-σ H σs
h. [kú-
\_yulé]\lís\aana to help open for one another one H sponsor; 3 post-σ H σs
i. si-
\_ya-[gadzjí-sé]\laana we help stamp for e.o. left edge of HD not H
j. si-[gadzagí-sé]\leene we helped stamp indiscriminately for e.o. left edge of HD not H
k. [kú]-[tsháá]\dza to love ultima depressor irrelevant
l. [kú-
\_lá]\džæela to follow penult depressor irrelevant

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\(^9\) Exceptions (which become clear from the extended discussion in Chapter 7): non-rightmost syllables which preceded a morphological stem boundary do not (typically) lower, here: (33e-g); all post-depressor HD syllables (if there are any)—including the rightmost—express as H, as in (33g-h).

\(^{10}\) ‘Canonical’ here is intended to include expanded HDs, that is, where the rightmost would-be HD syllable is both depressed and High, and as a result triggers expansion of the HD beyond its would-be HEAD position (cf. (42) below, in this section).

\(^{11}\) Stem depression triggers an unquantified degree of intonational lowering of the onset pitch of pre-stem H or toneless syllables, cf. data in (33a-h), possibly also in the case of (33k-l).
Depression (low) is analysed as an autonomous tone feature, L, triggered by every breathy consonant\textsuperscript{12}. The clash between the implementation of depression (low) and proper implementation of the H feature in a HD is resolved at the level of domain expression (34).

\begin{equation}
\text{(34) Depression constraint grammar}
\text{Express}_L \gg \text{Express}_H
\end{equation}

As always, short stems (2-\(\sigma\), 1-\(\sigma\)) require special treatment: both expression constraints (34) can be satisfied across a long penult (35a), and also across any other contoured low-high syllable, though seeming to be phonologically simultaneous (35b). Depression is modelled by a L feature domain, enclosed in {...}.

\begin{equation}
\text{(35) Rising L-H tone}
\begin{align*}
a. & \text{ si-ya-vu\={u}na } & \text{ si-ya-}[\{\text{vu}\}\text{\={u}}]na & \text{ we harvest} \\
b. & \text{ si-yaa-d\={a}} & \text{ si-yaa-}[\{\text{d}\\text{\={a}}}] & \text{ we eat}
\end{align*}
\end{equation}

Tone domains, both HD and LD, are continuous, that is, they obey locality (36). Even though the expression of a HD which contains a nested LD is disjunctive (36a), the domain structure itself is not disjunctive (36b).

\begin{equation}
\text{(36) Phuthi tone domains are structurally continuous}
\begin{align*}
a. & \left[\text{H}_\alpha \sigma \ldots \{1_\beta \sigma \sigma \ldots\} 1_\beta \sigma \ldots \sigma \right]_{H_\alpha} \\
b. & *\left[\text{H}_\alpha \sigma \sigma \ldots\right]_{H_\alpha} \left\{1_\beta \sigma \sigma \ldots\right\}_{L_\beta} \left[\text{H}_\alpha \ldots \sigma \right]_{H_\alpha}
\end{align*}
\end{equation}

Robust evidence for the prosodic autonomy of the depression feature is found in the extended depression patterns: anticipation (Chapter 7 §7.3); and shift and block (§7.4). Depression anticipation involves realigning the LD left-edge to a morphological target (stem left-edge), as in (37).

\textsuperscript{12} Depression (low) is also triggered by other lexical, morphological and grammatical factors—to follow in (47, 49, 52, 58) below.
(37) **Depression anticipation**

a. [kú-|ladze|l|fis|aana] to cause to follow each other
b. [bá-yá-|ladze|l|fis|aana] they cause to follow each other
c. [kú-|limalimage|lá|n|a]ni|sa to help cultivate indiscriminately now and then for e.o.
d. [bá-yá-|limalimage|lá|n|a]ni|sa they help cultivate indiscriminately now and then for e.o.

Shift and block patterns address the HD right-edge. In the shift pattern, the analytic challenge is to ensure the following: (a) the rightmost HD syllable (‘Head’, cf. §8.2.3 below) must be included in the HD; (b) the antagonism between LD depression and HD must continue to be resolved in favour of L expression (as in 34 above); (c) the right edge of the HD must be expressed as H, that is, there is an expression requirement on the HD right edge. The only possible response to these three criteria is to minimally *expand* a HD rightwards by one mora (shift), and not to shrink it.

Shift data is given in (38), modelled with the constraint set in (39), where **HEAD** is understood to be the ‘otherwise-rightmost-HD-syllable’, that is, the would-be right edge, if that edge were not also L (depressed). Expansion of the HD right edge is an absolutely inviolable requirement (cf. (39): **EXPRESS**_**_EDGE_**); the **HEAD** position (here: antepenult) *must* be included in the HD (that is, the HD cannot be shrunk to exclude a depressed **HEAD** position); a L feature must be expressed (**EXPRESS**_**_L_**) at the cost of an otherwise H syllable inside a HD, even in the head position.

(38) **Shift**

a. [bá-yá-|vu|fis]isa they help open
b. [bá-yá-|mabhe|tela] they delay
c. si-ya-[|tshege|lá]ana we buy for each other
d. si-[|tshege|lé]ene we have bought for each other

(39) **Shift analysis**

**EXPRESS**_**_Edge_** >> **Head**_**H_** >> **EXPRESS**_**_L_** >> **EXPRESS**_**_H_**

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(40) **Block**
   a. [bá-yá-{vú}]{gii.sa} they cause to agree
   b. [bá-yá-{ladzá}]{gii.sa} they help fetch indiscriminately
   c. si-ya-{{tshegá}]{gii.sa} we cause to buy indiscriminately
   d. si-{{tshegá}]{gii.}ye we have bought indiscriminately

Block data is given in (40), modelled with the single constraint addition of the L/H clash instantiation *L-in-H* (41), ranked comprehensively in (41f). All data in (38, 40) contains a single underlying H sponsor: either 3p prefix *bá-* (a,b) or a lexical stem H (c,d).

(41) **Block analysis**
   a. Express_Edge >> *L-in-H* better to express the right edge than exclude L
   b. Max-L >> *L-in-H* no underparsing L to satisfy H/L domain antagonism
   c. Head_H >> *L-in-H* better to include Head position, even if L
   d. *L-in-H >> WSA-Lf (L)* better to bar L from being inside HD, if it is not sponsored inside the HD
   e. *L-in-H >> Express_L* better to exclude L from within HD, rather than faithfully express any number of LDs that are found inside a HD.

   f. Express_Edge, Max-L, Head_H >> *L-in-H >> WSA-Lf (L), Express_L

The depressor data above in (37, 38, 40) is from the infinitive (37a-c), present indicative long form (37d, 38a-b, 40a-b) and long perfective (38d, 40d), but the patterns of anticipation and shift/block relate to any HD constructed according to the parameters already seen in Chapters 4 to 6 (here: §8.1.1 to §8.1.3); cf. Chapter 7 §7.4 Tableau 3 (67) and Tableau 4 (69) for the full range of shift/block patterns. Shift and block operate on any depressed HD right-edge (any pre-antepenult; antepenult, penult or ultima).

Importantly, in §7.4.3.2, the Head position of every HD is selected by the nested Head constraint (42a), in combination with the constraint requiring that a domain head be expressed inside the domain: Head_H (42b). Thus, contra Cassimjee (1998), the shift phenomenon requires no reference to process or derivation or non-declarative architecture (cf. lengthy discussion in §7.4.3.1-§7.4.3.5).
(42) Ensuring proper Head selection
(a) \textbf{Head-HD} (Head,)
\[
\text{Head,} = (*A \text{E} > > \text{NonFin} (\pi), > > \text{HD-Min}, > > \text{AvoidProm}(\pi), > > WSA-Rt(\pi), > > BA-Rt,)
\]
The (right edge of the) Head of domain X is the position selected by the interaction of these six constraints, subject to paradigm $\pi$-specific ranking of a right-edge subset.

(b) \textbf{Head-in-HD} (Head-H)
\[
\text{Head-H} \in \text{HD,}
\]
The Head of every HD must be included in the HD of which it is the Head.

In §7.5, it is shown that there is a minimality effect on the LD exactly parallel to HD minimality (43), though LD minimality is not fully general.

(43) LD Minimality
\begin{enumerate}
  \item mū-tfwáná-nyaana a tiny child citation form (no depressed $\sigma$)\textsuperscript{13}
  \item \{gu-mu\}-tfwáná-nyaana it is a tiny child default copula form: depressed post-depressor syllable
\end{enumerate}

The LD minimality (LD-M\textsubscript{IN}) facts lead to a second\textsuperscript{14} constraint paradox (44): the LD-M\textsubscript{IN} rankings in (44a-b) force a conflict, since we also know (44c) from §8.1.1, resulting in the impossibly ranked set in (44d).

(44) LD-M\textsubscript{IN} rankings
\begin{enumerate}
  \item NonFin, AvoidProm $>$ > > LD-Min LD cannot extend to either the penult or ultima
  \item LD-Min $>$ > > Express_H Minimally extended LD better than all Hs expressed
  \item Express_H $>$ > > NonFin, AvoidProm
  \item ? NonFin, AvoidProm $>$ > > LD-Min $>$ > > Express_H $>$ > > NonFin, AvoidProm
\end{enumerate}

This is resolved with yet another domain-specific constraint instantiation (45).

(45) Resolving LD-M\textsubscript{IN} paradox
\[
\text{NonFin}_{LD}, \text{AvoidProm}_{LD} \gg \text{LD-Min} \gg \text{Express}_H \gg \text{NonFin}_{HD}, \text{AvoidProm}_{HD}
\]

\textsuperscript{13} Morpheme structure in this data is set is as follows: mū- NOUN CLASS 1 PREFIX + -tfwáná- ROOT + -nyaana DIMINUTIVE SUFFIX. Copulas, e.g. (43b), are preceded by a copula prefix, e.g. gu-.

\textsuperscript{14} The first paradox was the HD-M\textsubscript{IN} ranking set in Chapter 6, which required that a paradigm-specific HD-M\textsubscript{IN}\textsubscript{SUBJUNC} constraint be generated to account for minimality in the short 2-$\sigma$ stems (cf. §8.1.3, and Chapter 6 §6.2.2.3).
In §7.6, three types of depression grading are distinguished, termed normal depression, masked depression and quasi-depression. The (lexically H) 1ps OP -ği- has the expected normal depression properties (46), that is, it behaves as a depressor in all contexts (much as lexically depressed consonants do, cf. preceding sections here, and in Chapter 7).

(46) 1ps OP induces shift / block
a. li-ya-[-[ği] - lí]ima you (pl.) cultivate me depressor shift off OP
b. li-ya-[-[ği] - [vu]lé]ela you (pl.) open for me depressor shift off segmental depressor trigger (head)
c. li-ya-[-[ği] - [bhee]ka you (pl.) look at me depressor block at OP/stem boundary (between head and post-head)

But there are ‘masked prefixes’ that indicate a toneless/L link, such as in the remote past paradigm (47a-b), domained in (47c-d), where instead of normally toneless 2ps u- contrasting H 3ps u-, the tone contrast has been reconfigured to one of voice: depressed 2ps waá- vs. non-depressed 3ps wáá-.

(47) Toneless 2ps prefix triggers depression (remote past)
   a. wáá-li i-má you cultivated 2ps
   b. wáá-li i má s/he cultivated 3ps
   c. [wa]-[li i ][má] you cultivated 2ps
   d. [wáá]-[li i ][má] s/he cultivated 3ps

I propose that all 2ps SP (not OP) instances of u- or wa- (from *u-a-) are in fact underlyingly breathy/depressed. In paradigms where 2ps u- is toneless and not H (unlike in the distributionally uncomomner case, such as the remote past in (47)), it is an open question whether the non-H 2ps u- is merely toneless, or also breathy/depressed (u-).

The choice of lexical toneless/L stem -lima ‘cultivate’ or -hlaba ‘stab’ is immaterial, though when combined with the 1ps OP, ‘cultivate me’ is semantically more marked in real discourse than ‘stab me’. In Chapter 7 §7.6.2 and §7.6.3 I use both stems; here, I have used only ‘cultivate’ for purpose of expositional clarity and simplicity.
Finally, I investigate whether the strange case of OPs can also be supported as OPs being underlyingly breathy/depressed (that is, lexically L), in which case the anti-expression of OPs as H (cf. Chapter 5 §5.4, and §8.1.2 above) would become an explicable phenomenon. But it quickly becomes clear that non-1ps OPs are not generally breathy/depressed (48b vs. 48c), even though in many cases the data is potentially ambiguous (48d-g, but *not* 48c); thus, the anti-expression account in §8.1.2 above is retained—albeit not entirely satisfactory.

(48)  **No depressor shift off non-1ps OP**

a. {l|i}-ya-{{g|i}}-líima you (pl.) cultivate me
b. {l|i}-ya-[bá]-líima you (pl.) cultivate them  Contrast >> *Express OP >> Express H
c. *{l|i}-ya-{{ba}}-líima you (pl.) cultivate them
d. si-ya-[ba]-líima we help them cultivate *Express OP >> Express H
e. si-ya-{{ba}}-líima we help them cultivate
f. si-ya-[ba]-bóóna we see them *Express OP >> Express _H
g. si-ya-{{ba}}-bóóna we see them

Worse, the OP appears to block shift onto itself in some cases such as the past subjunctive (49a), suggesting again that it may be depressed, and yet it does not trigger shift onto the penult (49b).

(49)  **Past subjunctive, with (depressed?) OP**

a. ...bá'-tí-liima  [{ba}]-[tí]-líima ...and they cultivated them
b. *...bá'-tí-liima  * [{ba}]-[tí]-líima ...and they cultivated them

The conclusion reached is that the OP is not lexically depressed; rather, there are highly paradigm-specific properties as to which aspects of depression the OP displays (cf. the depression cline in (60) below, and in §8.3.10). Moreover, it is concluded that depression is not reducible to grammatical insertion of downstep (cf. Chapter 7 §7.6.3.1 footnote 102).
In §7.7, I examine what appear at first to be two types of domain-structural anomaly\(^{16}\): shift-induced domain overlap (§7.7.1) and domain fission (§7.7.2). These are the only Phuthi data sets that suggest such feature domain incoherence. In both cases, the apparent anomaly of these marked tone patterns is resolved within the already elaborated theoretical domain structure of ODT. In the first case, Phuthi is argued to display sponsor unincorporation, that is, where the H sponsor syllable is not incorporated in the parsing domain (HD): (50a) has non-breathy prefix \(k\)á- which causes no unincorporation (that is, no such apparent shift); (50b-c) have the depressed H prefix \(g\)i- and resultant \(-b\)ú- on the following syllable. This is analysed in (50b) as a case of unincorporation (the only one in Phuthi), where the commencement of the stem HD is delayed until \(\sigma\)2 -\(\nu\) (which is in turn lowered by being in the anticipation domain set up by the depressor in stem-\(\sigma\)3); this is not analysed as (structurally incoherent) shift in (50c).

(50) **Unincorporation (participial)**

- a. \(k\)á-\(b\)ulugi\(s\)i\(s\)i\(s\)a  \([\{k\}]-\{b\}ulg\)i\(s\)f\(s\)i\(s\)a  him/her helping save intensively
- b. \(g\)i-\(b\)ulugi\(s\)i\(s\)i\(s\)a  \([\{g\}]-\{b\}ulg\)i\(s\)f\(s\)i\(s\)a  me helping save intensively
- c. ... *\([\{g\}]-\{b\}ulg\)i\(s\)f\(s\)i\(s\)a ... 

Perhaps even more strangely, a breathy (lexically depressed) H prefix preceding a toneless stem triggers two disjunctive instances of a single lexical tone feature H (51b=c,51e=f), that is, the H feature appears to have two reflexes: one at the stem boundary, and one in the stem; whereas, in the same paradigm, where the participial SP \(k\)á- is not breathy (51a,d), the expected HD expression is encountered, with all pre-depressor stem syllables failing to express as H.

(51) **Disjointed HD**

- a. ...\(k\)á-\(l\)imalimag\(s\)i\(s\)a  him/her intensively cultivating indiscriminately
- b. ...\(g\)i-\(l\)imalimag\(s\)i\(s\)a  me intensively cultivating indiscriminately
- c. ...*\([g\)i\]-\(l\)imalimag\(s\)i\(s\)a ... 

---

\(^{16}\) Both these structural ‘anomalies’ are considered again from the point of view of their irregular domain/expression relationship in §8.3.7 below.
But the analysis that resolves the structures in (51c,f) invokes a pattern that must refer to both morphology and phonology: obligatory prefix head expression. That is, a second head/edge intonational phonological constraint, `EXPRESS_PREFIX` (which addresses the proper expression of what can be called the prefix head), requires the prefix to be expressed, and failing this, allows minimal misalignment of prefix expression to the stem-initial syllable. Like `EXPRESS_EDGE`, `EXPRESS_PREFIX` is very highly ranked. As with unincorporation, its minimal outranking (51a-f) reduces the leftwards limit for the realignment of WSA-LF (LD).

In §7.8.1, there is a lengthy, detailed examination of tone and voice in a single paradigm: the present negative (a grammatical tone σ2 paradigm). A number of insights emerge from this section. Most saliently, the negative of toneless stems alone is audibly and considerably downstepped relative to the preceding prefix H (52a-c); the penult of toneless stems appears (partially) depressed: it blocks depressor-shift onto itself (52c); yet it does not trigger shift off of itself (52d). The H stems (52e-h) are offered for comparison, and do not participate in the depressorlike patterns of toneless/low stems.

(52) **Present negative**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>aká-`líími</td>
<td>s/he doesn’t cultivate</td>
</tr>
<tr>
<td>b.</td>
<td>aká-li’baáli</td>
<td>s/he doesn’t forget</td>
</tr>
<tr>
<td>c.</td>
<td>agí-`líími</td>
<td>I don’t cultivate</td>
</tr>
<tr>
<td>d.</td>
<td>*aká-`límí...</td>
<td>s/he doesn’t cultivate...</td>
</tr>
<tr>
<td>e.</td>
<td>aká-bóóni</td>
<td>s/he doesn’t see</td>
</tr>
<tr>
<td>f.</td>
<td>aká-bóñíisi</td>
<td>s/he doesn’t show</td>
</tr>
<tr>
<td>g.</td>
<td>agi- bóóni</td>
<td>I don’t see</td>
</tr>
<tr>
<td>h.</td>
<td>*aká-bóni...</td>
<td>s/he doesn’t see...</td>
</tr>
</tbody>
</table>

Cf. the full cline of depressor effects summarised in §8.3.10 below.
The claim (§7.8.1.3) is that the toneless stems in the present negative display evidence of an abstract \textsc{L}_{\text{gram}} feature, which grammatical \textsc{L} is parsed \textit{in situ} on the penult and \textit{not} realigned to the stem left-edge, unlike \textsc{l}_{\text{lex}}\textsuperscript{18}. This \textsc{L}_{\text{gram}} is responsible for preventing shift off the depressed 1ps prefix onto stem \( \sigma_1 \) in (52c). This is a second instantiation of quasi-depression (cf. (49) above), as this \textsc{L}_{\text{gram}} has only partial depression properties (although shift onto it is forbidden, there is no shift from the penult to the ultima, nor block).

To ensure that \textsc{L}_{\text{gram}} is parsed only on toneless stems (52a-c; cf. §7.8.1.5), the grammatical \textsc{L} parse constraint \textsc{Max \textsc{L}_{\text{gram}} (}\pi\text{)} is subject to a clash effect at the stem level, \(*\textsc{(H}_{\text{lex}} , \textsc{L}_{\text{gram}})_{\text{stem}}\) or \(*\textsc{StemClash}\), ranked as in (53a). Further (§7.8.1.6), the \textsc{L}_{\text{gram}} fails to insert if the stem already contains a \textsc{l}_{\text{lex}} syllable, that is, a syllable with a (lexically) depressed onset; an OCP instantiation prevents insertion in the ineligible stems: \(*\textsc{AE (L}_{\text{lex}}, \textsc{L}_{\text{gram}})(\pi) = *\textsc{AE (L}_{\text{L/G})(\pi)}\).

(53) **Grammatical \textsc{L} parsing**
   a. \*\textsc{StemClash} >> \textsc{Max \textsc{L}_{\text{gram}} (}\pi\text{)} >> \textsc{Dep \textsc{L}}
   b. \textsc{Max \textsc{L}_{\text{lex}}}} >> *\textsc{AE (L}_{\text{L/G})(\pi) >> \textsc{Max \textsc{L}_{\text{gram}} (}\pi)}

\textsc{OPs} in this paradigm (§7.8.1.7) express as \textsc{H} (54), indicating a cophonology here where \*\textsc{Express\_OP} is reranked lower than in phrase-final indicative paradigms (Chapter 4, §8.1.2 above).

(54) **\textsc{OPs express \textsc{H} in the present negative**
   a. aká-tí’-líími a[ká-tí]-[líí]mi \( s/he \) doesn’t cultivate them
   b. aká-bá-li’múísi a[ká-bá]-lí[i]múísi \( s/he \) doesn’t help them cultivate
   c. aká-bá-bóóni a[ká-bá-bóó]ni \( s/he \) doesn’t see them
   d. aká-bá-bónúísí a[ká-bá-bónúí]si \( s/he \) doesn’t show them

In §7.8.1.7 (first referred to in §7.8.1.8), another OCP effect, \*\textsc{AE (L}_{\text{lex}}, \textsc{L}_{\text{lex}}), drives the fusing of adjacent \textsc{LDs}. Thus, the data in (33g,i) from earlier does not reflect the unfused domains given in (55a,c) but rather the fused domains in (55b,d), an abstract effect that permits

\[\text{\textsuperscript{18} The distinct behaviour of \textsc{L}_{\text{lex}} vs. \textsc{L}_{\text{gram}} is summarised in §7.8.1.4 Tableau 19 (257). And cf. summary in §8.3.10 (99).}\]
the adjacency of otherwise serially conflicting tone specifications (and which effect is distinct from the insertion of grammatical L on the penult of toneless/low stems, cf. constraint in (53b) above).

(55) Lexical L fusion
   a. *[kú-{g}u} {dzî} sîsê]laana to shear carefully for e.o.
   b. [kú-{gùdzî} sîsê]laana to shear carefully for e.o.
   c. *si-ya-{[ga} {dzi} sê]laana we help stamp for e.o.
   d. si-ya-{[gadzi} sê]laana we help stamp for e.o.

Further, the constraint which fuses adjacent lexical and grammatical L (cf. 54a above), is only effected across the stem boundary in 2-σ toneless stems (56a vs. 56b,c), because the grammatical L is parsed only on the penult much as adjacent HDs fuse (in Chapter 5 §5.2; §8.1.2 above). There is no LD fusion in (56b), because the L sponsors are not adjacent; in (56c), there is no grammatical L at all.

(56) Fusing LDs: SP and stem
   a. aká-gi-ľîmî a[ká]-[Hx,Hy{L_G}gi-ľîm}Hx,Hy]bi s/he doesn’t cultivate me
   b. aká-gi-ľîbátﬁsi a[ká]-[Hx{L}gi-ľîHx,Hy{H_L}btﬁ}Gsi]si s/he doesn’t delay me
   c. aká-gi-ľîbóni a[ká]-[Hx,Hy{L}gi-ľîbó}Hx,Hy]ni s/he doesn’t see me

But, as shown in §7.8.1.9, OPs also fail to express H not just if the OP is 1ps, but if the SP is 1ps: depressed 1ps -gi- implements LD minimality (cf. 43-44 above; §7.5), forcing the OP to be L in H stems (57a-b), but not for toneless/low stems (57c-d), because *AE (L_L/L_G) (π) >> LD-MIN.

---

19 There is plausibly (but uninterestingly) fusion between lexical and grammatical L within a toneless/low stem in the present negative with antepenult lexical depressor.
(57) **LD minimality**

a. *agi*-ba-bóóni  
   a[gi-[ba]-bóóni]  
   I don’t see them

b. *agi*-ba-bánútísi  
   a[gi-[ba]-bánútísi]  
   I don’t show them

c. *agi*-tí-liímí  
   a[x,y{ gi }- tí]_{x,y}[-{ líí}]_{mi}  
   I don’t cultivate them

d. *agi*-bá-li’mútísi  
   a[x,y{ gi }-bá]_{x,y}-li[-{ múí}]_{si}  
   I don’t help them cultivate

The already established clash constraint, *L-IN-H.*, has been invoked and ranked to effect depressor block, in (40-41) above, and in §7.4. Out of this falls a full fusion typology, as presented in §7.8.1.9—(292), completed in (307)—and given here as (58) below: *all* possible configurations of L domains nested within HDs are considered. Essentially, the presence of a LD in the second of two potentially fusible adjacent HDs inhibits fusion.

(58) **Fusible HD structures (reflecting all possible nested LDs)**

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [x⋯]<em>{x} [y⋯]</em>{y}</td>
<td>[x_{y⋯}⋯]_{x,y}</td>
</tr>
<tr>
<td>two adjacent HDs, no depressed syllables</td>
<td></td>
</tr>
<tr>
<td>(cf. Chapter 5 §5.2): fusion.</td>
<td></td>
</tr>
<tr>
<td>b. [x{⋯}⋯]<em>{x} [y⋯]</em>{y}</td>
<td>[x_{y⋯}⋯]_{x,y}</td>
</tr>
<tr>
<td>two adjacent HDs, depressed σ at left edge</td>
<td></td>
</tr>
<tr>
<td>of HD_{x} (cf. §7.8.1.8 (287)): fusion.</td>
<td></td>
</tr>
<tr>
<td>c. [x⋯{⋯}]<em>{x} [y⋯]</em>{y}</td>
<td>[x_{y⋯}⋯]_{x,y}</td>
</tr>
<tr>
<td>two adjacent HDs, depressed σ at right edge of HD_{x};</td>
<td></td>
</tr>
<tr>
<td>HD_{x}/HD_{y} domain fusion</td>
<td></td>
</tr>
<tr>
<td>subsumes any form of successful or failed</td>
<td></td>
</tr>
<tr>
<td>unincorporation (cf. §7.8.1.9, (290f-h)).</td>
<td></td>
</tr>
<tr>
<td>d. [x⋯]<em>{x} [y⋯]</em>{y}</td>
<td>[x⋯]<em>{x} [y⋯]</em>{y}</td>
</tr>
<tr>
<td>two adjacent HDs, depressed σ at left edge of HD_{y};</td>
<td></td>
</tr>
<tr>
<td>no fusion (cf. §7.8.1.7, §7.8.1.8,</td>
<td></td>
</tr>
<tr>
<td>§7.8.1.9, including (290e): SP fails to fuse</td>
<td></td>
</tr>
<tr>
<td>with depressed OP).</td>
<td></td>
</tr>
<tr>
<td>e. [x⋯]<em>{x} [y⋯]</em>{y}</td>
<td>[...][⋯][⋯]_{μ}</td>
</tr>
<tr>
<td>or [...][⋯][⋯]_{μ}</td>
<td></td>
</tr>
<tr>
<td>two adjacent HDs, depressed σ at the right</td>
<td></td>
</tr>
<tr>
<td>edge (head) of HD_{y} (cf. (303)): no fusion.</td>
<td></td>
</tr>
<tr>
<td>f. [x⋯{⋯}]<em>{x} [y⋯]</em>{y}</td>
<td>[...][⋯]<em>{x} [...][⋯]</em>{x}</td>
</tr>
<tr>
<td>or [...][⋯]<em>{x} [...][⋯]</em>{x}</td>
<td></td>
</tr>
<tr>
<td>two adjacent HDs, depressed σ at right of</td>
<td></td>
</tr>
<tr>
<td>HD_{x} : possible fusion.</td>
<td></td>
</tr>
</tbody>
</table>

---

20 This input notation is informal: domains are in fact regarded not to be part of the phonological underlying representation (cf. Chapter 3 §3.3); they are surface indicators of underlying and ‘spread’ tone location, and the possible scope of (re)alignments. These input ‘domain’ edges merely signal the left and right edges of (a series of adjacent) H tone ([, ]) and L tone ([, ]) sponsors. The fusion typology is in part refined in §7.8.1.10 (307).

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The extended discussion of the present negative paradigm is useful for seeing the full range of tone/voice effects, and also for confirming that certain paradigm-specific claims have to be made, e.g. \*L-in-H is insufficient to capture the full range of L/H clash resolution, and an additional more highly ranked locally conjoined constraint (\textsc{Express}_L \& \textsc{Express}_H) must be invoked to eliminate candidate (310n) in Tableau 20, Chapter 7 §7.8.1.10 (cf. footnote 199 in that section).

For a final time, it is speculated (in §7.8.1.11) whether the H vs. toneless lexical stem contrast can be reinterpreted as H vs. L (retaining the interpretation of L as depressed). The issue seems unresolvable, however, with the available data.

In §7.8.2, I consider further instantiations of lexical depression (that is, overt depression/breathy voicing, modelled by \textsc{L\_Lex}, not \textsc{L\_Gram}) but where the insertion of the depression feature is conditioned prosodically and segmentally in up to three ways: (a) insertion is on the underived stem penult (already seen for the common 2\(\sigma\) cases seen above in the present negative; and cf. §7.8.1); (b) the insertion site optimally contains a segmentally sonorant (glide/liquid/nasal) onset; (c) depression insertion on prefixes may also be constrained morphologically to lexical sets (in ‘strong’ noun classes—as opposed to weak noun classes, cf. §7.8.2.3). A small cross-section of data is given in (59)\(^{21}\).

(59) Further lexical depression
a. kú-yhaála to refuse verb (H)
b. -nyheéti many adjective (underived stem): H penult
c. -oóhle all Quantitative-1 (cf. Chapter 2 §2.2.1.1 (46))
d. g-oóhle, wh-oóhle, s-oóhle, lh-oóhle, b-oóhle, yh-oóhle, hh-oóhle, t-oóhle, k-oóhle
e. wá-, yá-, (f)á- ASSOCIATION associative prefix (weak classes 1,1a,3;4,9,6)
     (incl: ‘of, for’)

\(^{21}\) In the full discussion in §7.8.2, I comment at some length in footnotes 203-220 on the etymological sources for these innovative lexical depression items, since in almost all instances Phuthi is at odds here with the rest of Nguni (and Sotho).
I propose a single binary constituent (§7.8.2.2), implemented by Depression Accent Projection (DAP), to target the penult for depression insertion. In §7.8.2.3, yet further details of grammatical and morphological depression insertion are examined.

Finally, I propose in §7.8.3 to draw together the several sets of conditions where depression occurs either lexically or grammatically under a single discourse/morphological criterion of ‘salience’, where salience means ‘phonologically/morphologically salient for speaker or for hearer, or for both’. ‘Salience’ triggers depression enhancement, which depression is realised across a continuum of possible effects (60a-f), the most robust phenomenon remaining lexical (i.e. consonant-triggered) depression (60a). This typology is taken from Chapter 7 §7.8.3 Tableau 21 (320); it is reprised, with the depression parameters further abstracted, as the depression cline in §8.3.10 (101) below.

(60) Depression Typology

<table>
<thead>
<tr>
<th>Depression type</th>
<th>Salience conditions</th>
<th>strong/weak relevance?</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lexical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) consonant-triggered (inherent)</td>
<td>no&lt;sup&gt;22&lt;/sup&gt;</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>(b) lexical enhancement (stem penult)</td>
<td>yes</td>
<td>yes (mostly)</td>
<td>no</td>
</tr>
<tr>
<td>(c) noun copula prefix</td>
<td>no</td>
<td>yes (Sgx: all classes; Mp: weak classes only)</td>
<td>no</td>
</tr>
<tr>
<td>(d) associative prefix</td>
<td>no</td>
<td>yes (except Cl.6)</td>
<td>yes</td>
</tr>
<tr>
<td>(e) past subjunctive OP</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td><strong>Grammatical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) pres negative / remote past (stem penult)</td>
<td>yes</td>
<td>(yes)</td>
<td>no</td>
</tr>
</tbody>
</table>

<sup>22</sup> In the ‘penult’ and ‘sonorant onset’ columns of this tableau, ‘no’ means ‘not necessarily’.

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(60c) indicates that for one dialect (Sigxodo) there is a copulative prefix ɣy- (with sonorant onset), which not only serves as the general predicator for three noun classes (Classes 2b,4,9), but which can preprefix any segmental copula from any noun class.

(60f): ‘yes’ is in parentheses for the H tone column, since although the penult in the present negative is H because this paradigm targets the penult as the rightwards extent of the grammatical H, in very short stems (1σ) there is no penult, and the ultima is not H.

It should be noted that non-lexical salience (60c-f) has a plausible origin outside the phonology: in discourse strategies linked to sociolinguistic and pragmatic categories (cf. Chapter 7 §7.8.2.1 footnote 220). These origins and a plausible emergence of the system in Phuthi are not discussed in this dissertation.

Finally, in §7.9, Register Domains are resumed and completed: the fourth register principle (cf. the earlier discussion in Chapter 5 §5.5—above in §8.1.2) is added, in the light of the tone/voice discussion in Chapter 7: ‘every depressor inside a HD—that is, every nested LD right edge—is followed by a RD left edge’ (61a-b).

(61) Post-depressor RD edge
a. | [kû-{v} | lê]laana to open for each other post-depressor syllable downstepped relative to prefix H; toneless/low stem

b. | [kû-{gûdzj} | sé]laana to help shear for each other adjacent LDs fused; post-depressor σ downstepped; toneless/low stem

8.2. Composite Theoretical Insights

Having summarised the contents of the whole empirical and theoretical work of Chapters 4 through 7, I reflect in the present section on three interrelated prosodic phenomena that emerge from the range of discussions in those earlier chapters: phonological and morphological minimality effects (§8.2.1); the nature of phonological prominence, as implemented at two salient prosodic boundaries: the antepenult-penult, and the penult-ultima (§8.2.2); the metrical nature of tone feet, specifically the notion of metrical headedness invoked by the prominence
properties of a tone/voice grammar as instantiated in Phuthi (§8.2.3), and supported by comparative parse/express patterns from the remainder of Nguni.

8. 2. 1. Minimality

Prosodic minimality (cf. McCarthy & Prince 1986, 1993a) in Phuthi is manifest both in the phonology and the morphology, suggesting that it is an example of a distributed phenomenon, much as will be seen (more robustly) for prominence in §8.2.2.

The instantiation of minimality is not identical in the two cases. Phonological minimality is instantiated by the HD-MIN constraint (cf. §8.1.1) requiring every H tone domain to be minimally two syllables long (62a-b). Morphological minimality is instantiated for reduplicates in the reduplicate form (cf. §8.1.1), which must be exactly two syllables long (62c), and if there is insufficient prosodic material in the base, a dummy syllable -yi- is inserted to satisfy this minimality requirement (62d-e)—the reduplicate material is given in italics. Thus, phonological minimality (a minimally binary H domain) is optimal, but not obligatory, whereas morphological minimality (a fixed binary reduplicate foot) is mandatory.

(62)  Minimality
a. si-ya-[bó núí]sa we show present indicative: minimality >> prominence anti-align
b. *si-ya-[bó]niisa minimality violated
c. si-ya-[bónbó núí]sa we show now & then cf. base si-ya-[bó núí]sa
d. si-ya-[phá]-yii-pha we give now & then cf. base si-ya-[phá]
e. *si-ya-[pháá]-pha minimality violated

8. 2. 2. Prominence

The insight that emerges from the preceding four chapters, as recapitulated in §8.1 above, is that phonological prominence is composite, distributed and paradigm-sensitive.

By distributed and paradigm-sensitive, I indicate that a single prominence phenomenon (e.g. the salience of the antepenult/penult boundary) is manifest in different ways across different paradigms, for example, (a) the tone foot targets the phrase-final word-antepenult (after the application of NONFIN and AVOIDPROM) in many indicative paradigms; (b) the weight trochee foot targets only the phrase-final word-penult; (c) the EndLow window applies only to the last two
syllables in a phrase-final word; (d) the depression feature is inserted in a number of individual lexical items and even some paradigms, almost always on the penult. I enumerate these distinct prominence instantiations in what follows.

By claiming prominence to be composite, I mean that it emerges from constraint interaction, rather than being a single lexical property, or a single phonological condition. For example, the antepenult target is selected in indicative paradigms (cf. §8.1.1) through extrametrical misalignment (\textsc{NonFinality}) and further misalignment from the heavy penult (\textsc{AvoidProm}). Prominence compositeness is examined in the subsections to follow: §8.2.2.1 to §8.2.2.7. We will conclude by saying that stress in Phuthi amounts to the cumulative set of align and anti-align conditions that require reference to the antepenult-penult boundary (and also in part to the penult-ultima and ultima-edge boundaries).

A question underlying the prominence discussion (and which I reflect further on under headedness, cf. §8.2.3 below) is what role, if any, metrical structure may play in the tonology of Phuthi. The study of intersection of tone phonology with metrical phonology is nascent. The standard claim is that tone structure and metrical structure can interact (Downing 1990a, 1996, in press; Leben 2002), though some authors are more sceptical (Odden 2000). The extent of this interaction remains a matter for consideration. The claim in the sections that follow here is that the last two syllables in Phuthi together constitute a binary, left-headed foot\textsuperscript{23}.

We turn our attention now to a range of prosodic phenomena which together allow Phuthi prominence to emerge. Most have already been noted in §8.1. These phenomena (a) invoke the salient stress demarcation site in Phuthi: the antepenult-penult boundary (§8.2.2.1-§8.2.2.5), or (b) invoke the domain of the penult-ultima syllable sequence, in which a phenomenon must or must not occur (§8.2.2.6-§8.2.2.7).

\textsuperscript{23} It is no surprise to the Nguni-ist, or even general Bantuist, that the penult-ultima sequence in a word (or phrase) has special tone properties. This was observed early on by Beach (1924:94) for Xhosa, to which Phuthi is fairly closely related within the Nguni cluster: ‘[T]he tonetics of the last two syllables of a breath-group in X[h]osa, as well as in every Bantu language that I have examined, exhibits peculiarities not to be found in the rest of the sentence, and is therefore of very special importance’.
8. 2. 2. 1. Weight Accent Projection on the penult

In Chapter 4 (§4.1.4.4-§4.1.4.6) it has been shown that phrase-final words redundantly lengthen their penult syllable. This is true for all phrases in Phuthi. I have argued in §4.1.4.6 that a single right-aligned trochee (left-headed foot) selects the penult as the target for redundant length. This Weight-Accent-Projection (WAP) foot—modelled in (63a), instantiated in (63b)—satisfies three constraints: (a) ALIGN-Wd-Rt (that is, right-align to word edge); (b) RhType=T (trochee); (c) STRESS-TO-WEIGHT PRINCIPLE (SWP), that is, the stressed syllable (trochee head) is heavy (µµ).

(63) Weight Accent Projection foot
   a. \( \ldots (σ \ σ) \#_{pwd} \wedge \ \underline{µµ} \)
   b. [bá-yá-límísísé]laana ‘they cultivate intensively for each other’ weight-accent projection (WAP)

8. 2. 2. 2. Tone Accent Projection (TAP) to the antepenult

The second piece of structure that requires reference to a metrically salient position is the widescope alignment of the HD (= WSA-Rt (HD)), which aims for the right edge of a word, but is stopped short by the two anti-alignment constraints: NONFINALITY and AVOIDPROMINENCE (64). Specifically, AVOIDPROMINENCE (Chapter 4 §4.1.4.6 (55)) refers to anti-alignment of a HD with the WAP trochee head, that is, the heavy penult.

---

24 Under certain conditions (not considered in this work), an interrogative sentence frame allows penult length to be eliminated.
25 Significantly, the effective TAP projection to the antepenult is not across-the-board: as already pointed out in §8.1.3 (cf. footnote 2) above, grammatical paradigms can require alignment to the penult or even to the ultima. This grammatical alignment forces a distinct cophonology where the anti-edge constraints are ranked below general widescope right-alignment.
26 Downing (1990a, 1996) has proposed explicitly targeting the antepenult with a binary foot, misaligned to the word-edge by extrametrically (that is, by NONFINALITY). As pointed out in §4.1.4.6, this fails to link the antepenult target with the presence of penult weight, which link is crucial, since the alignment is to the penult itself when there is no penult weight (§4.5). One could term this binary foot a Tone Accent Projection, but I reserve that for the HD right edge as it falls out of NONFin and AVOIDPROM (cf. Chapter 4 §4.1.4.6).
Avoid Prominence (revised)

*Align (H, WAP-Head)
Don’t align a H tone with the head of a weight-accent projection (here: the penult).

Thus, WSA-Rt (HD) constrains its right edge to the antepenult, as it falls out of the NonFin >> AvoidProm >> WSA-Rt (HD) ranking. One could name this HD a Tone Accent Project (TAP) foot, as the tone domain aims for an edge (word edge), but is misaligned by the metrically accented property of the penult.

8.2.2.3. Depression Accent Projection (DAP) on the penult

In Chapter 7 §7.8.2.2 (also cf. §8.1.4 above), I propose a Depression Accent Projection (DAP), that is, a single trochee foot, which weakly27 selects the penult as the salient parse site for inserted lexical depression28 (65). It could be that the DAP selects the metrically prominent penult (cf. §8.2.2.1), but even when the penult is not heavy, the DAP continues to be in force for the lexical stems it applies to.

Depression Enhancement (Depression Accent Projection)

Align (L_lex, Lf, WAP, Head_{H, [son] onset})
Align the left edge of a lexical L tone with the head (left edge) of the trochaic weight-accent-projection, where the trochee head coincides with the combined properties of a tonally H syllable with a sonorant onset.

8.2.2.4. Hedged minimality at the antepenult-penult

The minimality condition identified for Phuthi (Chapter 4 §4.2), where an otherwise overshort 1-σ HD expands to the metrically heavy penult, fails where there is a morphological stem boundary between the antepenult and penult (§4.3). This condition is modelled with two local conjoined constraints (AvoidProm & _CrispStem), as in (66), preventing what appears to be the metrically overlapped configuration in (67), where the HD and the WAP foot are non-discrete.

---

27 The DAP selection of the penult is ‘weak’ because not all eligible sonorant penults become depressed. The effect can best be characterised as a tendency.
28 This is also the site for inserted grammatical L tone, e.g. in the present negative (§7.8.1).
AvoidProm & CrispStem

\*[\check{\sigma} + \check{\sigma}]_{HD}

\wedge
\mu \mu

No metrical overlap at prominence boundary

\*...\sigma (\sigma ] \sigma) #_{PWD} (\ldots) = \text{WAP foot}; \ldots] = \text{HD foot}

8. 2. 2. 5. Downstep (fusion failure) at the antepenult-penult

The OCP effect on adjacent HDs forces fusion (Chapter 5 §5.2, cf. §8.1.2 (13) above) in all cases (68a), except at the antepenult-penult juncture where there is also a morphological stem boundary and where the penult is heavy (68b).

8. 2. 2. 6. Declination: EndLow-\mu and EndLow-\sigma

EndLow refers to a moraic pitch declination requirement at the right edge of every phrase (Chapter 5 §5.3, cf. (14) above), but is also instantiable at the level of a lowered syllable in certain paradigms (cf. §8.1.3 (26) above). This declination must occur within the penult-ultima sequence, that is, within the same foot length as invoked for the preceding prominence phenomena. When there is no declination on the ultima or the penult from high to low, then the second mora of the penult H is altered from \check{\mu} to \check{\mu} (69d) to satisfy this parameter, satisfying EndLow-\mu.

Obligatory declination: EndLow

\begin{align*}
a. & \ldots\check{\mu} \check{\sigma} # \quad \text{penult low, ultima low} \\
b. & \ldots\check{\mu} \check{\mu} \check{\sigma} # \quad \text{penult high, ultima low} \\
c. & \ldots\check{\mu} \check{\mu} \check{\sigma} # \quad \text{penult low, ultima high} \\
d. & *\ldots\check{\mu} \check{\mu} \check{\sigma} # \Rightarrow \ldots\check{\mu} \check{\mu} \check{\sigma} # \quad \text{penult high, ultima high} \Rightarrow \text{penult 2nd mora low}
\end{align*}
I have suggested in Chapter 6 §6.2.2.3 (and cf. §8.1.3 above) that there is a phonologised form of declination, invoked by ENDLow-σ in paradigms where a second grammatical H is sponsored on the ultima, typically resulting in (70a), but also seen as (70b-c) in short 2-σ and 1-σ stems, in order that the declination requirement be met. This intonation requirement interacts with the strong desire to parse the rightmost grammatical H tone, which can still succeed in (70b), but cannot in (70c) due to the overriding primary need to decline (here: on the ultima; the penult is occupied by the first grammatical H)²⁹.

(70)  ENDLow-σ: grammatical paradigms  
   a. σ +... σ σ σ #  general pattern: declination satisfied on penult  
   b. σ + σ σ #  2-σ stems: declination satisfied on ultima  
   c. σ + σ #  1-σ stem: declination satisfied on ultima

8. 2. 2. 7. Sponsor failure in reduplication base foot

In Chapter 4 §4.4 (and §8.1.1 above), it was shown that a H sponsor does not reparse inside the base stem for 1-σ stems and 2-σ stems, that is, within the penult-ultima foot (71a-d). But 3-σ stems display minimality effects for the base sponsor, which sponsor is parsed prior to the penult-ultima dyad, but extended into the dyad (71e) in what I have claimed could be an output-output paradigm uniformity relationship, cf. §8.1.1 (9) above. In (71), the 2-σ reduplicate is inside <...> parentheses; the penult-ultima dyad is marked off by (...) parentheses; unreduplicated forms are given in italics.

(71)  No sponsor-reparsing in penult-ultima of base stem  
   a. # - <[σ] (σ> σ) #  si-ya-[phá]-yii-phá  we give now & then  si-yaa-[phá]  
   b. # -*<[σ] (σ> [σ]) #  *si-ya-[phá]-yii-[phá]  
   c. # - <[σ σ]> (σ σ) #  si-ya-[bóná]boona  we see now & then  si-ya-[bóóna]  
   d. # -*<[σ σ]> ([σ] σ) #  *si-ya-[bóná][bóó]na  
   e. # - <[σ σ]>[σ] (σ|σ) #  si-ya-[bóní][bóní]sa  we show now & then  si-ya-[bónií]sa  
   f. # -* - <[σ σ]>[σ](σσ) #  *si-ya-[bóní][bó]niisa

²⁹ I do not show here why the configuration σ + σ σ does not occur (argued to be due to a minimality effect on the first H tone). For detailed examination, cf. Chapter 6 §6.2.2.3 Tableau 6 (66).
The upshot of the seven phenomena in §8.2.2.1 to §8.2.2.7 is that all require reference to the metrically salient boundary between antepenult and penult syllables (in phrase-final forms), or to the penult-ultima as a domain of application (§8.2.2.6) or a domain of avoidance (§8.2.2.7).

These stress-related phenomena are not of even status within the system: §8.2.2.3 ‘Depression Accent Projection (DAP) on the penult’ and §8.2.2.6 ‘Declination: $\text{EndLow-µ}$ and $\text{EndLow-σ}$’ may be triggered by the metrical salience of the penult (for DAP), or be responding to this salience (for Declination), but just these two phenomena out of the seven persevere even when the penult is not heavy. That is, the assignment of lexical depression remains truly lexical, even when those stems are no longer phrase-final (and therefore the penult is no longer heavy). And moraic Declination must be satisfied for all words in all phrases; syllable Declination continues to operate regardless of phrase-position but only in certain paradigms (subjunctive, present relative).

Thus, these seven patterns constitute the complex (distributed, composite) implementation of stress in Phuthi, by defining the antepenult-penult boundary as salient in multiple instantiations, and by defining the penult-ultima dyad as privileged.

We now turn to evidence of right-headedness within unbounded tone feet that suggests not trochees (as we have seen in §8.2.2.1 for WAP feet), but—at a higher level of prosodic structure—iambs.

8. 2. 3. Headedness

Building on a twenty-year literature on stress and metrics, Hayes (1995) proposes that stress feet are universally constructed along three parameters (72).

(72) **Metrical foot constituency**

a. bounded (binary) or unbounded (non-binary): $(\sigma\sigma)(\sigma\sigma)(\sigma\sigma)$ or $(\sigma\sigma\sigma\sigma\sigma)$

b. headed (left or right): $(\sigma\sigma)$ or $(\sigma\sigma)$

c. directional (left-to-right, or right-to-left): $(\sigma\sigma)(\sigma\sigma\sigma)(\sigma\sigma\sigma\sigma)$ or $\sigma(\sigma\sigma)(\sigma\sigma)(\sigma\sigma)$

Thus, every stress foot in every language instantiates some combination of these parameters. Uncontroversially, every foot (bounded or unbounded) is headed (left or right). In the most restrictive claim, Hayes (1995:2ff.) claims that all bounded feet fall into the types moraic
trochee, syllabic trochee, and iamb. Not all metrical material need be exhaustively footed, but all metrical structure is headed.

The tone literature has not made clear claims about headedness, in part because tone domains do not behave the same as other prosodic domains (such as stress, length): in the case of tone, the parsed feature (H or L) can be distributed—that is, expressed—evenly across the entire domain, that is, on every potential tone-bearing unit in the domain, whereas this is not possible in stress systems. While this even distribution of tone is the default case in Phuthi, it not necessarily the case, as we shall see in §8.2.3.1 below.

It seems that tone languages can require access to either bounded or unbounded metrical feet. Before turning to headedness of unbounded feet in Phuthi, it is worth noting that a language such as Rwanda (Adisasmito & Donnelly 1993a,b, Donnelly 1993) requires a binary parsing mechanism, suggesting a role for bounded feet, parsed from left to right, but where there is no evidence of headedness. The data in (73) is from the present indicative short form (phrase-medial), where it is clear that (a) the H tone sponsored by the verb stem aligns left of its sponsor position to the left edge of the macrostem; (b) the macrostem includes the tense/aspect marker -ra- (corresponding to Phuthi -ya-), and any Object Prefixes (OPs); (c) despite the potentially expressable syllables inside the HD, syllables are only surface-expressed in pairs (73-d). Thus, in stems where there is an uneven number of syllables in the HD (73b,d), the last syllable at the HD right-edge is underexpressed.

In (73-74), OPs include: -du- ‘us’ (1pp), -mu- ‘him/her’ (class 1), -wu- ‘it’ (class 3), -ki- ‘it’ (class 7), -ha- ‘there’ (locative class 16). The noun class semantics of any particular OP in this list has no bearing on the phonology of the tone feet.

<table>
<thead>
<tr>
<th>(73)</th>
<th>Bounded tone feet in Rwanda</th>
<th>gloss</th>
<th>σs in HD</th>
<th>σs expressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>ba-[(rá-fá)]sha ...</td>
<td>they are helping...</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>b.</td>
<td>ba-[(rá-mú)-fá]sha...</td>
<td>they are helping her...</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>c.</td>
<td>ba-[(rá-mú)-(dú-fá)]shiriza...</td>
<td>they are helping her for us...</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>d.</td>
<td>ba-[(rá-há)-(mú-dú)-fá]shiriza...</td>
<td>they are helping her there for us...</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

‘Macrostem’, again, refers to the {OP+stem} complex, that is, the post-SP stem material (but excluding certain τ/Λ affixes, e.g. -ya-). Cf. comments in Chapter 2 §2.2.4.2 (footnote 224); Chapter 5 §5.4.2.2, §5.4.2.6; Chapter 6 §6.2.2.2; §6.3.3.2, and footnote 51; reference to structure in Chapter 7 §7.8.1.7 (footnote 165); §7.8.1.8 (288).
While it is clear that Rwanda parses bounded, left-to-right feet, it is not clear that the headedness parameters needs invoking. Neither of the two syllables in each foot dyad in (73) is perceptibly higher or louder or longer than the other. Hence, headedness appears to serve no particular purpose in Rwanda (for this data set).

Similarly, in (74), the Rwanda present relative paradigm requires a binary foot—but this time just a single foot (which could also be construed as ‘local spread’ in the autosegmental metaphor)—to be parsed at the left edge of the macrostem (with or without OPs). The single binary foot is sensitive to the stem edge proper (74b): it is subject to a C\text{RISP} effect much like the local conjunction effect in Phuthi overriding minimality (§8.1.1, §8.2.2.4 above; cf. Chapter 4 §4.3); yet in (74e-f), proper parsing of a single well-formed binary foot is preferred to a C\text{RISP}-respecting degenerate foot. Object Prefixes are as indicated for (73) above.

(74) Rwanda present relative: bounded, left-aligned tone foot
a. ba-gárúka... ba-[(gárú)]ka... they who return...
   b. ba-ki-gárúra... ba-[ki-(gárú)]ra... they who return it...
   *ba-[(ki-gárú)]ura...
   c. ba-kí-mú-garuríra... ba-[(kí-mú)]-garuríra... they who return it to him...
   d. ba-kí-há-mu-garuríra... ba-[(kí-há)]-mu-garuríra... they who return it to him there...
   e. ba-wú-skyá... ba-[(wú-skyá)]... they who grind it...
   *ba-[(wu-skyá)]...
   f. bá-skyá... (bá-[skyá])... they who grind...
   *ba-[(skyá)]...

Thus, as in Phuthi, proper foot construction in Rwanda interacts with prosodic morphological boundaries. Having claimed above that tone domains are not headed in the same sense that metrical domains are, because the parsing feature (e.g. H, L) is in the default case evenly distributed across all feature-bearing units in the domain, I now provide two types of evidence that support the claim that tone domains are headed, specifically right-headed, in Phuthi (and Nguni generally): the first (§8.2.3.1) is partially cross-linguistic evidence (Xhosa vs. Phuthi); the second (§8.2.3.2) emerges from the Head properties evident under tone shift/block conditions in Phuthi.
8. 2. 3. 1. Head expression: Xhosa vs. Phuthi

Nguni allows transparent comparison of closely related tone languages, such as Xhosa and Phuthi, which share a nearly identical set of tone and tone/voice parameters. The two languages are identical in one respect: Xhosa and Phuthi are both wide-domain languages (that is, a H tone surfaces not only in—or adjacent to—its sponsor position, but further away, in a domain of potentially unbounded length). The salient difference between the two languages relates to the expression of material inside the H domain (pointed out in Chapter 4 §4.1.4.3-§4.1.4.4): in the autosegmental metaphor, Xhosa is a ‘shift’ language, while Phuthi is a ‘spread’ language (cf. a limited discussion of the typology of Bantu spread and shift in Cassimjee & Kisseberth 1998). Specifically, H only surfaces in Xhosa on the rightmost position in its HD, on what Kisseberth (p.c.) and Cassimjee (1998) and C&K (1998) call the ‘head’ position. Hence, the comparative data in (75).

(75)  Head expression vs. whole domain expression

<table>
<thead>
<tr>
<th></th>
<th>Xhosa</th>
<th>Phuthi</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>[bá-libálá]na...</td>
<td>[bá-libálá]na...</td>
</tr>
<tr>
<td></td>
<td>they forget each other...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>they forget e.o. now &amp; then</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>si-[bónisélá]na...</td>
<td>si-[bónísélá]na...</td>
</tr>
<tr>
<td></td>
<td>we show for each other...</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>si-ya-[bóribóní]saana</td>
<td>si-ya-[bóribóní]saana</td>
</tr>
<tr>
<td></td>
<td>we show e.o. now &amp; then</td>
<td></td>
</tr>
</tbody>
</table>

To achieve these distinct expression effects, Cassimjee (1998) and C&K (1998) invoke an anti-express constraint that refers to non-head constituents (76, my phrasing).

(76)  Expression failure on non-head syllables

*(H, NON-HEAD)
Do not express H on non-head syllables.

The properties of this expression constraint are troubling by their required reference to the absence of a feature rather than its presence (in the head position). I suggest it more likely that Xhosa manifests the interaction EXPRESSHEAD >> *EXPRESS, where *EXPRESS is the putative constraint countermanding proper expression of any feature in its parsing domain[^31].

[^31]: It may seem unintuitive that proper expression of any feature be undermined by a constraint such as *EXPRESS, which in the worst case could cause ‘fatal expression’ (cf. Chapter 3

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The constraint \texttt{EXPRESSHEAD} is very similar to what was proposed in Chapter 7 §7.4 as \texttt{EXPRESS\_EDGE}, where the edge in question was set up as the right edge of any HD. Although the Phuthi constraint could be reconstituted as \texttt{EXPRESSHEAD}, where the Head is the normal rightmost position in the HD (cf. discussion of \texttt{HEAD} position in §8.2.3.2 below), this constraint would be satisfied in the tone shift configuration only through the \texttt{HEAD} position being misaligned to the post-HD mora (antepenult to penult, penult to ultima, ultima to initial, etc).

More insightfully, Xhosa expression can be reconstructed as (right-)edge expression. Either way, the rightmost mora/syllable in a HD must be expressed in Phuthi (and is the only expression position in Xhosa), as exemplified in (77).

(77) Edge expression

<table>
<thead>
<tr>
<th>Xhosa</th>
<th>Phuthi</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [ba-ya-yulé]laana</td>
<td>[bá-yá-yulé]laana</td>
</tr>
<tr>
<td>b. si-ya-[vuní]saana</td>
<td>si-ya-[vuní]saana</td>
</tr>
<tr>
<td>c. si-ya-[vunisé]laana</td>
<td>si-ya-[vunisé]laana</td>
</tr>
<tr>
<td>d. [ba-ya-{v}ú]lýisa</td>
<td>[bá-yá-{v}ú]lýisa</td>
</tr>
<tr>
<td>e. [ba-ya-{länd}é]láana</td>
<td>[bá-yá-{lad}zé]láana</td>
</tr>
</tbody>
</table>

they open for each other
we help each other harvest
we help harvest for each other
they help open
they follow each other

§3.3.4 on ‘fatal expression’), but this tension is indeed expected in every aspect of the constraint grammar, and \texttt{*EXPRESS} simply reflects one particular tension. It is merely the internal arrangement of constraints that characterises a particular grammar. It remains an open question whether fatal expression is ever properly motivated for any phonological grammar. Fatal expression should result in total loss of contrast, which amounts under the present analysis to complete erasure of domain structure. Cf. comments in Chapter 3 §3.3.4, footnote 17. The ‘total’ loss of H contrast in certain Shona H tone noun stems is demonstrated by an OCP effect. But for the contrast to be definitively complete, further tone processes would be needed that behave ‘subsequently’ (relying on the time metaphor for ‘derivations’) as if there had never been any H structure at all. This latter effect of total domain loss is possibly demonstrated in the erasure of all H tone sponsor effects in Phuthi (and a number of other Bantu language) paradigms that collapse the lexical stem contrast H vs. toneless/low, e.g. in the present subjunctive (cf. Chapter 6 §6.2.2.2; Appendix A, paradigm I). The theoretical reservation in such cases is that sponsor erasure (or simply, absence of the sponsor feature) would preclude parsing any HD structure at all, thus avoiding fatal expression.
8. 2. 3. 2. Head position: nested rankings, redux

A significantly problematic aspect of an OT (or ODT) grammar proposed for closely related Xhosa (cf. discussion in Chapter 7 §7.4.3.1-§7.4.3.5) has been that some form of ‘parasitic domains’, entailing derivationality, seemed necessary (Cassimjee 1995, 1998). This is eliminated in the present work with the meta-constraint (or nested constraint), Head_, (78), which selects the unique Head position for every H domain; and cf. §8.1.4 above.

(78) \( \text{Head-HD}_x \) (Head_,)
\[
\text{Head}_x = (\text{*AE}_x \gg \text{NonFin}(\pi)_x \gg \text{HD-Min}_x \gg \text{AvoidProm}(\pi)_x \gg \text{WSA-Rt}(\pi)_x \gg \text{BA-Rt}_x)
\]
The (right edge of the) Head of domain X is the position selected by the interaction of these six constraints, subject to paradigm \( \pi \)-specific ranking of a right-edge subset.

Thus, the Head is simply the position that is rightmost in each non-shifting H domain; it may be pre-antepenult (in any position, due to an OCP effect when there is another H token further to the right), or it may be one of the final three edge-positions (antepenult, penult or ultima), all depending on the particular ranking in that paradigm. In other words, pre-penult heads (e.g. the frequent antepenult heads, in phrase-final domains) require neither derivational processing, nor counting to a position three away from the edge of the word (thus, locality and non-derivationality are preserved; cf. §8.3.5 below). Even the expression of the special prefix head position—achieved through sponsor unincorporation or a disjunctive HD (cf. §8.1.4 above)—does not require either of these principles to be surrendered.

8. 3. Other Theoretical Tone Problems

Several theoretical phenomena deserve mention in the final summary of this work, inasmuch as they have a particular role to play in the Phuthi constraint grammar. They are as follows: OCP and anti-expression (§8.3.1); domain left-edges vs. register domains: downstep distribution (§8.3.2); cophonologies and paradigm-specific rankings (§8.3.3); explosion and multiple instantiation (§8.3.4); locality (§8.3.5); directionality (§8.3.6); unincorporated sponsors and disjointness (§8.3.7); feature activity, with special reference to the number of discrete tone heights the Phuthi grammar requires (§8.3.8); contrast maintenance: stem faith, L and H visibility
through phasing (§8.3.9); the cline of depression effects (§8.3.10); marking: feature conflict in the lexicon (§8.3.11).

8.3.1. OCP and Anti-Expression


But an area of analytic difficulty was the object prefix (OP) configuration, discussed in Chapter 5 §5.4 (cf. §8.12 above). Not only do OPs (in some paradigms) uniformly fail to express as H (unless Contrast would be violated, that is, unless complete neutralisation would ensue, cf. § 8.1.2), but the OCP effect must make reference to the left edge of the anti-expressed OP domain (79).

Thus, the anti-expression constraint and ranking proposed to handle this data, *Express\_OP >> Express\_H (cf. 17 above), receives strong support from the OCP effect in (79c-d)\textsuperscript{33}, despite the fact that expression failure explicitly on the sponsor morpheme otherwise seems highly unintuitive as it directly links phonetic expression with the implementation of a morphological category.

\begin{itemize}
  \item[(79)] OCP sees left edge of unexpressed OP
  \begin{itemize}
    \item a. si-ya-[tɪ-límf]siisa we cultivate them intensively *si-ya-[tɪ-límf]siisa
    \item b. si-ya-[tɪ-lí]baala we forget them *si-ya-[tɪ-lí]baala
    \item c. [bá]-ya-[tɪ-límf]siisa they cultivate them intensively *[bá-yá]-tɪ-[límf]siisa
    \item d. [bá]-ya-[tɪ-lí]baala they forget them *[bá-yá]-tɪ-[lí]baala
  \end{itemize}
\end{itemize}

\textsuperscript{32} OPs are uniformly H in the UR, but whether they express H or not turns out to be significantly paradigm-dependent. In a paradigm that does express OPs H, whether the OP is uniformly H within that paradigm is additionally complex. This becomes clear in the discussions in Chapter 7 §7.6.3, §7.8.1.7 (281ff.),§7.8.1.8-§7.8.1.9. There are significant further comments on OP variation given in Appendix A, in paradigms including H (present relative), I (present subjunctive) J (short perfective), in particular footnotes 55, 65, 73, 74.

\textsuperscript{33} But the opposite ranking (a distinct cophonology) is required in paradigms where the OP expresses H (cf. previous footnote), as proposed in §7.8.1.7 (283); cf. OP cophonology (88) in §8.3.3. below.

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8.3.2. Domain Left-Edges vs. Register Domains: Downstep Distribution

In this work—following proposals by Kisseberth (p.c., 1993) and Cassimjee (1998)—the interpretation of domain left-edges has been proposed as uniquely reflecting a pitch downstep (Chapter 5 §5.5, and cf. §8.1.2 above). As a result of this claim, all adjacent discrete H domains that fail to display a downstep between them must be fused together (§5.2).

Downstep is attributable not only to domain left-edges, but also to an ENDLOW declination requirement (cf. §8.1.2, §8.2.2.5, §8.2.2.6), and to the effects of depressor domains (LDs). I have assembled these effects under Register Domains (Chapter 7 §7.9, and §8.1.4 above). Thus, downstep does not have a unique source, nor a unique representational configuration, but is rather a distributed phenomenon34.

8.3.3. Cophonologies: Paradigm-Specific Rankings

First discussed in Chapter 5 §5.6.2, cophonologies have been proposed as a theoretical construct within an OT grammar, and have been compared with the analytic alternative of indexed constraints (Inkelas & Zoll (2000, 2003), and references therein). We have seen evidence for several cophonology fragments in the course of this dissertation, where the claim for a cophonology is that certain morphologically defined subparts of a grammar require conflicting rankings of the same constraints. Most of the discussion has revolved around edge-alignment of H domains (in Chapter 5 §5.6; Chapter 6 §6.2.2, §6.3.1, §6.3.2).

The nine cophonology sets are summarised in (80-88); the variable rankings have been indicated in constraint summaries throughout the dissertation with diacritics π or λ, indicating paradigm- or level-specific rankings.

In (80), λ₁ refers to lexical level; λ₂ refers to postlexical level.

(80) Cophonology: noun deverbative edges (§5.6.2: 188)35
   a. derived stem-level alignment       WSA-Rt >> AvoidProm, NonFin    λ₁
   b. postlexical phrasal alignment    NonFin >> AvoidProm >> WSA-Rt    λ₂

34 It is simply a feature of the messiness of human grammars that phenomena are rarely as neatly distributed as analysts may hope for, as this complex conditioning of downstep triggers indicates.

35 The italic numbers following the section number (e.g. §5.6.2:188) indicate example numbers in those chapter sections.
(81) **Cophonology: lexical parse vs. unparsable** (§6.2.2: 37-38)

a. Max-$H_{LEX}$ >> *Max-$H_{LEX}$ \(\pi\) lexical paradigms; most grammatical paradigms
b. *Max-$H_{LEX}$ >> Max-$H_{LEX}$ \(\pi\) certain grammatical paradigms (subjunctive, present relative)

The ranking in (82a) refers to the participial, present relative and subjunctive grammatical paradigms; (82b) reflects the ranking (slightly distinct with reference to its morphological left-edge alignment target) for the short perfective paradigm.

(82) **Cophonology: grammatical left-alignment** (§6.3.2: 129)

a. Align\(_{(H_{GRAM}-Lf, PWord, Lf)}\) >> Max-$H_{GRAM}$ >> Max-$H_{LEX}$ >> FaithLexTone
b. Max-$H_{GRAM}$ >> Max-$H_{LEX}$ >> FaithLexTone >> Align\(_{(H_{GRAM}, Lf, MStem, Lf)}\)

(83) **Cophonology: grammatical paradigm edges** (§6.3.1.2: 99; §6.3.3.1: 143)

a. WSA-Rt >> NonFin >> AvoidProm ultimate right-edge grammatical paradigms
b. NonFin >> WSA-Rt >> AvoidProm penult right-edge paradigms
c. NonFin >> AvoidProm >> WSA-Rt lexical paradigms (Ch. 4, 5); inserted on ultima $H_{GRAM}$.

(84) reflects a paradigm-specific case of an opaque morphological boundary (between the prefix cluster and the grammatical tense/aspect marker -ta-) that resists minimalism.

(84) **Cophonology: perfective negative** (§6.3.3.2: 160)

a. CrispEdge >> HD-Min perfective negative
b. HD-Min >> CrispEdge elsewhere

(85) **Cophonology: suppressing SP L in non-3p prefixes** (§7.6.2.1: 164)

a. Max-L >> *Max-L \(\pi\) general L ranking for non-3p SPs (including past subjunctive)
b. *Max-L >> Max-L \(\pi\) paradigm-specific anti-L ranking (including participial)

(86) **Cophonology: past subjunctive L expression on SPs** (§7.6.3.2: 171)

a. SP\(_{GENERAL}\): Express_Edge, Head_H >> Express_L >> Express_H
b. SP\(_{PAST\, SUBJUNCTIVE}\): Express_Edge, Head_H >> Express_H >> Express_L

The copulative cophonologies in (87) do not involve paradigm-dependent reranking, but rather style($\zeta$)-dependent reranking.
(87) Cophonology: depressed copulative expression (§7.7.2.4: 216)
a. \*L-in-H >> Express_Prefix >> \*AE (L)ζ  Copula 1: prefix expression; no LD fusion; disjoint reflex
b. \*L-in-H >> \*AE (L)ζ >> Express_Prefix  Copula 2: no prefix expression; LD fusion; single (non-disjoint) reflex

(88) Cophonology: expression of Object Prefixes as H (§5.4; §7.8.1.7: 283)
a. \*Express_OP (π) >> Express_H (σ)  general OP anti-expression (§5.4, cf. §8.1.2)
b. Express_H (σ) >> \*Express_OP (π)  OP expressed H (including present negative)

8.3.4. Explosion and Multiple Instantiation

Of interest to the ODT framework, and to OT generally, is the variety of ways in which a single general grammatical tendency identified in a particular language is configured analytically in the constraint grammar. Specifically, the single grammatical inclination may be realised as one constraint subcategorised for varying morphological or syntactic domains, that is, as a series of ‘exploded’ constraints (Prince & Smolensky 1993, McCarthy & Prince 1993a); or it may be achieved with discrete constraints that conspire to achieve the same output, that is, where this single output is multiply instantiated. It is not clear in the latter case that the putatively ‘single phenomenon’ is really unitary at all, given that it cannot be articulated with a single constraint or constraint family. It is also not clear that explosion and multiple instantiation are analytically distinct phenomena in any interesting ways.

There are two instances of multiple instantiation attested in the Phuthi constraint grammar motivated in this dissertation: (a) anti-edge phenomena, and (b) tone/voice antagonism.

The first phenomenon could be characterised as a set of conditions that deflect a H tone domain from successfully achieving maximal right-alignment, that is, from perfectly fulfilling wide-alignment, or WSA-Rt (H). The constraints that limit wide-alignment include the anti-parse constraints NonFinality (NonFin), Avoid_Prominence (AvoidProm) (§8.1.1), the conjoined constraint AvoidProm & _CrispStem (cf. §8.2.2.4) and the anti-express constraint *Express_Ultima. NonFin and AvoidProm could both be configured as instantiations of *Align-Rt (as discussed in Chapter 4 §4.1.4.2). But *Express_Ultima would remain outside the
*ALIGN-Rt ‘family’\(^{36}\), even though conceptually the two constraint types appear parallel in their anti-implementation of H on the final syllable(s).

The *ALIGN-Rt constraints as they refer to the H feature have analogues that refer to the domain set up by the L feature (Chapter 7 §7.5.1): NONFINLD, AVOIDPROMLD. Thus, there is a family of *ALIGN constraints, and a discrete instantiation of anti-edgeness in the form of *EXPRESS\_ULTIMA.

The second, more interesting, more complex form of multiple instantiation refers to the tone/voice antagonism identified in Chapter 7 §7.2, captured in six different constraints or constraint interactions (89-94).

The basic antagonism is characterised as EXPRESS competition between the two ungrounded tone feature domains (H, L)\(^{37}\), as in (87a), where L parsing and L expression\(^{38}\) always win over H-parsing and H-expression, subject to edge requirements: EXPRESS\_PREFIX, EXPRESS\_EDGE (89b).

(89) L / H clash: Expression (§7.2.4: 35)
   a. Express_L >> Express_H
   b. Express_Prefix, Express_Edge >> Express_L >> Express_H

(89) does not interfere with LD and HD structure; it is only the expression of these domains that displays evidence of clash. (90a), on the other hand, is a structural constraint that repels L structure from being parsed within H structure, forcing depressor block instead of

---

\(^{36}\) What I propose as reflecting *EXPRESS\_ULTIMA has been analysed by Cassimjee (1998) and C&K (1998) as reflecting a more specific instantiation of NONFIN, which would appear to more closely bring the anti-edge constraints into an exploded family. C&K (1998:70) suggest ‘NONFINALITY X (MONOMORAIL/MONOSYLLABIC HD)’, where X = \{prosodic word / prosodic phrase / intonational phrase\}, which is a new kind of constraint invoking reference to a H domain length (monomoraicity/monosyllabicity) if such a domain were parsed, that is, to a non-existent candidate (a kind of ‘sympathy’ relation, in terms of McCarthy 1998). This would require a syllable-count checking operation on hypothetical HDs of every verb stem exiting the phonology, that is, a kind of ‘horizontal’ dependency relationship among constraints. The implications of this proposal for constraint typologies are not explored in C&K (1998), nor here.

\(^{37}\) I return in §8.3.11 below to the topic of L/H clash as an inbuilt lexical conflict.

\(^{38}\) Placing this claim in context, the grammatical low feature, L\(_{\text{GRAM}}\)—posed in Chapter 7 §7.8.1 (cf. §8.1.4 (52-57) above)—is considerably more abstract than L\(_{\text{LEX}}\), and its dominance of EXPRESS\_H in (89a) is not felt in the complete lowering of the H to L in the H domain, but in a range of subtler effects.
depressor shift when there is a sequence of L domains across the Head and Head+1 positions; the anti-parse constraint interacts with other parse (Head_H) and express (Express_Edge) constraints.

(90)  L / H clash: H block (§7.4.3.3: 122)
   a. *L-in-H
   b. Express_Edge, Head_H >> *L-in-H >> Express_L

There is evidence for a higher order conjoined expression constraint, given the patterns in the present negative (Chapter 7 §7.8.10): (310n,ff) can only be rejected if such an expression constraint (91a) exists to outrank Contrast_HD; cf. discussion in footnote 199, and below candidate (310n).

(91)  L / H clash: conjoined expression (§7.8.1.10: footnote 199; discussion of 310n)
   a. Express_L & Express_H
   b. (Express_L & Express_H) >> Contrast_HD >> Express_L >> Express_H

H domain fusion (Chapter 7 §7.8.1.9) is affected by the location of L domains: of two adjacent potentially fusible HDs—HDx and HDy—fusion can occur if there is an LD inside HDx, but not if there is an LD nested inside HDy. These effects fall out of *L-in-H (cf. 89 above), only if there is a convention to assess violations of this anti-parse constraint once per potential L domain, that is, once per discrete instantiation of a LD, without the effects of LD fusion (cf. Chapter 7 §7.8.1.10 (310), footnote 200). The anti-fusion effects, as a subset of the full fusion typology (given in §8.1.4 (58) above), are excerpted in (92) below.

(92)  L / H clash: anti-fusion (§7.8.1.9: 292c,d,e)
   a. [...]x[...],... y  [...]...[...]x,... y  two adjacent HDs, depressed σs at right edge of HDx; HDx/HDy domain fusion subsumes overlap (cf. §7.8.1.9, (290f-h)).
   b. [...]x[...]...,... y  [...]...[...]... y  two adjacent HDs, depressed σs at left edge of HDy; no fusion (cf. §7.8.1.7, §7.8.1.8, §7.8.1.9, including (290e): SP fails to fuse with depressed OP).
   c. [...]x[...]...,... y  [...]...[...]μy  or [...]x[......]μy  two adjacent HDs, depressed σs at the right edge (head) of HDy (cf. (303)): no fusion.
Assuming a richness-of-the-base (ROTB) approach, \( L_{\text{GRAM}} \) can be inserted on all stems; it is only the case that toneless/low stems surface with the L feature, and H stems with the H feature, because there is a general L / H clash condition (91a) that repels one of the two tone features, subject to lexical stem tone faithfulness (91b). The redundantly supplied \( L_{\text{GRAM}} \) will thus be unparsed in H stems, both lexically and in paradigms where \( L_{\text{GRAM}} \) is properly realised (e.g. the present negative L stems, in §7.8.1).

\[
\begin{align*}
(93) & \quad \text{L / H clash: stem tone faithfulness } (§7.8.1.5, §7.8.1.11; §7.6.2.1) \\
& \quad \text{a. } \text{*StemClash: } *(H_{\text{LEX}}, L_{\text{GRAM}})_{\text{stem}} \\
& \quad \text{b. } \text{FaithLexTone } \gg \text{*StemClash } \gg \text{Max } L_{\text{GRAM}} (\pi)
\end{align*}
\]

\( L_{\text{LEX}} \) appears to be ‘stronger’ than \( L_{\text{GRAM}} \) and never underparses, hences the specific reference in (93a) to \( L_{\text{GRAM}} \).

Finally, there is the resolution of quasi-clash in the case of morphological object prefixes, which in many paradigms typically fail to surface H, even though they contribute a H. In §7.6.3 (and §8.1.4 above), it has been concluded that OPs cannot be argued to be lexically depressed generally, despite the fact that they show depression block properties in some paradigms (e.g. past subjunctive), and despite their general tendency to surface as non-H\(^{39}\). Yet their persistent non-H-ness in those paradigms where the OP has this property provides a clash-like effect of removing surface H from the OP (94a)\(^{40}\), even though this is not a ‘true’ L/H clash configuration\(^{41}\).

---

\(^{39}\) These two tendencies do not occur in the same OP paradigms, for example: depression block is not implemented by OPs in the present indicative, whereas anti-expression on OPs (the failure to express H at all) is found in that paradigm; by contrast, anti-expression is not implemented in the past subjunctive, whereas depression block is. (The patterns mentioned here for the past subjunctive accurately reflect the version of the past subjunctive under discussion, though there are, in fact, two patterns of behaviour for OPs in that paradigm; cf. Chapter 7 §7.6.3.2 footnote 104).

\(^{40}\) Again, as shown in the earlier sections referred to, this anti-expression is subject to a CONTRAST condition, where H is properly implemented if absolute neutralisation is otherwise threatened.

\(^{41}\) It has already been commented on in §7.6.3 that this may be a case of language-change in progress: the OP is almost properly depressed, but not quite.
Thus, L/H antagonism in Phuthi is manifested in a variety of ways, as a single tendency, but with several instantiations. Empirically, the range of depression effects found in Phuthi can be arranged alone a cline, as considered in §8.3.10 below. (The phonological and lexical sources of L/H antagonistic feature configurations are considered in an integrated way in §8.3.11 below).

8. 3. 5. Locality

I have shown in Chapter 7 §7.2 that locality is crucially preserved as a general property of the Phuthi phonological grammar, but that (a) locality must be assessed at the domain structure level (e.g. in the construction of a HD), not at the expression level, and that (b) locality cannot be absolute, contra Ní Chiosáin & Padgett (1997, 2001), because V_{HL} (a vowel which is both tonally H and L, as is robustly necessary at the domain structure level in Phuthi) is phonetically unimplementable and uninterpretable. In Chapter 7 §7.2ff (and §8.1.4 above), Phuthi has been shown to require representations that appear to massively violate locality (‘gapped configurations’, where the gap is in principle of unconstrained length), but under careful scrutiny the representations are shown to properly preserve locality even while allowing surface-level disjunction of H domain expression. Phuthi allows L domains to nest inside H domains. This fact cannot be captured (while preserving locality) in a model of phonology that fails to distinguish between domain structure and feature expression: ODT satisfies locality in the toneless stems in (95a-b), while a non-domains representation in (95c-d) fails to respect locality, unless tone fission is (ad hocly) admitted to the analysis and representation (95e-f). Fission fails to satisfy the basic ODT requirement of feature incorporation (where the domain trigger is incorporated inside its own domain).

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42 Implementing V_{HL} as V_L would ‘solve’ the unimplementability crisis, but would in fact amount to merely a phonological sleight-of-hand (obscuring the L >> H relation). This does not constitute an escape route for a Ní Chiosáin & Padgett-esque analysis.

43 Glosses: (93a/c/e) ‘to shear carefully for each other’; (93b/d/f) ‘to help cultivate indiscriminately now and then for each other’.

44 This non-domains representation could be OT or not. The autosegmental representation is maintained by a number of scholars in OT tone work (such as Bickmore 1996, 1997).
Locality: ODT vs non-domains OT

a. [kú-{gudzi}sísé]laana
ODT: locality preserved at domain structure level

b. [kú-{limalimage}lániisa
ODT: locality preserved at domain structure level

c. [kú-gudzi sísé]laana
gapped configuration: locality violated

d. [kú-{limalimage}lániisa
gapped configuration: locality violated

e. [kú]-gudzi[sísé]laana
tone fission: incorporation violated, uniqueness violated

f. [kú]-{limalimage}[lá]niisa
tone fission: incorporation violated, uniqueness violated

8. 3. 6. Directionality

It has been shown in Chapter 4 §4.1 that the sponsor syllable in Phuthi (and in Bantu, generally) lies at the left edge of the verb\(^{45}\) stem. Phuthi tone effects all relate to rightwards\(^{46}\) expansion of a tone domain from its sponsor location. Rightwards tone expansion amounts to neutralisation of the tone status of syllables to the right of the sponsor).

This is unsurprising given the phonological left-right prominence asymmetry identified by Beckman (1998:56) as ‘first syllable root faithfulness’ (examined further in Bye & de Lacy (2000)). Krämer (2003) summarises the left-right asymmetry as: (a) the left edge of words is more resistant to neutralisation than other positions; (b) languages prefer suffixation over prefixation (this second part is also true in Phuthi: the area of greatest morphological productivity is the verb suffixes—‘extensions’ in standard Bantu reference).

What is interesting in Phuthi is that directional expansion (left-to-right) is achieved in three ways: (96a) by explicit reference to a right-edge (widescope right-alignment), (96b) by a

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\(^{45}\) While the same rightwards expansion is possible for suffixed (including deverbative) nouns, all syllables of a non-derived noun root (usually only two, sometimes three) can be contrastively tone-bearing (Chapter 5 §5.6.1). I do not comment further on nouns here.

\(^{46}\) In a sequence of feature domains (e.g. F\(_1\) F\(_2\)...), fusion of the non-initial domain(s) neutralises the left edge of the non-initial domain(s), in this case of F\(_2\), thus: [F\(_1\) F\(_2\)]. But this still does not constitute leftwards expansion (the merged feature domain structure in the output has dual status representing both \(F_1\) and \(F_2\) features, cf. Chapter 5 §5.2).
minimality requirement (no reference to a right edge), and (96c) by a combination of metrical membership (obligatory inclusion of a domain head-syllable inside a H feature domain) and salient right-edge expression.

(96)  Rightwards domain expansion in Phuthi  
  a.  Widescope Align-Right (F domain): WSA-Rt (H); [WSA-Rt (L)]
  b.  Feature domain minimailty: HD-Min; LD-Min
  c.  Headedness: Head$_x$; Head$_H$; edge expression: Express$_E$ (=Express$_R$ight$_E$dge)

The most interesting is (96c), which contains the two constraints that achieve overexpansion rightwards by a mora, just in case the head syllable is depressed (cf. Chapter 7 §7.4.1, and §8.1.4 above). All previous treatments of the depressor shift facts have required a processual analysis which mechanically stretches a H domain rightwards just in case the otherwise rightmost syllable is depressed. The analysis in this work selects the right-edge position as a position of tone prominence requiring proper expression, such that directionality falls out of the prominence expression requirement (while continuing to avoid any need for derivationality).

8. 3. 7. Unincorporated Sponsors and Disjoint Domains

The most structurally ‘deviant’ and most opaque tone interactions in the Phuthi constraint grammar are phenomena I have called ‘unincorporation’ and ‘HD disjointness’ (cf. Chapter 7 §7.7, and §8.1.4 above). Both are hitherto unattested in other southern Bantu languages which display voice effects (Ikalanga; other Nguni)\(^\text{48}\). Both involve what appear to be violations of the

\(^{47}\) There is no direct evidence of WSA-Rt(L) in Phuthi, even though it be assumed to be a rightwards tension in the constraint grammar. Comparatively, this constraint is manifest in the depressor domains (that is, LDs) of Ndebele (Rycroft 1983), that extend rightwards of the depression sponsor to the pre-head syllable (cf. extended note in Chapter 7 §7.3.2 footnote 41). Eastern Bantu languages in the Mijikenda group display a range of tone/voice interactions, mostly found in unpublished work by Kisseberth (p.c.). The displaced (but not necessarily depressor-triggered) H tones in Digo (Kisseberth & Wood 1980, Kisseberth 1981, 1984) display unincorporation properties (what look like overlapping domains: prefix into stem; stem-initial to stem-final position); multiple disjointness (that is, multiple images of a single H tone feature) occur in some dialects.  

\(^{49}\) For a limited discussion of cross-word plateauing effects, and Register Domain raising in Xhosa, cf. Cassimjee (1995, 1998). And yet, Xhosa does not display genuine unincorporation, nor disjunctive HDs. Rather, the phenomenon in that language is one of a whole post-prefix H

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basic domain construction parameters, but turned out to receive coherent theoretical accounts within the ODT grammar already established (augmenting the constraint count by just two). Significantly, neither phenomenon would seem to receive a non-*adhoc* theoretical account within and only within an ODT grammar, that is, these two phenomena would not receive coherent treatment outside an ODT grammar where parse and express are distinct theoretical constructs.

In order to confirm the salient structural peculiarities of these two phenomena (as presented above in §8.1.4, from Chapter 7 §7.7), it is worth recapitulating them both (§8.3.7.1, §8.3.7.2).

### 8.3.7.1. Unincorporation

The data in (97) below—as in §8.1.4 (50) above—reflects the only case in which a H sponsor feature is *not* parsed inside the feature domain which parses it, that is, the relationship of proper parsing and proper expression is interrupted. Thus, (97a)\(^{50}\) reflects two adjacent HDs, one sponsored on the participial prefix *ká-* and one on the lexically H stem; the second H domain contains a depressor in pre-antepenult position, \(-gí-\); hence the stem H expresses only on the head syllable (antepenult), \(-sí-\). This structure is entirely uncontroversial. (97b) reflects the same tone configuration, except that the participial prefix is now depressed \(\_gí\_\), which results in shift into the stem domain of the H sponsored on that prefix; this shift prevents the stem H sponsored on \(-bu-\) from being incorporated in what must be the stem H domain now stretching from \(\sigma 2\) to the antepenult—the same head position as before in (97a). Thus, the \(-bu-\) sponsor must be unincorporated in its own domain\(^{51}\). The structurally illicit alternative in (97c) reflects an analytically uninterpretable violation of the universal ban on domain overlap. Subscripts \(x\) and \(y\) indicate the sponsor site, and the left and right edges of the parsing HD for that sponsor.

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\(^{50}\) Glosses are as given in (50) above: (97a) ‘him/her helping save intensively’; (97b,c) ‘me helping save intensively’.

\(^{51}\) There is a marginal alternative to this solution, that proper anchoring of the stem sponsor is overridden, but that has not been explored here as it is deemed to offer no promise of fruitful insight (cf. comment in Chapter 7 §7.7.2, footnote 120).
(97) Unincorporated sponsors
   a. ká-

   b. gi-

   c. gi-

Thus, depression and edge requirements—the inviolable Express constraints (EXPRESS_L and EXPRESS_EDGE)—force the sponsor in (97b) to be outside its parsing domain.

This manifests a departure from the particular language type which Phuthi otherwise appears to be, by way of the domain parse/express relationship. In terms of the typology provided in Cassimjee (1995), the language strictly adheres to both INCORPORATION and UNIQUENESS as domain wellformedness principles (cf. Chapter 3 §3.3.3), that is, a sponsor is always—now, almost always—parsed in its parsing domain, and, each sponsor triggers the parsing of a unique domain. From the data in (97), however, we see Phuthi indulging just in this instance in a parse/express misalignment not elsewhere attested in the language (nor in the Nguni part of the southeastern Bantu zone).

The analytically ill-formed alternative (97c) confirms that overlapping tone domains of the same feature type are incoherent (here, the feature is ‘H’). But since overlap has been argued to be theoretically uninterpretable (Kisseberth 1994, and cf. §7.7.1), the analytic strategy adopted in Chapter 7 is one of unincorporation.

8.3.7.2 Disjointness

Differently to unincorporation, ‘disjointness’ refers to a double EXPRESS image from a single H feature (98)\(^{52}\). A disjoint HD occurs in a toneless stem in a paradigm such as the participial (corresponding to the participial data in (97) above). The effect at the prefix-stem juncture looks precisely like depressor-triggered shift (98b,c), yet cannot be, as the HD successfully expresses its right edge at the shifted antepenult-to-penult right edge, and thus should have had no further need to instantiate itself on the pre-stem syllable.

\(^{52}\) Glosses are as given in (51) above: (98a) ‘him/her intensively cultivating indiscriminately’, (98b) ‘me intensively cultivating indiscriminately’. 

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If the effect were construed as shift (98c), then the single H domain would have two right edges, a quite uninterpretable configuration in any theory where tone well-formedness is assessed with matching pairs of domain edges. (98c) was, thus, regarded as analytically incoherent and abandoned.

(98) Disjointed HD

a. kā-climalimag̃fisa  ...[kā-{limalimagi}s]ija  no disjointness; no ‘overlap’
b. gi-limalimag̃fisa  ...[(gi)-li{malimagi}s]ija  disjointness; no ‘overlap’
c. gi-limalimag̃fisa  *...[(gi)-li]{malimagi}s,ija  disjointness; ‘overlap’ (two right edges)

Hence the solution proposed in §7.7.2 (cf. §8.1.4 above) was that there is a left-peak expression requirement, Express_Prefix, which must be instantiated, but which can be misaligned a single position to the right (98b). Express_Prefix is not perfectly symmetrical in its implementation with Express_Edge (that is, ExpressRightEdge), as not all H domains require the expression of their left edge (Chapter 7 §7.2). But the language has clearly interpreted the presence of a depressor syllable inside a HD as a cue for edge expression, and if this occurs at a morphological edge (e.g. prefix-stem boundary), expression must occur53.

The disjointness seen in (98b) would seem to entail a violation of the ODT domain correspondence principle Uniqueness (Chapter 3 §3.3.3), again edging Phuthi out of the exceptionlessly faithful incorporating, unique-domain languages (as just seen, too, for unincorporation in §8.3.7.1 above). And yet, in the relevant datum (98b), both the prefix-adjacent

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53 There is a stylistic wrinkle to this pattern, as remarked on in Chapter 7 §7.7.2.1 footnote 122. The misalignment of the prefix edge-expression can be extended—on occasion—by a syllable, or by three syllables, into a stem of the same sort instantiated here in (98), under conditions where there are four pre-depressor stem syllables (respectively). There are still constraints on this ‘over-extension’ of the prefix-edge (it only occurs in pairs of syllables), and the over-extension is rare. All of this is contextualised against an empirical backdrop of diminishingly certain judgements on data of the sort found in over-extension examples, given that the verb stems are so long, and so morphologically complex, and that the semantics becomes increasingly contorted (given the presence of the extensive suffix).
expression of H and the expression of H at the right edge are indeed reflexes of the single H sponsor syllable (the participial prefix syllable itself). Thus, Uniqueness remains unviolated.

8. 3. 8. Feature Activity

There are six general points to be made about the phonological features that have been claimed in this work to be active in Phuthi, and the nature of their relationship to each other, as follows: the three tone settings—H vs. L vs. toneless (§8.3.8.1); falling/rising tones are complex, and positionally restricted (§8.3.8.2); there are two of each tone type: $H_{\text{LEX}}$, $H_{\text{GRAM}}$, $L_{\text{LEX}}$, $L_{\text{GRAM}}$ (§8.3.8.3); breathiness entails depression (and not vice versa); depression = L (§8.3.8.4); [voice] vs. [low] (§8.3.8.5); ‘L’ and ‘toneless’ cannot be conflated (§8.3.8.6). These points are to be followed, finally, by more detailed comments on both specific feature relationships and the general principles at work in Phuthi feature relationships, in §8.3.9 (contrast maintenance: stem faith, L and H visibility through phasing), §8.3.10 (the cline of depression effects), and §8.3.11 (salience and lexical conflict).

8. 3. 8. 1. H vs. L vs. toneless

Phuthi provides robust evidence that although the language only has only two contrastive tone heights on the surface (high, low), it cannot be reduced to a feature grammar with only one active privative tone (H), where the second unmarked value (‘toneless’) would be left unspecified and filled in ‘low’ by the postlexical phonological grammar, or where the unmarked value would perhaps not be filled in by the phonology at all (but merely receive a value in the phonetics). Rather, it has been shown (starting in Chapter 7 §7.2, cf. (30a-e)) that the presence of a second active tone, L, is required in the phonology to model a wide range of voice-related effects that are mostly segmentally (lexically) but also grammatically triggered. In addition to this second privative tone, many syllables (‘toneless’) do indeed emerge from the phonology unmarked, and—one may hypothesise—receive their absolute non-high pitch value only subsequently as a function of phonetic interpolation\textsuperscript{54}.

\textsuperscript{54} The case for possible conflation of the L vs. toneless ‘specifications’ is considered in §8.3.8.6 below.
This places Phuthi in a small class of Bantu languages that at one level (pre-surface) have three contrastive tone levels: H, L, toneless. H and L are privative tone features in the current analysis. At the surface, it sometimes seems that L and toneless no longer contrast. But the presence of L domains ‘during’ the processing of the optimal domains constraint grammar is crucial, and these domains contrast with toneless (cf. the analyses in Chapter 7; footnote 54 here below).

Nevertheless, Odden (2000), Odden & Kisseberth (2003) and Downing (in press) are correct in being cautious to label the Nguni subfamily as truly three-tone languages. It has been made abundantly clear in Chapter 7 that Phuthi, too, is not truly a three-tone language in the sense of having three active tones. One might characterise the Phuthi distribution of tone labour as: H is fully active; L is also active (though less active than H), serving primarily to interfere both locally and nonlocally with the proper implementation of H; toneless is a condition of inertness, characterising the ‘elsewhere’ syllables which are addressed neither lexically nor anywhere in the phonological constraint grammar.

8.3.8.2. Falling/rising tones are complex, and positionally restricted

As is also the case for the rest of Nguni, Phuthi does not display a three-way tone contrast—H vs. L vs. F (falling)—though such an inventory has frequently been claimed by Bantuists in the Southern Africa tradition (Lanham 1958, 1960).

There are two potential complex tone contours: falling, rising. The falling tone—compositionally complex\(^{55}\) \(\text{H}\underline{\text{L}}\)—is entirely predictable in its instantiation, and is positionally restricted\(^{56}\) to the penult syllable in phrase-final position, as has been shown in Chapter 5 §5.3, that is, to a long syllable. In a Phuthi (and general Nguni) falling tone, the two moras in a long syllable are each capable of distinct—though not lexically contrastive—tone specification.

\(^{55}\) Lanham (1958, 1960) and Doke (1954) and many others subsequently have correctly observed this positional restriction on falling tones, but they have failed to analyse them as compositional as they have been working in theoretical traditions (typically structuralist) that simply did not pursue questions of the compositional nature of contour tones, nor of tone derivation.

\(^{56}\) There are two falling tones that lie outside this generalisation: the remote past (which appears to be a contracted verb form), cf. Chapter 7 §7.6.2; and a very short falling tone on the first syllable of the present negative paradigm (§7.8.1, footnote 138), hypothesised as vestigial.
Similarly—though perhaps instantiated more rarely—a rising tone, that is, L^H, properly manifests only on the long penultimate syllable of a word (Chapter 7 §7.2). The Phuthi rising tone is always the result of a H syllable that carries lexical depression (that is, typically a reflex of a breathy onset of that syllable).

8. 3. 8. 3. Two of each tone: H_{LEX}, H_{GRAM}; L_{LEX}, L_{GRAM}

Significantly, in the present work, and for comparative tone studies, each of the two Phuthi tones, H and L, have two discrete instantiations: a lexical tone, and a grammatical tone. H_{LEX} characterises one of the two classes of verb stem (Chapter 4ff.), and each syllable in a non-derived noun stem (Chapter 5 §5.6), and certain prefixes (e.g. noun class prefixes, 3p SPs). H_{GRAM} characterises grammatical verb paradigms (Chapter 6), and certain prefixes (e.g. participial SP, also cf. Chapter 6). L_{LEX} is triggered by every breathy syllable, generally where there is a depressor (breathy) consonant onset, but also where breathiness (thus, depression) is triggered grammatically (e.g. in noun copulas: Chapter 7 §7.5) and even lexically without a breathy consonant (e.g. data in Chapter 7 §7.8.2, §7.8.3). L_{GRAM} is triggered grammatically on the penult of certain verb paradigms (e.g. present negative, remote past), and on OPs in certain paradigms (e.g. past subjunctive: Chapter 7 §7.6.3), and may even be the feature assigned to all toneless/low stems (Chapter 7 §7.8.1.11, cf. §8.3.4 above).

8. 3. 8. 4. Breathiness entails depression (and not vice versa); depression = L

Evident in the discussion in Chapter 7 §7.1-7.2 (cf. §8.1.4 above), an important theoretical observation emerges from the behaviour of breathy/depressor consonants and non-segmental lexical/grammatical breathiness/depression and grammatical depression (non-breathy): breathiness and depression are not coterminous nor coextensive. The crucial perceptual feature that triggers L tone insertion in Phuthi is depression, not breathiness, because

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57 It becomes clear in §7.2.3 (cf. footnote 24) and §7.2.5 that there is the additional short rising tone (also L^H), which must parse on a single mora, where that mora is in head position—that is, rightmost syllable—of both HD and LD, and where depressor shift cannot take place (for one of various reasons, such as depressor block (Chapter 7 §7.4.2, §7.4.3; §8.1.4 above). Under these conditions, a phonologically simultaneous but phonetically phased short rising H tone is expressed. Cf. footnotes 79, 80 in §8.3.9 below.

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perceived L domains (LDs) expand leftwards in the form of depression anticipatory assimilation (§7.3, 8.1.4), not breathiness assimilation. Thus, breathiness implies depression, not the reverse.

So, in (99a-b), all syllables inside the L domain (except the breathy trigger syllable at the right edge) assimilate to the perceptual low status of that rightmost trigger syllable, which is marked as breathy (with the standard underscore diaeresis). No non-head syllables in a LD—that is, all those inside the L domain not marked diacritically as breathy—are themselves perceived as breathy\footnote{In a case where there is more than one adjacent breathy-syllable, each resultant L domain is theoretically autonomous. But I have argued in Chapter 7 §7.8.1.8 that adjacent LDs fuse (with the evaluational caveat in §7.8.1.9 footnote 182), in which case the rightmost of any adjacent breathy syllables is the (fused) LD head.}.

(99) Breathiness (head = breathy) vs. depressed (non-head = non-breathy)
   a. \[kú-{ladze}lí]saa to cause to follow each other
   b. \[kú-{limalimage}lá]niisa to help cultivate indiscriminately now and then for e.o.

There are cases of lexical depression not triggered by breathy consonants, such as the morphological use of depression in noun copulas (Chapter 7 §7.5; Chapter 2 §2.2.1.7), other copula forms (§2.2.2.1, §2.2.3.2, §2.2.3.4, §2.2.5), on associative morphemes (subject to a distinction between ‘strong’ and ‘weak’ classes; cf. Chapter 7 §7.8.2), and on the conjunctive morpheme (subject to grammatical polarity; cf. Chapter 2 §2.2.5). Further, there is lexical depression on a variety of lexical items (§7.8.2). Finally, there is depression triggered grammatically (with a distinct range of effects), such as in the present negative paradigm (§7.8.1).

Breathy voice alone, per se, is only present (impressionistically) in the cases of what I have termed lexical depression, that is, depression triggered directly by breathy voicing as a characteristic of consonant production (the ‘breathy’ or ‘depressor’ consonants, cf. Chapter 2 §2.1.1; Chapter 7 7.2.1) or breathy voicing as an instruction directly to the nucleus of a syllable (usually, the vowel), in the case of copulas, and the like.
Tonal depression alone per se (that is, without the necessary accompaniment of breathy voicing) is present in cases of grammatical depression, and in all L domain-internal syllables, except the head, as indicated just above in (99)\textsuperscript{59}.

8. 3. 8. 5. [voice] vs. [low]

Also significant for theoretical claims about feature activity, the voice activity in Phuthi robustly contradicts the claim made for close Nguni relative, Swati, that the privative features [voice] and [L] tone can be conflated (contra Bradshaw 1999). The two features serve distinct functions in Phuthi: (a) the non-voiceless consonants cannot be reduced to [+voice], as there are two series of non-voiceless consonants (voice vs. breathy voiced), albeit incomplete series (cf. §7.2.3: footnotes 22, 23, 26); Chapter 2 §2.1.1; (b) the two non-voiceless consonants have distinct properties (as just shown in §8.3.8.4), thus, must be referred to with distinct feature sets.

8. 3. 8. 6. ‘L’ and ‘toneless’ cannot be conflated

Despite the claimed distinction between the two non-H featural states—tonelessness and L-ness—at two points in this dissertation I have pursued the possibility of partially (or even entirely) conflating the by now well-motivated privative L tone with tonelessness. In other words, I have attempted to return to a phonological grammar that clearly invokes just two tone settings: H and L, where there would no longer be any need for an unmarked state, that is, absence of tonal feature marking. In other words, I have set about eliminating tonelessness as a phonological necessity in this grammar.

I have pursued this conflation possibility not only because a two-tone phonology would be symmetrical and more coherent as a southern Bantu grammar, but because I have established a predictive link between tonelessness and L-ness in more than one paradigm, which link indicates a grounding\textsuperscript{60} relationship between the two non-H tone settings.

\textsuperscript{59} And cf. Chapter 7 §7.6.3.1 footnote 102 on the relationship between depression and breathiness, discussed in the context of the variable paradigm-dependent status of OPs.

\textsuperscript{60} The discussion in Chapter 7 §7.1 makes it clear that such a grounding relationship is to be expected. What the discussion immediately below demonstrates, however, is that the grounding relationship cannot be reduced to only one of its terms, for example, that ‘L predicts toneless’, or ‘toneless predicts L’.
Firstly, in Chapter 7 §7.6.2 (cf. §8.1.4 (47) above), I established in certain paradigms (e.g. remote past) that, while all SPs in such a paradigm are paradigmatically H, non-3p SPs (§7.6.2—that is, all SPs which are usually (elsewhere) toneless—are in this paradigm depressed (§7.6.2.1 (160b,c,d)). Moreover, what are generally called toneless/low stems (that is, from the non-H lexical set of verb stems) appear to have a depressed penult syllable in this paradigm (160a-f).

I suggest in §7.6.2.1, thus, that in fact all toneless stems are really L stems (with the feature L as part of the lexical entry). The problem, of course, is that in all other paradigms, toneless stems, and toneless prefixes, do not manifest the behaviour of syllable bearing a L, and in fact, even in the remote past, the behaviour is inconsistent (for example., there is no salient shift off the depressed syllable). The attempt is thus abandoned, even while admitting that it cannot then be adequately explained why toneless and L-ness are linked in this way in this particular verb paradigm.

Secondly, a different type of phenomenon was examined in §7.6.3—the Object Prefix—which displays a status that varies between \{UR=H, surface=toneless\} and \{UR=H, surface=depressed\}. I termed this variable status of the OP ‘quasi-depression’. In this case of the OP, there was cross-paradigm evidence that tonelessness (as an expression condition) and L-ness are related. But here, again, no consistent synchronic link between toneless and L can be claimed.

Thirdly, in Chapter 7 §7.8.1.5—(259-261), and see footnote 150 there—I propose to insert a grammatical L on toneless/low stems, again to avoid otherwise the absence of a connection between the two tone settings: \(L_{\text{gram}}\) becomes inherent in every toneless/low stem. The problem, of course, is that this would only be evident for toneless/low stems in certain paradigms (e.g. present negative), and would need suppression everywhere else. Moreover, a richness-of-the-base line of analysis would assume \(L_{\text{gram}}\) comes with all stems, ‘H’ or ‘L’. In that case, a constraint would suppress L from all H stems, and from toneless (that is, non-H) stems in most paradigms. Thus, his does not appear to offer any analytic advantage over the default scenario where only H stems are marked for lexical tone; toneless stems are just that: not marked for L or any other tone.
From these three attempts, it became clear that marking some or all toneless stems and toneless prefixes as L was not fruitful, even though this leaves a residue of material where toneless and L are connected—albeit in limited ways—without apparent account.

One important outcome of the conflation attempts, which supports some kind of overt link between the two tone feature settings (toneless, L), is that nowhere in the Phuthi grammar as analysed in this work is reference to a tripartite tone contrast required. Thus, the oppositions are H-vs.-toneless\(^1\) or H-vs-L, but never *H-vs.-L-vs.-toneless.

Thus, the strongest statement that can be made about the tone feature grammar is that (a) ‘toneless’ and ‘Low’ remain distinct featural states for any lexical and morphological material; and (b) there is a grounded link between ‘toneless’ and ‘Low’, though manifest only in certain paradigms (thus leading to ambiguity about the L/toneless correspondence under certain conditions).

After considering the maintenance of two types of tone contrast in §8.3.9, I reflect in §8.3.10 on the fairly startling range of complexity in the Phuthi system of voice/tone interactions spread out across a continuum of H/L antagonism effects. The gradient manifestation of L/toneless phenomena reaffirms the significant blurring between the two features hinted at in the discussion in this section. Yet, the features will remain non-conflatable. Finally, in §8.3.11 below, I will return to the topic of L/H clash as an inbuilt lexical conflict.

### 8.3.9. Contrast Maintenance: Stem Faith; L and H Visibility through Phasing

There are two types of tone contrast that the Phuthi phonology seeks to maintain: H vs. low/toneless, and H vs. L. Failure to maintain these contrasts would result in neutralisation, which effect the language appears to go to great lengths to avoid.

On the one hand, the robust contrast between two\(^2\) lexical tone classes of verb stem—H vs. low/toneless\(^3\)—is one that Phuthi shares with most\(^4\) Bantu languages. This contrast appears

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\(^1\) Cf. §8.3.9 below for comments on featural contrasts maintained by the phonological grammar: H vs. toneless/low, and H vs. L.

\(^2\) As pointed out in §8.3.8.2 above, Phuthi does not have a three-way tone category distinction (e.g. H vs. L vs. Fall), as claimed for Xhosa (Lanham 1960, Westphal et al 1967).

\(^3\) The simultaneous contrast H vs. L (where L reflects phonological depression) is a rare one in the grammar of Phuthi. Typically, the contrast is H vs. toneless. But cf. §8.3.8 above for discussion of L vs. toneless blurring; and cf. §8.3.11 below for discussion of the L/H clash.
to be highly enough valued that it is virtually never neutralised in any paradigm of the Phuthi grammar. Throughout a number of the grammatical paradigms in the language—including short perfective, imperative, perfective negative—the contrast is faithfully maintained in just a single syllable (stem $\sigma 1$): in what was termed the $\sigma 2$ paradigms (Chapter 6 §6.3). I invoked a highly ranked $\text{FAITHLEXSTEM}$ constraint to force the two stem sets—H and toneless/low—to remain distinct just where they otherwise threaten to neutralise the tone distinction (cf. §6.3.1.4)\textsuperscript{65}.

However, in a very few Phuthi paradigms this lexical contrast between H and toneless/low is completely neutralised—including present subjunctive and relative negative (Chapter 6 §6.2.2; Chapter 2 §2.2.4.9, §2.2.4.10; cf. fuller data sets in Appendix A, paradigms H and I). In each case, the paradigm lacks even the solitary $\sigma 1$ contrast syllable. However one may speculate on the grammatical or cognitive reasons for the conflation in just these paradigms, the neutralisation appears to be complete and irretrievable. Nevertheless, by the small number of such neutralising paradigms, it is clear that Phuthi values the lexical/morphological tone contrast very highly. Even at the expense of significant tonal complexity, the distinction of the two tonal verb identities is to be maintained.

In the case of the L/H contrast—that is, the phonological contrast between two opposing active tone specifications—Phuthi frequently tolerates partial neutralisation, but never complete neutralisation. This may be considered a remarkable universal generalisation (especially in light of the lexical conflict data examined in §8.3.11).

Now there are basic parameters of parsing and expressing, which have particular settings in Phuthi. The parameters include: (1) active privative tones in the language (two: H, L); (2) direction of parsing (left-to-right); (3) featural dominance (L>>H); (4) head setting (right).

\textsuperscript{64} While most Bantu languages appear to preserve this Proto-Bantu contrast (Guthrie 1967-1971, and almost all subsequent work on Western and Eastern Bantu tone phonology from 1970s to the present), a significant minority of Eastern languages (typically in Zone P) have conflated the tone contrast, either in the verb system alone, or systematically in both verbs and nouns (Odden 1987, 1989, 1995).

\textsuperscript{65} Besides the paradigm contrast forced by $\text{FAITHLEXSTEM}$, I suggested a second way that the $\sigma 1$ slot in a grammatical paradigm be reserved for the lexical H vs. low/toneless contrast (as opposed to the rest of the stem which reflects the grammatical H domain), that is, through a distinction between two types of (ranked) H tone: $H_{\text{LEX}}$ and $H_{\text{GRAM}}$, with the $\sigma 1$ slot kept free from the effects of left-aligning $H_{\text{LEX}}$ (by $\text{NONINITIALITY}$).
These general theoretical parameters interact with four basic ODT principles (§3.3.3):
(4) Domain Correspondence (which subsumes faithfulness, achieved in ODT through parsing with basic alignment); (5) Incorporation; (6) Uniqueness; (7) Expression.

In light of the extended examination in Chapter 7 of the competition of a L feature and a H feature for the same syllabic material, we have seen that there are further principles at work in the language in addition to those above: (a) L and H—antagonistic tone gestures—can be neither phonetically nor phonologically simultaneously realised; (b) feature fission is never a phonological option; (c) neither the L nor H features can be permitted to be fully masked, even over short domains (one syllable: either two moras, or even one mora); (d) the principle of locality can never be violated at the level of feature parsing domains; (e) every domain must have an expressed head; (f) a domain can never be empty, that is, underexpressed to the extent of fatal expression (cf. Chapter 3 §3.3.4).

From the interaction of these parameters and principles, there is a set of tone effects, including all major tone phonological topics of this dissertation: (i) OCP effects; (ii) fusion effects; (iii) downstep effects. And with special reference to the maintenance of contrast: (iv) competing L and H are only ever resolved asymmetrically, in a single phasing gesture: LH; (v) phonetic expression on very short material (1 mora) mimics phonological expression over all other domain lengths (that is, LH). These effects build on a set of more specific observations.

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66 Expression can be proper, improper, minimal or fatal (Chapter 3 §3.3.4).
67 Cf. §7.2.2 (5) for phonological claim. The phonetic impossibility of simultaneous L and H expression is trivially true at the physiological level, if L and H are taken to strictly reflect pitch values. But one could hypothesise a kind of simultaneity if breathy voicing alone was a sufficient manifestation of adequate L expression (which is not the case); cf. following footnote.
68 Fission is considered and rejected in §7.2.5.1 (43d), §7.2.6 (47b), §7.3.3. Not even under conditions of unincorporation or disjointness (§7.7, and §§8.3.7 above) is fission the solution.
69 The masking configuration is given in §7.2.5 (37).
70 Locality is not—cannot ever be—strict in the sense of Ní Chiosáin & Padgett (2001); locality is massively violated in non-local expression of a single HD (but structural locality, I argue, is not defined over domain expression). Locality, as a structural principle defined over parse domains is crucially retained (cf. Chapter 3 §3.3.2, §3.3.4.1). This is part of the crucial motivation for distinctness of domain parsing and domain expression (Chapter 3 §3.3.1).
71 Headedness is introduced in Chapter 3 §3.3.5, instantiated and developed in §7.4.3.2 (and cf. §8.1.4 above).
72 The phonological dominance of L over H is reflected in the Expression class ranking (L>>H), cf. §7.2.4 (35).
73 Proof for the phonetic phasing comes from the case of a 1-mora HD which must
of the L/H interaction in the form of the depressor domains superimposed on H domains. (Finally, there will be a range of subtly distinct tonal (tone/voice) effects in §8.3.10 below; and then the principle referred to as ‘lexical salience’ and a related lexical/phonological phenomenon in §8.3.11 termed ‘lexical conflict’).

These effects in Chapter 7 (cf. §8.1.4) have confirmed the additional ODT principles of feature behaviour: perceptibility, and articulator stability, both of which are maximised by a feature effect termed ‘extension’ (Chapter 3 §3.3.1), which seeks to extend the parsed ‘visibility’ of a feature in the grammar, subject to competing principles of faithfulness to underlying feature sponsoring, and competing parameters of domain parsing and expression.

Thus, in Phuthi the sponsored L feature seeks to enlarge its domain (anticipation leftwards; minimal extension rightwards), much as the H features enlarges its own domain (no leftwards extension, other than conflation of adjacent HDs in order to avoid an OCP violation; but significant nonlocal rightwards extension, typically to a head position (antepenult/penult/ultima). Each of the two active features seeks to extend the perceptibility of its feature domain, and in asymmetrical bleeding relationships with other kinds of feature/featurelessness:

(a) L expands at the expense of H (hence: the almost\(^75\) inviolable L \(\gg\) H expression ranking);
(b) H expands at the expense of tonelessness\(^76\).

Thus the feature conflict is worsened by the expansion of the two features. The proper maintenance of contrast between H and L features throughout the Phuthi grammar is on the one hand hindered by syllabic material where H and L address the same tone-bearing units through lexical configuration (cf. §8.3.11 below), and through the maximisation of the extension principle, where a H is extended over all available material (given the usual range of parsing parameters), as in (100a)\(^77\). LD expression appears not to interfere with HD expression (100b), except for winning a local conflict. On the other hand, though, minimal expression (100c) is ensured by head-expression—referred to just above as principle (e) at work in Phuthi—which

\(^74\) ‘simultaneously’ be L §7.2.5.1): the sharply rising pitch reflects a phonetic LH sequence.
\(^75\) I made nine observations (partially reprised at the beginning of §8.1.4): depression patterns 1a through 1f in §7.2.2 through §7.2.5, and patterns 2 through 4 in §7.3.1 through §7.4.
\(^76\) \texttt{EXPR}\_\_L \(\gg\) \texttt{EXPR}\_\_H fails for very short (monomoraic) forms (cf. footnotes 67, 73).
\(^77\) Tonelessness is by definition the status of all syllabic material that is neither H nor L. The material exemplified comes from an ‘ultima’ paradigm, for example, the imperative.
rescues (100e) any HD from fatal expression (100d), that is, from complete neutralisation of the H and L features, which would amount to full loss of contrast.

(100) **H-vs.-L contrast: near-loss**

a. \[ \text{HD} \hat{\sigma} \hat{\sigma} \hat{\sigma} \text{LD} \sigma \sigma \# \] proper expression of H

b. \[ \text{HD} \{ \text{LD} \sigma \sigma \} \sigma \hat{\sigma} \sigma \# \] improper expression of H; proper expression of L

c. \[ \text{HD} \{ \text{LD} \sigma \sigma \sigma \} \sigma \sigma \# \] improper (minimal) expression of H; improper expression of L

d. \[ *\text{HD} \{ \text{LD} \sigma \sigma \sigma \} \sigma \sigma \# \] fatal expression: complete failure of H expression

e. \[ \text{HD} \{ \text{LD} \sigma \sigma \sigma \} \sigma \hat{\sigma} \sigma \# \] minimal expression rescued through depressor shift

Even minimal expression (100c) comes under threat (100d) if the rightmost syllable of the HD is the depressor head (in this case: a breathy voiced consonant triggering lexical depression) and if there is further syllabic material to the right, in the same word. In such a case, the phenomenon of depressor shift\(^78\) (100e) has been shown to result. Depressor shift functions as more than merely a local mechanical strategy to rescue feature conflict; it is also a rescue strategy ensuring that H/L feature neutralisation is avoided. Its presence in the phonology is thus vital to maintaining the lexical feature contrast under discussion in this section\(^79\).

Standing back from the details of the data, what is centrally remarkable among the L/H effects evident in Phuthi is that the L feature attempts to obliterate H wherever possible, even the expression of H on the H sponsor syllable (100b,c,e)—given a phonological configuration of L/H lexical feature antagonism, and given wide scope realignment of L, as in (100c). Additionally, however—and crucially—L never, under any circumstances, achieves this conflation entirely.

Because of the L-to-R parsing—referred to as principle (2), above—the phasing of L and H is invariably resolved resolved as LH (that is, asymmetrically towards the L feature). That is, L

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\(^78\) Depressor shift is introduced in Chapter 7 §7.4.1, §7.4.3 (cf. §8.1.4 above).

\(^79\) The complementary effect of depressor block (§7.4.2, §7.4.3; cf. §8.1.4 above) appears to disable, or circumvent, LH phasing, in that it inhibits depressor shift, thus preventing minimal expression and the rescue of the L/H contrast. But, as indicated in §8.3.8.2 (footnote 57) above, and cf. following footnote, LH phasing never fully fails, at least at the phonetic level. So, a depressor blocked syllable, which should be both L and H, manifests phonetically as a lowered, sharply rising H (and not as a raised L).
is invariably parsed proceeding H where there is a feature conflict. Such a LH sequence is never resolved as straightforwardly L or straightforwardly H\textsuperscript{80}.

Thus, of the two types\textsuperscript{81} of tonal feature contrast found in Phuthi—one lexical/morphological (H-vs.-toneless), the other phonological (H-vs.-L)—it is only the second that is truly inviolable. And while the first is violable, it is only under very specific conditions (such as the morphological override in the present subjunctive, present relative).

8.3.10. Depression Cline

It is only when identifying the detailed patterning of the effect of L/H antagonism—in the wide range of tone/voice interactions that Phuthi has allowed us to examine—that such a cline of depression effects becomes evident. Contrary to what may have seemed the case in earlier work on Nguni, in at least this one member of the Nguni subfamily, depression is not a binary choice between being faithfully expressed as H and being interrupted/shifted/blocked as L. Rather, Phuthi displays an entire range of subtly distinct depression effects (101a-e).

This range of effects is made possible by the conceptualisation of two poles as the extreme possibilities of non-H-ness: tonelessness and L-ness. Each of these two settings has a range of associated behaviours and effects, which can be dismantled, and reassembled in various incomplete combinations, as in (101), leading to a continuum of status from most-L (101a) to most-toneless (101f). The dissembled components are given in the vertical columns (i, iii-vi); column (ii) is phonetic\textsuperscript{82}.

\begin{itemize}
\item[\textsuperscript{80}] In this claim, it is important to retain the observations in \S8.3.8.2 above, and especially footnote 57 (and the foonote preceding here): in the present analytic system, feature conflict in a very short domain—one short syllable, i.e. a single mora—does appear to resolve in the direction of just one of the two tone features: H. It has been shown that the phonetics continues to resolve the clash where the phonology leaves off, and that the phonetics is faithful to the general feature phasing established in the phonology in that the short rising H tone maintains a sequenced low-high profile. But is certainly a H tone that is significantly lowered at its onset, rising sharply to a point lower than a non-breathy or non-low H mora. The phenomenon does not represent, however, a raised L tone, which might be expected to show a raised a F0, but should not show any characteristics of a rising pitch.
\item[\textsuperscript{81}] Departing from problems around conflicting OP data, speculative but unsuccessful attempts have been in Chapter 7 \S7.6.2.1, \S7.6.2.2, and again in \S7.8.2.1 to conflate \{Low\} with \{toneless\}.
\item[\textsuperscript{82}] As an auditorily impressionistic phonetic criterion, this is perhaps to be regarded with less weight than the more discrete behaviour of the remainder of the phonological structural effects.
\end{itemize}
Lexical depression (101a) refers to that which is triggered defaultly by every depressor (that is, breathy voiced) consonant\(^ {86} \). Grammatically triggered lexical depression (101b) has the same phonological properties, save the source of its triggering which is grammatical. The paradigm example is the copula\(^ {87} \), which in the default case—non-strong classes, that is weak/‘nasal’ classes—consists morphologically of solely the phonological depression feature (L). The associative prefix\(^ {88} \) is another example of this level in the depression cline. A typical

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\(^{83}\) More accurately, this ‘no’ should read ‘not necessarily’, cf. (60a,c-e) and §8.1.4 footnote 22 above. Some of the copula prefixes do contain breathy/depressor consonants in their segmental copula (the weak classes: 1, 3, 4, 6 and 9 are more ambiguous); but all classes can take a non-segmental phonational (depression) copula (cf. Chapter 2 §2.2.1, especially §2.2.1.7).

\(^{84}\) The observed inability to shift here may be because the quantitative -\(\text{ghle}\) is syntactically regarded as domain-final, and hence regarded as an ineligible shift trigger position (shift from penult head position only happens when the lexical item is not syntactically phrase-final). The intersection of phonological with syntactic constituency remains to be investigated.

\(^{85}\) This condition cannot be tested in lexical items where the lexically breathy/depressed syllable is non-stem-final (e.g. -\(\text{ghle}\)) because no second depressor can be supplied to follow the depressor target syllable.

\(^{86}\) On lexical depression in consonants, cf. Chapter 7 §7.2 (and following), §8.1.4 above.

\(^{87}\) The copula is introduced in Chapter 2 §2.2.1.7 (ff.), and is treated extensively with regard to its tone patterns in Chapter 7 §7.5 (and cf. §8.1.4 above).

\(^{88}\) The associative prefix is introduced in Chapter 2 §2.2.2.3; its tone status is dealt with in

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(101) Cline of depression patterns: from most-\( L \) (a) to most-toneless (f)

<table>
<thead>
<tr>
<th>Effects ⇒</th>
<th>i</th>
<th>ii</th>
<th>iii</th>
<th>iv</th>
<th>v</th>
<th>vi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradigms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) general lexical depression</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(b) lexical depression triggered grammatically</td>
<td>no(^ {83} )</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(c) onsetless lexical depression</td>
<td>no</td>
<td>yes</td>
<td>no(^ {84} )</td>
<td>( )(^ {85} )</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(d) depression shift/block split</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>(e) vestigial depression block</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>(f) default for non-H nouns/verbs</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

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Effects /bright/ bright /bright/bright

Paradigms /bdown/bdown /bdown/bdown
example of (101c) is the quantifier stem -ohle ‘all’¹⁸⁹. (101d-e) appear to be strictly paradigm-related phenomena, as indicated in the tableau. For (101d) the past subjunctive object prefix⁹⁰ (OP) is the paradigm case; this level in the cline is the most truly gradient, in that depression is undeniably present on the object prefix in the form of block⁹¹ (column v), and yet depression shift⁹² off the prefix does not take place (column iii). This is the clearest case of separating the two phenomena (shift and block) otherwise almost always linked.

(101e) is the most vestigial form of depression—paradigmatically, the present negative verbs⁹³—in that it is only manifest under heavily conditioned depression block (onto the penult of the toneless/low category stems, when they are two syllables long—that is when the penult is the block target). The penult is the phonological head position in the present negative (which is a σ²-to-penult paradigm), thus, the depression profile could also be termed ‘resists shift onto depressed-σ-as-head’. Finally, (101f) is the elsewhere phonological condition for toneless/low verb stems, that is, in all (other) paradigms.

As has been made clear in parts of Chapter 7, one of the chief conditioning factors of the manifestation of this gradient of depression—especially in the non-discrete cases, that is, from (101b) to (101e)—is morphological paradigm membership (e.g. present negative). As such, this constitutes interference from without the phonology. Nevertheless, the constituent elements of the depression phenomena are centrally phonological (even though with reference also to morphological boundaries, e.g. prefix/stem edge).

8. 3. 11. Marking: Feature Conflict in the Lexicon

The relationship between H and L was established in Chapter 7 §7.2-§7.8 as phonologically antagonistic, that is, as a conflicting feature setting that optimally requires resolution of some sort. Phonological (and phonetic) resolution through phasing has been
addressed again in §8.3.9 just above.

But the source of the feature antagonism has not yet received any comment. It is frequently assumed in phonology that feature antagonism is the result of some ‘normal’ lexical feature configuration being manipulated by further morphological and phonological patterns such that an untenable feature conflict is the result. Because of the conflict—not anticipated by the phonology—repair rules must be invented by the phonological grammar to make the output representation of the phonology match the representational filters or phonotactic constraints. That is, the phonology gets to clean up the feature mess that results from the application of some combination of its own rules/constraints.

Now I have shown in §8.3.9 that despite the extension of the perceptibility (visibility) of both the L and H features—and among the two, the L feature expands at the expense of the H—the contrast between the two is never lost. But this observation becomes all the more remarkable when it is found also to be the case that the feature conflict is frequently set up at the source: in the lexicon. In other words, the very feature conflict which requires resolution in the form of constraints that extend or shrink feature domains—in order to avoid the untenable feature configuration of having to parse L and H in the same syllabic space—is delivered as a conflict in the lexicon (102), well ‘before’ the phonology even becomes relevant. One could accuse the lexicon of creating inherently unstable, unparsable entities. There are three types of lexical conflict: conflict in the morphology (102), conflict related to sonorancy (103), and ‘accidental’ conflict (104).

Firstly, there are cases of lexical conflict set up in specific morphemes (102).

(102)  **Lexical conflict in the morphology**

a. remote past / past subjunct *non*-3p prefixes\(^95\): (ga- [1ps]), wa- [2ps], sa- [1pp], la- [2pp]

b. associative prefixes\(^96\): Ca- [where C < ‘weak’ classes 1,1a,3,4,6,9]

c. object prefixes\(^97\) (in certain paradigms): {-mu-}, {-ba-}, etc

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\(^94\) Besides (102a-b), the inclusive suffix -(á)ni seems to require depression on the first syllable, in the form of a downstep (cf. Appendix A, paradigm V). This may relate to clitic status. These paradigms, with the feature conflict in the morphological lexemes, are presented in Chapter 7 §7.6.2 (various subsections). Cf. Appendix A, paradigm V, for the remote past.

\(^95\) The associative was introduced in Chapter 2 §2.2.2.1, §2.2.2.3, and presented as having conflicting tone specifications in Chapter 7 §7.8.2.3. The strong/weak class distinction was introduced in Chapter 2 §2.2.1.1 (48-49), and is referred to again in Chapter 7 §7.8.2.

\(^96\) The case of OPs is discussed at length (for the present indicative, and similar paradigms)
In the examples in (102a-b), a morpheme is specified underlingly as both L and H. Thus, the feature antagonism is (already) lexically specified (in that the morpheme has its own proper lexical entry).

Similarly, but not identically, is the subtype of Object Prefixes in (102c), which—in paradigms such as the present indicative (Chapter 5 §5.4)—contain an inherent conflict: in these paradigms they never surface-express as H. That is, even though they are lexically H in the underlying representation—they introduce a H tone to the representation, which is subject to the usual range of H domain parse and express constraints—they are subjected to the morphophonetic anti-express constraint: *EXPRESS\_OP, which forbids H expression on the OP morpheme itself.

Secondly, I have shown earlier\(^98\) that certain canonically bisyllabic lexical items having sonorant onsets in stem \(σ1\) position \(may\)^\(^99\) be depressed in Phuthi. This is easily identifiable as crosslinguistically anomalous for Nguni; thus, none of the items that are depressed (and breathy) in (103) are depressed in other Nguni languages.

(103) **Sonority-driven conflict**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>a.</td>
<td>-ohle</td>
</tr>
<tr>
<td>b.</td>
<td>-odzi/-ędzi(^100)</td>
</tr>
<tr>
<td>c.</td>
<td>kũ-yhāala</td>
</tr>
<tr>
<td>d.</td>
<td>-nyheēti</td>
</tr>
<tr>
<td>e.</td>
<td>lǐi-wḥā</td>
</tr>
</tbody>
</table>

in Chapter 5 §5.4. In Chapter 7 §7.6.3, the status of OPs is revisited: OPs—subsequently termed ‘quasi-depressors’—were analysed as H and also as depressed, in that they presented themselves—paradigm-specifically—as depressed. For extensive OP data, see all sections III-VI in all 22 paradigms of Appendix A.

\(^98\) This category of salient, sonorous-onset lexical items is introduced in Chapter 7 §7.8.2-§7.8.3 and recapitulated in §8.1.4 above.

\(^99\) As shown in Chapter 7 §7.8.2, lexical items commencing in sonorous consonants are certainly not obliged to be depressed as well. In §7.8.2.1, depressed (311-312) contrast with non-depressed (313).

\(^100\) The quantitative (103a,b) is introduced in Chapter 2 §2.2.1.1, and presented as the morpheme specified theoretically as both H and L in Chapter 7 §7.8.2.1. The quantitative could be listed under morphology in (102) above, if instead of a conflicting tone specification on the quantitative stem, this is conceived of as a non-conflicting stem, with systematically conflicting prefixes. Either way, the tone conflict is set up in the lexicon (that is, not by any phonological operation). Inconsequentially, the depressed penult is followed by a lexically depressed syllable.
It was suggested in Chapter 7 §7.8.2, where the data in (103) is discussed, that a unifying principle which I termed ‘salience’ attracts depression (L) to a phonological or morphological position that is salient (for speaker or for hearer, or for both): in these cases, the phonologically salient penult syllable is penult—ultima in the minimal (103e)—which is also the morphologically stem-initial syllable.

Depression through salience appears to be nudged into place by the phonology (sonorous onsets are inherently compatible with audible expression of breathy voicing / depression, whereas obstruents are inherently incompatible). This form of conditioned depression seems midway between the unconditioned depression insertion (L-insertion) in (102) above, and the fully conditioned consonant-driven insertion in (104) to follow.

Thirdly and finally, there is a set of verbs that are H toned (as opposed to toneless), and which also contain breathy (or ‘depressor’) consonants in their segmental stems, which breathiness in turn requires the presence of a lexically-triggered depression domain\(^\text{101}\). Clearly, I do not consider the L/H conflict in these stems as part of the set of inherently conflicting morphemes in (102), nor as part of the sonority-triggered depression in (103), but rather as ‘accidental’ conflict (104). That is, L-ness is not intended grammatically, but emerges phonologically merely as a byproduct of the breathy voicing status of a particular subset of the consonants occurring in the set of verb stems\(^\text{102}\).

\(\text{(104) Accidental lexical conflict}\)
\[\text{a. kû-geêna} \quad \text{to enter}\]
\[\text{b. kû-gaádzə} \quad \text{to stamp}\]
\[\text{c. kû-bhîjña} \quad \text{to sing}\]

The data in (102-103)—and cf. Chapter 7 §7.8.2.1—confirms that despite the antagonism inherent in parsing L and H simultaneously, the Phuthi lexicon is quite content to issue a number of lexical and grammatical morphemes that are specified with respect to both active tones—both

\(^{101}\) We might expect these verbs with breathy/depressor consonants which are also H to constitute half of the verb stem lexicon (as opposed to the other half, which is toneless), but in reality, there are many stems that do not contain any breathy/depressor consonants (by virtue of what can be assumed to be the ‘random’ assignment of consonants to stems).

\(^{102}\) For these lexical items, cf. the examples used in discussions in all sections of Chapter 7, commencing with §7.2. Cf. also the lexicon in Appendix D.
tone *qua* tone, and voice—that is, as simultaneously H and L. The inherent conflict in these morphemes seeks to be resolved by linearly phasing depression and H tone (cf. §7.2.5). In other words, a whole set of tone/voice constraint interactions is necessarily invoked in order to respond to these inherently conflicting specifications (which we can safely call phonologically marked specifications).

The obvious phonological question is why Phuthi would not only tolerate ‘bad’, non-accidental, phonologically marked configurations in its grammar but actually *create* them in its lexicon. The speculative answer is that antagonistic configurations can be part of the lexicon because both the L and H features can serve a higher function: phonological—and perhaps discourse—prominence.

This speculative answer builds on two linked observations: (a) general prominence, and (b) salience. General prominence is the range of prosodic conditions—proposed in Chapters 4, 5, 6, 7—that define the attraction of a rightmost H tone domain to the prosodic head of a word (usually antepenult or penult; ultima under minimality conditions). Thus, H is attracted to a prosodically prominent position (achieved through an interaction of constraints that invoked both phonological and morphological structure). Salience, then, invokes depression enhancement, that is, it is the unifying principle that attracts a L feature to an already prosodically prominent position which I defined as already being H (though it is not simply the phonological head).

But the phenomenon identified in this final section goes beyond salience: it involves ‘derived’ prominence (head-related) and ‘derived’ salience being raised together out of the phonology into the lexicon, which raising phenomenon acknowledges that what has been observed as a phonologically ‘derived’ process is also an acceptable preexisting configuration in the lexicon itself, presumably in order to draw particular attention to—or ‘mark’—a particular morpheme or lexical item. I term this raising of an item (or part of it) from the phonology into the lexicon ‘phonological marking’.

In the historical state of play, I suggest that this two-step process of ‘marking’ is a very recent strategy in Phuthi. Now that this marking is available to the grammar, however, I suggest it will likely be exploited in the future by a wider range of lexemes (including morphemes) than

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103 The linguistic level of the function that the lexical creation of tone antagonism serves may well be of a higher order than the phonology, and may extend to a discourse function.
before. I also suggest that salience on its own will also increase in the range of contexts it is invoked in.

Projecting ahead, there are two possible further outcomes that I venture to propose: (a) Phuthi may yet drift into an even more complex cline of depression phenomena than was indicated in §8.3.10 (101), by way of even greater fragmentation\textsuperscript{104} of the depression properties across the paradigms of the language\textsuperscript{105}; (b) alternatively, or perhaps subsequently, this fragmentation may give way to phonological and morphological levelling, in that the paradigm-specific behaviour of the OP, as well as its ambivalent tone status—H but unexpressed, possibly even L as well as H—may be simplified\textsuperscript{106}: either all OPs will be everywhere H and depressed (that is, an extension from the properties presently associated with the present indicative paradigms (cf. Chapter 5 §5.4), or at least, parsed as H, but uniformly unexpressable as H); or, all OPs everywhere will be just plain H with none of the anti-express effect currently found in several paradigms. These are two distinct—possibly sequenced—speculative outcomes.

It is clear, of course, that this ‘explanation’ cannot hold universally, since vast numbers of eligible lexical items do not reflect any marking in the lexicon (that is, they are specified as H but not L; or as L (lexically- or grammatically-triggered) but not H; or as neither L nor H.

We can observe that if L serves as a form of salience enhancing H-ness, and the two features together compose the ‘marking’ I have suggested, then H on its own certainly also serves

\textsuperscript{104} Each of the shift and block properties has already been teased out partially paradigm-specifically, as revealed in (101) in §8.3.9 above. Thus, the obvious direction for further fragmentation is further paradigm-specific encoding of the various properties. The phonological distinctions between the six forms of depression/non-depression (a-f) seem potentially very unstable, raising the question of whether even the present range of property fragmentation on the depression continuum is sustainable. The past subjunctive §7.6.3.2 (cf. footnote 104 in that section) already displays actual instability, where SPs display allomorph variation between two sets of realisations (depressed vs. non-depressed).

\textsuperscript{105} This corresponds to the diffusion that Dixon’s (1997) punctuated equilibrium model expects for languages which exist in a similar geographic region for a very long period of time. Thus, equilibrium leads to ever greater diffusion of linguistic features across a linguistic area. I maintain uncontroversially, that this also happens within a single grammar of a single variety of a language.

\textsuperscript{106} In my grammar-internal analogy, this simplification would correspond to the punctuation stage in Dixon’s (1997) model of punctuated equilibrium. Rapid and fairly radical changes can be expected in a period of punctuation: Phuthi already displays clear evidence of historical levelling and simplification (cf. Chapter 1 §1.1.5), even though levelling (and innovation) in Phuthi have been presented as triggered largely by contact effects.
as a salient tone feature, lifting a syllable out of tonelessness. In conclusion, then, Phuthi entertains two distinct forms of phonological prominence: L (depression) and H, triggered separately by independent grammatical conditions—lexical, morphological, phonological—or, sometimes, derived or specified together (marking).

If depression-insertion is a form of salience/prominence, then H tone certainly also provides an uncontroversial form of perceptual salience. In this respect, Phuthi stands as an example of a rather special Bantu language revealing two distinct forms of phonological prominence (L, H), each antagonistic to the other—even though they do interact phonologically, either perforce through ‘derived’ effects, or through the sponsored configuration in the lexicon that has been the focus of the present section.

8. 4. Future Directions

This dissertation has provided a thorough investigation of the tone and tone/voice patterns in a single language, Phuthi. A number of interesting theoretical observations have been made in this work that have confirmed theoretical claims made elsewhere (e.g. the prominence and neutralisation left-right asymmetry). In other instances, the present analysis forces certain theoretical claims made elsewhere to be rethought (the allegedly distinct behaviour of lexical and grammatical H and L tones; the relation between tone qua tone and voice-triggered tone).

The specific theoretical challenge that arises from this work is the following: if the complex range of relationships between domain structure (parsing) and domain expression (surface feature) in Phuthi is reflected accurately in this dissertation, then a non-domains based theory—with the necessarily entailed parse/express distinction—can never adequately represent the range of theoretical relationships that the phonological grammar must be able to articulate. Phuthi—and all languages which share a similar range of tone faithfulness-structural properties—issues a direct challenge to all non-domains-based optimality-encoded theoretical phonology.

Much work also remains to be done in theoretical areas related to the phonology. The claims for phonological breathiness and tonal depression await the rigorous, quantified instrumental testing performed for Swati by Traill (1990). The phonology-syntax interface remains almost entirely unexplored; in fact, virtually no light has been shed on the properties of
Phuthi syntax, which lie beyond the scope of this work (although the syntax can observed to correspond in large part to surface configurations in other Nguni languages, especially to South Sotho). No evidence concerning the phonological properties (and neutralised properties\textsuperscript{107}) of interrogative phrases has been presented.

Additionally, no examination of discourse structure has been offered. And no satisfactory (quantitative) examination of the sociolinguistic profile of Phuthi speech communities has been carried out (Chapter 1 §1.1.4-§1.1.5 notwithstanding).

Finally, although a fairly indepth study of one main variety (Mpapa Phuthi) has been provided, with some comparative reference to distinct phonological behaviour in a second variety (Sigxodo Phuthi), nothing has been documented here for Qacha Phuthi\textsuperscript{108}, nor for the remnant communities in the Matatiele and Mount Fletcher areas, which two regions together cover a large geographical space in southern and eastern Lesotho and almost certainly offer concomitant regional linguistic variation.

It is hoped that the curiosity of scholars may be sufficiently aroused by what has been revealed in this work that they would re-test the claims made here, and that they would open wider the window of insight offered into this corner of the Bantu language spectrum.

\textsuperscript{107} Downing (1996) addresses the suspension (or neutralisation) of certain tone configurations in interrogative structures in Jita. Similarly, Kisseberth (1994) examines neutralisation of tone distinctions in negative forms in Tsonga.

\textsuperscript{108} Qacha Phuthi communities north of the town appear to be the largest set beyond Mpapa and Quthing (possibly even more numerous than both these others); cf. Appendix B for details of these and other Phuthi speech communities.
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Appendix A

Lexical and Grammatical Tone Paradigms

Abbreviations are as used throughout the dissertation: H = high stem; L = low/toneless stem; SP = subject prefix; OP = object prefix. In addition, ‘C1 / C2 / C3’ = depressor consonant in first / second / third stem-syllable. ‘Σ’ or ‘Μ’ indicates a lexical item found exclusively in Sigxodo or Mpapa. Otherwise, items (and patterns) are found in both dialects. The three SPs most generally used are toneless/low si- ‘we’, li- ‘you’
1, and H-tone bá- ‘they’. The OPs used, all meaning ‘it/them’ (the details of grammatical number are not relevant), are all underlyingly H: -bá-, -tí-. In addition, the depressed 1ps SP and OP -gi- is provided in all paradigms. ‘Long form’ indicates ‘phrase-final’ (cf. discussion in Chapter 2 §2.2.4.7, Chapter 4 §4.1 vs. §4.5), just as ‘short form’ indicates ‘phrase-medial’; these terms are only used in contrast with one another, that is, when ‘long’ and ‘short’ paradigms are being contrasted. In other instances, for clarity, ‘long form’ or ‘short form’ is used in parentheses, only to indicate more clearly the nature of the paradigm being exemplified (even if its long or short counterpart is not present in this appendix).

The following are the paradigms exemplified in this appendix (by default, a paradigm is in the affirmative (non-negative polarity) form, unless indicated as negative):

(1) Paradigms catalogued in this appendix
   I. Lexical paradigms
      A. Present Indicative, long form
      B. Present Indicative, long form, reduplicative
      C. Present Indicative, short form
      D. Infinitive
      E. Perfective Indicative, long form
      F. General Future
   II. Grammatical paradigms
      G. Present Participle
      H. Present Relative, long form
      I. Present Subjunctive
      J. Perfective Indicative, short form
      K. Imperative
      L. Remote Past

1 For expositional simplicity, 2pp ‘you (all)’ is glossed as ‘you’ throughout this appendix.
M. Perfective Indicative Negative
N. Past Subjunctive
O. Subjunctive Negative (general non-indicative negative)
P. Remote Past Negative I, II (+ participial; + subjunctive)
Q. Present Potential
R. Present Relative Negative
S. Perfective Relative
T. Perfective Relative Negative
U. Present Negative
V. Present Inclusive (and extended inclusive properties)

All paradigms except the inclusive have been introduced in Chapter 2 §2.2.4 (§2.2.4.9 for non-indicative moods). Several paradigms above (including the potential Q and inclusive V) have not been used in the dissertation to illustrate theoretical points, but are presented in this appendix (with some analysis in accompanying footnotes).

The 22 paradigm sets above (A-V) constitute an essentially maximal template: I claim that all phonologically interesting tone combinations\(^2\) in verb stems are given here, even though not all will be contrastively interesting for all verbs. The template is reduced for some paradigms (as indicated). On the other hand, it has not been felt necessary to provide more than one set of reduplicate stems\(^3\) in this appendix (the present indicative—1B above), as the sole intention in this appendix is to demonstrate that the phonological behaviour of lexical H tone in verb stems is fully productive regardless of the number of syllables in a verb stem, that is, even in very long stems (> 5-σ stems).

The paradigms are subdivided into six sets of combinatory ‘verb paradigm templates’ sorted according to the morphological presence/absence of the (non-1ps) OP, of the 1ps OP, and of the presence/absence of depression—more specifically the position of a depressed syllable in a

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\(^2\) Factors in these combinations are: (a) the number and location of the H tones on prefix(es) and stem; (b) the location of depression on the prefix and/or on one or more of the stem syllables. For an approximate, but fuller calculation of the range of paradigm forms that can be produced from a single verb root, cf. Chapter 2 §2.2.4 (footnote 218).

\(^3\) Reduplication is fully productive for all verb paradigms, albeit with variation in the reduplicate stem σ2 vowel: while V2 (or σ2) is neutrally -a- (not only for the indicative but generally), there appear to be paradigms, and perhaps individual {stem+extension} combinations that are more tolerant of V2 being a non-a vowel, e.g. the causative -i- in the present indicative, the perfective indicative -i- (Chapter 2 §2.2.4.11 (129d,g); also cf. (8d, 9d, 9ab) below, and the discussion of paradigm B preceding (8); surprisingly, present subjunctives (cf. (1) above) seem not to require the paradigm final vowel -e in σ2 (§2.2.4.11 (129i,j))).
stem (C1, C2, C3 or C4; and further into the verb stem in paradigm B below):

I. Modal (that is, non-breathy / non-depressor) stems.
II. Breathy / depressor stems.
III. Modal stems, with OP.
IV. Modal stems, with 1ps OP.
V. Breathy / depressor stems, with OP.
VI. Breathy / depressor stems, with 1ps OP.

For each of the series I to VI, stems are exemplified in all four toneless/L and H combinations of the subject prefix and stem morphemes: L SP + L stem; L SP + H stem; H SP + L stem; H SP + H stem. Each non-depressor stem is given in lengths from one syllable (where possible) up to four syllables; even though longer stem lengths are at times used in the dissertation body, they add no contrastive tone patterns, and therefore are not required in this appendix. Nevertheless, they do occur.

Given my choice to limit stem lengths and numbers of depressor consonants, and given lexically unattested exemplars, that is, accidental gaps—such as the absence of a depressed one-syllable L stem, cf. (3a), and so on—each paradigm A to V in this appendix yields no more than around 160 forms. A few paradigms are more severely reduced in their data yield, for semantic or morphological reasons, for example, the imperative (K) permits no OPs, since the semantic imperative with pronominal objects requires a morphological subjunctive configuration (paradigm I). Some paradigms have a richer data yield because they admit alternative forms, for example, unincorporated or disjoint HD forms in the present indicative short form (C) and participial (G). The richest data yield is the present indicative long form reduplicative (B).

Unspecified ‘SP’ in the paradigms in this appendix indicates lexical SPs; the standard configuration applies: all SPs are H, except 1ps, 1pp, 2ps, 2pp. A few paradigms, specified in each case, require grammatical SPs, where all SPs are H, without exception. These include the participial (G) and subjunctive (I).

‘OP’ in the paradigms in this appendix indicates lexical OPs: all OPs are H, without exception, and the OP tone has the properties revealed in Chapter 5 §5.4. Certain paradigms (generally grammatical paradigms) will tend not to underexpress the OP, but rather to retain the universal surface-expression of OP as H. This universal H-ness is in these cases subject to the standard depression effects (cf. Chapter 7 §7.2 - §7.4), and subject also to somewhat paradigm-
specific variation, e.g. the past subjunctive (paradigm N to follow), already examined in Chapter 7 §7.6.2 - §7.6.3.

Generally, phonologically predictable downsteps are not indicated in this appendix (cf. Chapter 5 §5.5 for the properties of downstep not triggered by phonological depression, and Chapter 7 §7.9 for depression-triggered downstep). Contrastive downsteps, however, will be indicated in the participial (G), present negative (U) and inclusive (V) paradigms. Predictable, but rare, depressor-induced (Register Domain) downsteps occur in the present indicative short form (C) and the perfective short form (J); these are generally not marked because they follow exceptionlessly from the principles in §7.9.

A chart indicating comparative lexical and tone configurations has been provided as Tableau 1 (3) in Chapter 6, all of which tone configurations are elicited among the 22 paradigms in this appendix.

[turn to the next page for Appendix A, Paradigm A: Present Indicative long form]
Paradigm A: Present Indicative, long form

- \(\text{SP} + -ya- + (\text{OP}) + \{\text{ROOT} (+\text{suffixes}) + -a\}\) stem
- As indicated above, ‘SP’ without further specification indicates standard SP lexical tone properties, as shown in Chapter 4 §4.1 (i.e. all SPs are H, except 1ps, 1pp, 2ps, 2pp).

(2) Verb Paradigm Template I

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>L SP, L stem, 1σ</td>
<td>li-yaa-ta</td>
</tr>
<tr>
<td>b.</td>
<td>L SP, L stem, 2σ</td>
<td>li-ya-liima</td>
</tr>
<tr>
<td>c.</td>
<td>L SP, L stem, 3σ</td>
<td>li-ya-liimisa</td>
</tr>
<tr>
<td>d.</td>
<td>L SP, L stem, 4σ</td>
<td>li-ya-limelaana</td>
</tr>
<tr>
<td>e.</td>
<td>H SP, L stem, 1σ</td>
<td>bá-yáá-ta</td>
</tr>
<tr>
<td>f.</td>
<td>H SP, L stem, 2σ</td>
<td>bá-yá-liima</td>
</tr>
<tr>
<td>g.</td>
<td>H SP, L stem, 3σ</td>
<td>bá-yá-límiisa</td>
</tr>
<tr>
<td>h.</td>
<td>H SP, L stem, 4σ</td>
<td>bá-yá-límélaana</td>
</tr>
<tr>
<td>i.</td>
<td>L SP, H stem, 1σ</td>
<td>li-yaa-phá</td>
</tr>
<tr>
<td>j.</td>
<td>L SP, H stem, 2σ</td>
<td>li-ya-bóóna</td>
</tr>
<tr>
<td>k.</td>
<td>L SP, H stem, 3σ</td>
<td>li-ya-bóníísa</td>
</tr>
<tr>
<td>l.</td>
<td>L SP, H stem, 4σ</td>
<td>li-ya-sébétíisa</td>
</tr>
<tr>
<td>m.</td>
<td>H SP, H stem, 1σ</td>
<td>bá-yaa-phá</td>
</tr>
<tr>
<td>n.</td>
<td>H SP, H stem, 2σ</td>
<td>bá-ya-bóóna</td>
</tr>
<tr>
<td>o.</td>
<td>H SP, H stem, 3σ</td>
<td>bá-ya-bóníísa</td>
</tr>
<tr>
<td>p.</td>
<td>H SP, H stem, 4σ</td>
<td>bá-ya-sébétíisa</td>
</tr>
</tbody>
</table>

---

4 It will be rare in this appendix to refer to non-extant data, that is, hypothetical but unelicited forms. But the rare instances, such as (2k), draw attention to comparative forms that may be extant in other Nguni or Sotho languages in the South-Eastern Bantu zone, and assure Bantuist comparativists that careful checking has been done for such potential competitor forms. This has been all the more important, because under certain conditions surface variation is attested, for example, long reduplicated stems with multiple breathy/depressed consonants, possibly with a depressed OP, cf. (13q-an), and below. There is also some dialectal and register-based surface variation possible in phrase-medial forms, cf. (7s-t,w-x; 19) below.
Paradigm A: Present Indicative, long form

(3) Verb Paradigm Template
Breathy / depressor stems

(a) L SP, L stem, C1, 1σ — 5
(b) L SP, L stem, C1, 2σ li-ya-vuula you open
(c) L SP, L stem, C1, 3σ li-ya-vuliisa you help open
(d) L SP, L stem, C1, 4σ li-ya-vulelaana you open for e.o.

(e) H SP, L stem, C1, 1σ —
(f) H SP, L stem, C1, 2σ bá-yá-vuula they open
(g) H SP, L stem, C1, 3σ bá-yá-vulíisa they help open
(h) H SP, L stem, C1, 4σ bá-yá-vulelaana they open for e.o.

(i) L SP, H stem, C1, 1σ li-yaa-dlä 6 you eat
(j) L SP, H stem, C1, 2σ li-ya-vúúna you harvest
(k) L SP, H stem, C1, 3σ li-ya-vúnilisa you help harvest
(l) L SP, H stem, C1, 4σ li-ya-vísíisiisa you understand

(m) H SP, H stem, C1, 1σ bá-yaa-dlä they eat
(n) H SP, H stem, C1, 2σ bá-yá-vúúna they harvest
(o) H SP, H stem, C1, 3σ bá-yá-vúnilisa they help harvest
(p) H SP, H stem, C1, 4σ bá-yá-vísíisiisa they understand

5 This lexical gap in (3a, 3e), and therefore throughout all paradigms in this appendix, is accidental: that is, there is no principled reason for the absence of a one-syllable depressed verb stem in the low/toneless paradigm: the lexicon (elicited up to the present time) simply fails to concede such an entry.

6 This form is more commonly represented as si-yaa-dlä in Nguni languages, with a H ultima, which is almost phonologically satisfactory in that the syllable is indeed phonologically H. In the analysis of this dissertation, however, the form in (3i) with phonetically rising H tone reflects more accurately the successful parsing of both phonological tones (L, H), sequenced, on the monosyllable. This is phonologically accurate in the same way that all (non-medial) phrase-penultimate syllables are phonetically and phonologically long, thus represented with the doubling of the vowel symbol (e.g. 3j, 3k, 3l, and so on).
q. L SP, L stem, C2, 2σ  li-ya-laadza  you fetch
r. L SP, L stem, C2, 3σ  li-ya-ladzeela  you follow
s. L SP, L stem, C2, 4σ  li-ya-ladzel:la  you pursue
t. H SP, L stem, C2, 2σ  bá-yá-laadza  they fetch
u. H SP, L stem, C2, 3σ  bá-yá-ládzeela  they follow
v. H SP, L stem, C2, 4σ  bá-yá-ladzel:la  they pursue
w. L SP, H stem, C2, 2σ  li-ya-tshééga  you buy
x. L SP, H stem, C2, 3σ  li-ya-tshegi ísa  you sell
y. L SP, H stem, C2, 4σ  li-ya-tshegeláana  you buy for each other
z. H SP, H stem, C2, 2σ  bá-ya-tshééga  they buy
aa. H SP, H stem, C2, 3σ  bá-ya-tshegi ísa  they sell
ab. H SP, H stem, C2, 4σ  bá-ya-tshegeláana  they buy for e.o.
ac. L SP, L stem, C3, 3σ  li-ya-limaaga  you cultivate indiscriminately
ad. L SP, L stem, C3, 4σ  li-ya-limagiísa  you help cultivate indiscriminately
ae. L SP, L stem, C3, 5σ  li-ya-limagisíísa  you cultivate intensively indiscriminately
af. H SP, L stem, C3, 3σ  bá-yá-límaaga  they cultivate indiscriminately

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7 The syllabic -íl- stems in (3s,v), (6r,u), (7s,v), (9s,v), and everywhere else, have identical tonal properties as stems where instead a vowel corresponds to the syllabic -íl- in these examples.

8 C3 depressors in toneless/L stems are introduced first in data sets in Chapter 7 §7.4.1.3 (86ff.), but are not developed there into fuller paradigm sets. Here I provide C3 and C4 stems, if possible (though rarely) undervised, as in (3ai, ao) below, but otherwise with the productive but fairly low-frequency extensive suffix -ag- ‘indiscriminately’ (cf. Chapter 2 §2.2.4.6 (110c), as also used in the Chapter 7 data. I do not attempt a wider range of depressor-bearing stems, as the principles are quite clearly consistent in all the data given here. As has been pointed out earlier, morphological combinatorial possibilities of verb stems are in principle limitless.
<table>
<thead>
<tr>
<th>ag. H SP, L stem, C3, 4σ</th>
<th>bá-yá-límágiisa</th>
<th>they help cultivate indiscriminately</th>
</tr>
</thead>
<tbody>
<tr>
<td>ah. H SP, L stem, C3, 5σ</td>
<td>bá-yá-limagisfisasa</td>
<td>they cultivate intensively indiscriminately</td>
</tr>
<tr>
<td>ai. L SP, H stem, C3, 3σ</td>
<td>li-ya-búlúúga</td>
<td>you save / keep</td>
</tr>
<tr>
<td>aj. L SP, H stem, C3, 4σ</td>
<td>li-ya-búlúgiisa</td>
<td>you help save</td>
</tr>
<tr>
<td>ak. L SP, H stem, C3, 5σ</td>
<td>li-ya-bulugisfisasa</td>
<td>you save intensively</td>
</tr>
<tr>
<td>al. H SP, H stem, C3, 3σ</td>
<td>bá-ya-búlúúga</td>
<td>they save / keep</td>
</tr>
<tr>
<td>am.H SP, H stem, C3, 4σ</td>
<td>bá-ya-búlúgiisa</td>
<td>they help save</td>
</tr>
<tr>
<td>an. H SP, H stem, C3, 5σ</td>
<td>bá-ya-bulugisfisasa</td>
<td>they save intensively</td>
</tr>
<tr>
<td>ao. L SP, L stem, C4, 4σ</td>
<td>li-ya-patalaaga</td>
<td>you pay indiscriminately</td>
</tr>
<tr>
<td>ap. L SP, L stem, C4, 5σ</td>
<td>li-ya-patalagiisa</td>
<td>you help pay indiscriminately</td>
</tr>
<tr>
<td>aq. L SP, L stem, C4, 6σ</td>
<td>li-ya-patalagisfisasa</td>
<td>you pay intensively indiscriminately</td>
</tr>
<tr>
<td>ar. H SP, L stem, C4, 4σ</td>
<td>bá-yá-pátalaaga</td>
<td>they pay indiscriminately</td>
</tr>
<tr>
<td>as. H SP, L stem, C4, 5σ</td>
<td>bá-yá-pátalágiisa</td>
<td>they help pay indiscriminately</td>
</tr>
<tr>
<td>at. H SP, L stem, C4, 6σ</td>
<td>bá-yá-patalagisfisasa</td>
<td>they pay intensively indiscriminately</td>
</tr>
<tr>
<td>au. L SP, H stem, C4, 4σ</td>
<td>li-ya-búlalaaga</td>
<td>you kill indiscriminately</td>
</tr>
<tr>
<td>av. L SP, H stem, C4, 5σ</td>
<td>li-ya-búlágisfisasa</td>
<td>you cause to kill indiscriminately</td>
</tr>
<tr>
<td>aw.L SP, H stem, C4, 6σ</td>
<td>li-ya-bulalagisfisasa</td>
<td>you kill intensively indiscriminately</td>
</tr>
<tr>
<td>ax. H SP, H stem, C4, 4σ</td>
<td>bá-ya-búlalaaga</td>
<td>they kill indiscriminately</td>
</tr>
</tbody>
</table>
ay. H SP, H stem, C4, 5σ  
  bà-ya-búlálágíísa  
  they cause to kill indiscriminately

az. H SP, H stem, C4, 6σ  
  bà-ya-bułalagišíísa  
  they kill intensively indiscriminately

ba. L SP, L stem, C12 9, 2σ  
  li-ya-guđda  
  you shear

bb. L SP, L stem, C12, 3σ  
  li-ya-guđzi Já  
  you help shear

bc. L SP, L stem, C12, 4σ  
  li-ya-guđzeláana  
  you shear for e.o.

bd. H SP, L stem, C12, 2σ  
  bà-ya-guđda  
  they shear

be. H SP, L stem, C12, 3σ  
  bà-ya-guđzi iça  
  they help shear

bf. H SP, L stem, C12, 4σ  
  bà-ya-guđzeláana  
  they shear for e.o.

bg. L SP, H stem, C12, 2σ  
  li-ya-gááda  
  you stamp

bh. L SP, H stem, C12, 3σ  
  li-ya-gadzi ísa  
  you help stamp

bi. L SP, H stem, C12, 4σ  
  li-ya-gadzi sáana  
  you help e.o. stamp

bj. H SP, H stem, C12, 2σ  
  bà-ya-gááda  
  they stamp

bk. H SP, H stem, C12, 3σ  
  bà-ya-gadzi ísa  
  they help stamp

bl. H SP, H stem, C12, 4σ  
  bà-ya-gadzi sáana  
  they help e.o. stamp

bm. L SP, H stem, C123, 6σ  
  li-ya-gadzagi séláana  
  you help stamp indiscriminately for e.o.

bn. H SP, H stem, C123, 6σ  
  bà-ya-gadzagi séláana  
  they help stamp indiscriminately for e.o.

Paradigm A: Present Indicative, long form

(4)  Verb Paradigm Template III

Modal stems, with OP

a. L SP, L stem, OP, 1σ  
  li-ya-tíí-nya  
  you excrete them

9  ‘C12’ refers to the presence of a depressor consonant in both C1 and C2 positions (not to the number ‘twelve’). Similarly ‘C123’ to the separate positions C1, C2 and C3; and so on.

10  Elsewhere in this work (Chapter 5 §5.4.1, Chapter 7 §7.6.3), I have used the Class 14 OP -bu- with this 1-σ stem. The use of Class 8/10 OP -ti- here is purely in order to be consistent with the non-1ps OP used in all other stem lengths in this paradigm. The use of -ti- in this monosyllabic stem has no phonological tone implications. One may note generally that -ti- functions also as the fixed reflexive OP (cf. Chapter 2 §2.2.4.2 99u); thus the gloss for all examples in this appendix with OP -ti- (‘it/them’) could also be semantically reflexive (‘self/selves’, ‘myself; yourself; ourselves; yourselves; themselves’).
b. L SP, L stem, OP, 2σ  li-ya-tí-liima  you cultivate them

c. L SP, L stem, OP, 3σ  li-ya-tí-liimiisa  you help them cultivate

d. L SP, L stem, OP, 4σ  li-ya-tí-libátiisa  you delay them

e. H SP, L stem, OP, 1σ  bá-ya-tú-nya  they excrete them

f. H SP, L stem, OP, 2σ  bá-ya-tí-liima  they cultivate them

g. H SP, L stem, OP, 3σ  bá-ya-tí-liimiisa  they help them cultivate

h. H SP, L stem, OP, 4σ  bá-ya-tí-libátiisa  they delay them

i. L SP, H stem, OP, 1σ  li-ya-tú-pha  you give them

j. L SP, H stem, OP, 2σ  li-ya-tí-bóóna  you see them

k. L SP, H stem, OP, 3σ  li-ya-tí-bóníisa  you show them

l. L SP, H stem, OP, 4σ  li-ya-tí-sébátiisa  you use them

m. H SP, H stem, OP, 1σ  bá-ya-tú-pha  they give them

n. H SP, H stem, OP, 2σ  bá-ya-tí-bóóna  they see them

o. H SP, H stem, OP, 3σ  bá-ya-tí-bóníisa  they show them

p. H SP, H stem, OP, 4σ  bá-ya-tí-sébátiisa  they use them

Paradigm A: Present Indicative, long form

(5)   Verb Paradigm Template IV
Modal stems, with 1ps OP
a. L SP, L stem, 1psOP, 1σ  li-ya-gíí-nya  you excrete me

---

11 The penult -gíí- reflects a single H sponsor: the expositional disjunction is a typological artefact. The phonologically lengthened penult can never sponsor two distinct H (or L) tones.

12 Previously in the dissertation, examples requiring a toneless/L subject prefix have been exemplified with 1pp SP si-. Templates IV and VI (throughout the appendix) force a switch of the subject prefix to 2pp SP li-, in order to escape the semantic incoherence *‘we VERB-ed me’. There is no phonological implication in this switch; rather, li- is the only other toneless/L SP semantically available.

13 (5a) and (5e)—similar examples follow in paradigms below—are clearly semantically marked (though certainly possible in genres of imagination), but are nevertheless grammatically well-formed. As before, this semantic sequence is used here (and below) only because -nya

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b. L SP, L stem, 1psOP, 2σ  
   li-ya-gi-hláaabá  
you stab me

c. L SP, L stem, 1psOP, 3σ  
   li-ya-gi-límiíisa  
you help me cultivate

d. L SP, L stem, 1psOP, 4σ  
   li-ya-gi-libátiíisa  
you delay me

e. H SP, L stem, 1psOP, 1σ  
   bá-ya-gí-nya  
they excrete me

f. H SP, L stem, 1psOP, 2σ  
   bá-ya-gí-hláaabá  
they stab me

g. H SP, L stem, 1psOP, 3σ  
   bá-ya-gí-límiíisa  
they help me cultivate

h. H SP, L stem, 1psOP, 4σ  
   bá-ya-gí-libátiíisa  
they delay me

i. L SP, H stem, 1psOP, 1σ  
   li-ya-gíí-phá  
you give me

j. L SP, H stem, 1psOP, 2σ  
   li-ya-gí-bóóna  
you see me

k. L SP, H stem, 1psOP, 3σ  
   li-ya-gí-bóníísa  
you show me

l. L SP, H stem, 1psOP, 4σ  
   li-ya-gí-sébétiísa  
you use me

m. H SP, H stem, 1psOP, 1σ  
   bá-ya-gíí-phá  
they give me

n. H SP, H stem, 1psOP, 2σ  
   bá-ya-gí-bóóna  
they see me

o. H SP, H stem, 1psOP, 3σ  
   bá-ya-gí-bóníísa  
they show me

p. H SP, H stem, 1psOP, 4σ  
   bá-ya-gí-sébétiísa  
they use me

Paradigm A: Present Indicative, long form

(6) Verb Paradigm Template V  
Breathy / depressor stems, with OP

a. L SP, L stem, C1, OP, 1σ  
   —

b. L SP, L stem, C1, OP, 2σ  
   li-ya-tí-vuula  
you open them

c. L SP, L stem, C1, OP, 3σ  
   li-ya-tí-vulííisa  
you help open them

d. L SP, L stem, C1, OP, 4σ  
   li-ya-tí-vulélaana  
you open them for e.o.

e. H SP, L stem, C1, OP, 1σ  
   —

f. H SP, L stem, C1, OP, 2σ  
   bá-ya-tí-vuula  
they open them

g. H SP, L stem, C1, OP, 3σ  
   bá-ya-tí-vulííisa  
they help them open

h. H SP, L stem, C1, OP, 4σ  
   bá-ya-tí-vulélaana  
they open them for each other

‘excrete’ is the sole toneless/L monosyllabic transitive stem so far encountered in the language.

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<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i. L SP, H stem, C1, OP, 1σ</td>
<td>li-ya-tú-dlā</td>
<td>you eat them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. L SP, H stem, C1, OP, 2σ</td>
<td>li-ya-tú-vuúna</td>
<td>you harvest them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k. L SP, H stem, C1, OP, 3σ</td>
<td>li-ya-tú-vunísa</td>
<td>you help harvest them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l. L SP, H stem, C1, OP, 4σ</td>
<td>li-ya-tú-ísísísa</td>
<td>you understand them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m. H SP, H stem, C1, OP, 1σ</td>
<td>bá-ya-tú-dlā</td>
<td>they eat them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n. H SP, H stem, C1, OP, 2σ</td>
<td>bá-ya-tú-vuúna</td>
<td>they harvest them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o. H SP, H stem, C1, OP, 3σ</td>
<td>bá-ya-tú-vunísa</td>
<td>they help harvest them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p. H SP, H stem, C1, OP, 4σ</td>
<td>bá-ya-tú-ísísísa</td>
<td>they understand them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>q. L SP, L stem, C2, OP, 2σ</td>
<td>li-ya-tú-laadza</td>
<td>you fetch them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r. L SP, L stem, C2, OP, 3σ</td>
<td>li-ya-tú-ládzeela</td>
<td>you follow them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>s. L SP, L stem, C2, OP, 4σ</td>
<td>li-ya-tú-ladzelːla</td>
<td>you pursue them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t. H SP, L stem, C2, OP, 2σ</td>
<td>bá-ya-tú-laadza</td>
<td>they fetch them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u. H SP, L stem, C2, OP, 3σ</td>
<td>bá-ya-tú-ládzeela</td>
<td>they follow them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. H SP, L stem, C2, OP, 4σ</td>
<td>bá-ya-tú-ladzelːla</td>
<td>they pursue them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w. L SP, H stem, C2, OP, 2σ</td>
<td>li-ya-tú-tsheéega</td>
<td>you buy them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x. L SP, H stem, C2, OP, 3σ</td>
<td>li-ya-tú-tshegi ìsa</td>
<td>you sell them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>y. L SP, H stem, C2, OP, 4σ</td>
<td>li-ya-tú-tshegeláana</td>
<td>you buy them for e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>z. H SP, H stem, C2, OP, 2σ</td>
<td>bá-ya-tú-tsheéega</td>
<td>they buy them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aa. H SP, H stem, C2, OP, 3σ</td>
<td>bá-ya-tú-tshegi ìsa</td>
<td>they sell them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ab. H SP, H stem, C2, OP, 4σ</td>
<td>bá-ya-tú-tshegeláana</td>
<td>they buy them for e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ac. L SP, L stem, C3, OP, 3σ</td>
<td>li-ya-tú-límaaga</td>
<td>you cultivate them indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ad. L SP, L stem, C3, OP, 4σ</td>
<td>li-ya-tú-límagii ìsa</td>
<td>you help cultivate them indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ae. L SP, L stem, C3, OP, 5σ</td>
<td>li-ya-tú-límagisísa</td>
<td>you cultivate them intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
they cultivate them indiscriminately

they help cultivate them indiscriminately

they cultivate them intensively indiscriminately

you save / keep them

you help save them

you save them intensively

they save / keep them

they help save them

they save them intensively

you pay them indiscriminately

you help pay them indiscriminately

you pay them intensively indiscriminately

they pay them indiscriminately

they help pay them indiscriminately

they pay them intensively indiscriminately

you kill them indiscriminately

you cause them to kill indiscriminately

you kill them intensively indiscriminately
ax. H SP, H stem, C4, OP, 4σ bá-ya-tí-búlálaaga they kill them indiscriminately
ay. H SP, H stem, C4, OP, 5σ bá-ya-tí-búláąią̃sá they cause them to kill indiscriminately
az. H SP, H stem, C4, OP, 6σ bá-ya-tí-búláąią̃sá they kill them intensively indiscriminately
ba. L SP, L stem, C12, OP, 2σ li-ya-tí-gúddza you shear them
bb. L SP, L stem, C12, OP, 3σ li-ya-tí-gúddzi śa you help shear them
bc. L SP, L stem, C12, OP, 4σ li-ya-tí-gúddžéńana you shear for e.o.
bd. H SP, L stem, C12, OP, 2σ bá-ya-tí-gúddza they shear them
be. H SP, L stem, C12, OP, 3σ bá-ya-tí-gúddzi śa they help shear them
bf. H SP, L stem, C12, OP, 4σ bá-ya-tí-gúddžéńana they shear them for e.o.
bg. L SP, H stem, C12, OP, 2σ li-ya-tí-gááđza you stamp them
bh. L SP, H stem, C12, OP, 3σ li-ya-tí-gáádzi śa you help stamp them
bi. L SP, H stem, C12, OP, 4σ li-ya-tí-gáádzi십a you help e.o. stamp them
bj. H SP, H stem, C12, OP, 2σ bá-ya-tí-gááđza they stamp them
bk. H SP, H stem, C12, OP, 3σ bá-ya-tí-gáádzi śa they help stamp them
bl. H SP, H stem, C12, OP, 4σ bá-ya-tí-gáádzi십a they help e.o. stamp them

Paradigm A: Present Indicative, long form

(7) Verb Paradigm Template VI

Breathy / depressor stems, with 1ps OP
a. L SP, L stem, C1, 1psOP, 1σ —
b. L SP, L stem, C1, 1psOP, 2σ li-ya-gí-bheeka you look at me
c. L SP, L stem, C1, 1psOP, 3σ li-ya-gí-yułísá you help me open
d. L SP, L stem, C1, 1psOP, 4σ li-ya-gí-bhekísísá you look at me intensely
1 variation patterns in toneless/L stems—here in (7s-t, 7w-x, 7ag-ah, 7ak-al, 7aw-ax, 7ba-bb), and in paradigms that follow—are termed ‘disjointed H domains’ (Chapter 7 §7.7.2); cf. footnote 24 below.

This is not as semantically ill-formed as it may seem: ‘buy’ with a person object indicates ‘bribe’. Similarly, ‘sell me’ can mean ‘sell me out’.  

14 Cf. previous footnote: (7i, 7m) are semantically eccentric, but they are grammatically well-formed (these particular items are selected as no alternative depressor-bearing H 1σ stem exists).

15 The σ1 variation patterns in toneless/L stems—here in (7s-t, 7w-x, 7ag-ah, 7ak-al, 7aw-ax, 7ba-bb), and in paradigms that follow—are termed ‘disjointed H domains’ (Chapter 7 §7.7.2); cf. footnote 24 below.
Under particular elicitation conditions (speaker emphasis), the apparent ‘overlapping HD’ execution of this and similar forms (aa, ac, ad) can be achieved: li-ya-gi-tshégi ísa, where the penult rising H is significantly downstepped from the antepenult H, cf. (7ao,as,be,bi). The phenomenon has been analysed in Chapter 7 §7.7.1 as unincorporation of a H sponsor; cf. footnote 15 above.
<table>
<thead>
<tr>
<th>Verb Type</th>
<th>Stem</th>
<th>Mood</th>
<th>Person</th>
<th>Tense</th>
<th>Infinitive</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aq.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C3</td>
<td>1psOP, 3σ</td>
<td>bá-ya-gí-búluúga</td>
</tr>
<tr>
<td>ar.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C3</td>
<td>1psOP, 4σ</td>
<td>bá-ya-gí-búluúgiisa</td>
</tr>
<tr>
<td>as.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C3</td>
<td>1psOP, 5σ</td>
<td>bá-ya-gí-búluugíisa</td>
</tr>
<tr>
<td>at.</td>
<td>(ditto)</td>
<td>SP</td>
<td>H</td>
<td>C3</td>
<td></td>
<td>bá-ya-gí-búluugíisa</td>
</tr>
<tr>
<td>au.</td>
<td>L</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 4σ</td>
<td>li-ya-gí-pátálaaga</td>
</tr>
<tr>
<td>av.</td>
<td>L</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 5σ</td>
<td>li-ya-gí-pátalágíisa</td>
</tr>
<tr>
<td>aw.</td>
<td>L</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 6σ</td>
<td>li-ya-gí-patalagíisa</td>
</tr>
<tr>
<td>ax.</td>
<td>(ditto)</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td></td>
<td>li-ya-gí-patalagíisa</td>
</tr>
<tr>
<td>ay.</td>
<td>H</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 4σ</td>
<td>bá-ya-gí-pátálaaga</td>
</tr>
<tr>
<td>az.</td>
<td>H</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 5σ</td>
<td>bá-ya-gí-pátalágíisa</td>
</tr>
<tr>
<td>ba.</td>
<td>H</td>
<td>SP</td>
<td>L</td>
<td>C4</td>
<td>1psOP, 6σ</td>
<td>bá-ya-gí-patalagíisa</td>
</tr>
<tr>
<td>bb.</td>
<td>(ditto)</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td></td>
<td>bá-ya-gí-patalagíisa</td>
</tr>
<tr>
<td>bc.</td>
<td>L</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 4σ</td>
<td>li-ya-gí-búlaaga</td>
</tr>
<tr>
<td>bd.</td>
<td>L</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 5σ</td>
<td>li-ya-gí-búlálágíisa</td>
</tr>
<tr>
<td>be.</td>
<td>L</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 6σ</td>
<td>li-ya-gí-búlalagíisa</td>
</tr>
<tr>
<td>bf.</td>
<td>(ditto)</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td></td>
<td>li-ya-gí-bulalagíisa</td>
</tr>
<tr>
<td>bg.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 4σ</td>
<td>bá-ya-gí-búlaaga</td>
</tr>
<tr>
<td>bh.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 5σ</td>
<td>bá-ya-gí-búlálágíisa</td>
</tr>
<tr>
<td>bi.</td>
<td>H</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td>1psOP, 6σ</td>
<td>bá-ya-gí-búlalagíisa</td>
</tr>
<tr>
<td>bj.</td>
<td>(ditto)</td>
<td>SP</td>
<td>H</td>
<td>C4</td>
<td></td>
<td>bá-ya-gí-bulalagíisa</td>
</tr>
</tbody>
</table>
You carry me on your back

You help carry me on your back

You carry me on your back tightly

They carry me on their backs

They help carry me on their backs

They carry me on their backs tightly

They flatten me

They help me flatten

They flatten me completely

[turn to the next page for Appendix A, Paradigm B: Present Indicative long form, reduplicate]
Paradigm B: Present Indicative, long form reduplicate

- SP + -ya- + (OP) + \{2-σ REDUP\}+\{ROOT + (+suffixes) + -a\}\_stem
- The present indicative reduplicates below are glossed with ‘+’, abbreviating the reduplicative gloss which typically means ‘now and then’ or ‘here and there’.
- The basic reduplicative patterns for lexical paradigms are treated in Chapter 4 §4.4.
- The reduplicative displays significant variation along several parameters connected with the choice of σ2 vowel in the bisyllabic reduplicate template. Although this complexity is only partly reflected in this appendix, the parameters of variation include the following:

1. In almost any reduplicate stems **where there is morphological complexity** inside the first two base stem syllables (that is, in the syllables which serve as the source of the reduplicative templatic copy), there is a choice of the quality of the σ2 vowel in the bisyllabic reduplicate template. This copy-σ2 can be: (i) a copy of the base stem σ2, e.g. -i- in (8c); or, (ii) the morphological default vowel (-a), as in (8d); or (iii) the default morphological vowel for a particular morphological paradigm (e.g. -i(-) for present negative, where a base stem is two syllables long, that is -CVCi). In the examples below, I have left stems in default forms (checked against non-default well-formed alternatives) as elicited from a particular speaker, even if they involve distinct choices (e.g. (9c) -a- vs. (9d) -e-).

2. In reduplicate stems containing a depressor consonant in C1 or C2 or C3 position (and hypothetically in any C-position), there can be tonal variation between H and toneless/low on the non-depressor syllables, for example, in (9h): bá-yard-vulé-vuléaana (as given), or bá-yard-vulé-vuléaana (with σ2 of the reduplicative itself now H); similarly, (9o): bá-yard-vuní-vuníisa (as given), or bá-yard-vuní-vunísa.

3. **Pre-depressor** syllables—where the depressor is one or more syllables rightwards of the left edge of the reduplicative/base stem edge—can under certain circumstances variably surface as H, e.g. (9u) bá-yá-ladgaládzela (as given), or also bá-yá-ladgaládzela (with σ1 of the reduplicative prefix being H). Cf. Chapter 7 §7.7.2.1, footnote 122.

4. OPs with short (1-σ) reduplicate stems can surface either H or toneless (cf. (10a-b, k-l) below): bá-yard-náyá-buu-nya or bá-yard-náyá-buu-nya. Further, σ1 of the short stem
bisyllabic *reduplicate* can be the OP (here: -*bu*), or even the default syllable -yi-: *bá*-ya-bú-nyá-yii-nya, cf. footnote 21.

5. The tonal choices in 1 to 4 above in some cases appear to reflect an intersection of phonological and discourse factors difficult to determine, which factors certainly include individual style, focus, and preferences associated with particular lexical stems. I present here only the canonical stem and OP patterns, though for some stems several tonal possibilities were elicited and recorded.

6. The syllable lengths refer to length with and then without the reduplicate, e.g. ‘3σ (1σ)’ indicates that the reduplicate and base stem together are three syllables; the base stem alone is one syllable.

<table>
<thead>
<tr>
<th>Verb Paradigm Template I</th>
<th>Modal stems</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. L SP, L stem, 3σ (1σ)</td>
<td>li-ya-ta-yii-ta</td>
</tr>
<tr>
<td>b. L SP, L stem, 4σ (2σ)</td>
<td>li-ya-lima-liima</td>
</tr>
<tr>
<td>c. L SP, L stem, 5σ (3σ)</td>
<td>li-ya-limi-liimiisa</td>
</tr>
<tr>
<td>d. (ditto)</td>
<td>li-ya-limi-liimiisa</td>
</tr>
<tr>
<td>e. L SP, L stem, 6σ (4σ)</td>
<td>li-ya-lime-limelaana</td>
</tr>
<tr>
<td>f. (ditto)</td>
<td>li-ya-lime-limelaana</td>
</tr>
<tr>
<td>g. H SP, L stem, 3σ (1σ)</td>
<td>bá-yá-tá-yii-ta</td>
</tr>
<tr>
<td>h. H SP, L stem, 4σ (2σ)</td>
<td>bá-yá-límá-liima</td>
</tr>
<tr>
<td>i. H SP, L stem, 5σ (3σ)</td>
<td>bá-yá-libá-libaala</td>
</tr>
<tr>
<td>j. H SP, L stem, 6σ (4σ)</td>
<td>bá-yá-límá-límélaana</td>
</tr>
<tr>
<td>k. L SP, H stem, 3σ (1σ)</td>
<td>li-ya-phá-yii-pha</td>
</tr>
<tr>
<td>l. L SP, H stem, 4σ (2σ)</td>
<td>li-ya-bóná-boona</td>
</tr>
<tr>
<td>m. L SP, H stem, 5σ (3σ)</td>
<td>li-ya-bóná-bóniísa</td>
</tr>
<tr>
<td>n. (ditto)</td>
<td>li-ya-bóni-bóníísa</td>
</tr>
<tr>
<td>o. L SP, H stem, 6σ (4σ)</td>
<td>li-ya-bóni-bóníísaana</td>
</tr>
</tbody>
</table>
p. H SP, H stem, 3σ (1σ)  
q. H SP, H stem, 4σ (2σ)  
r. H SP, H stem, 5σ (3σ)  
s. H SP, H stem, 6σ (4σ)  

| a. L SP, L stem, C13, 3σ (1σ) | li-ya-vula-vuula | you open + |
| b. L SP, L stem, C13, 4σ (2σ) | bá-ya-vulá-vuula | they open + |
| c. L SP, L stem, C13, 5σ (3σ) | li-ya-vula-vuliisa | you help open + |
| d. L SP, L stem, C13, 6σ (4σ) | li-ya-vule-vulelaana | you open for e.o. + |
| e. H SP, L stem, C13, 3σ (1σ) | — |
| f. H SP, L stem, C13, 4σ (2σ) | bá-ya-vulá-vuula | they open + |
| g. H SP, L stem, C13, 5σ (3σ) | li-ya-vula-vulíisa | they help open + |
| h. H SP, L stem, C13, 6σ (4σ) | li-ya-vule-vulélaana | they open for e.o. + |

This form is crucial for articulating the claim that in reduplicated stems: (1) only σ1 of a {reduplicate+base} 3σ stem—that is, a stem of the shape (σσ)σ#—can be parsed as H; in other words, σ3 (the ultima) is not parsed as H, contrary to the general expectation; (2) the general minimality effect seen in all HDs fails to occur here; if it did, -yíí- (here displaying the effect of depressor shift (cf. Chapter 7 §7.6) from the antepenult) would be a level H tone *-yíí-. Cf. discussion in Chapter 4 §4.4.
q. L SP, L stem, C24, 4σ (2σ)  li-ya-ladza-ladza  you fetch +
   l. L SP, L stem, C24, 5σ (3σ)  li-ya-ladza-ladzeela  you follow +
s. L SP, L stem, C24, 6σ (4σ)  li-ya-ladza-ladzeela  you pursue +
t. H SP, L stem, C24, 4σ (2σ)  bá-yá-ladza-láadza  they fetch +
u. H SP, L stem, C24, 5σ (3σ)  bá-yá-ladza-ládzeela  they follow +
v. H SP, L stem, C24, 6σ (4σ)  bá-yá-ladza-ladzeela  they pursue +
w. L SP, H stem, C24, 4σ (2σ)  li-ya-tshe-ga-tsheega  you buy +
x. L SP, H stem, C24, 5σ (3σ)  li-ya-tshe-gi isa  you sell +
y. L SP, H stem, C24, 6σ (4σ)  li-ya-tshege-tshegeláana  you buy for e.o. +
z. H SP, H stem, C24, 4σ (2σ)  bá-yá-tshega-tsheega  they buy +
   aa. H SP, H stem, C24, 5σ (3σ)  bá-yá-tshegi isa  they sell +
   ab. H SP, H stem, C24, 6σ (4σ)  bá-yá-tshege-tshegeláana  they buy for e.o. +
ac. L SP, L stem, C5, 5σ (3σ)  li-ya-lima-limaaga  you cultivate indiscriminately +
ad. L SP, L stem, C5, 6σ (4σ)  li-ya-lima-limagi isa  you help cultivate indiscriminately +
   ae. L SP, L stem, C5, 7σ (5σ)  li-ya-lima-limagi isisa  you cultivate intensively indiscriminately +
af. H SP, L stem, C5, 5σ (3σ)  bá-yá-límá-límaaga  they cultivate indiscriminately +
   ag. H SP, L stem, C5, 6σ (4σ)  bá-yá-límá-límagi isisa  they help cultivate indiscriminately +
   ah. H SP, L stem, C5, 7σ (5σ)  bá-yá-líma-límagi isisa  they cultivate intensively indiscriminately +
ai. L SP, H stem, C5, 5σ (3σ)  li-ya-búlú-búlúga  you save / keep +
aj. L SP, H stem, C5, 6σ (4σ)  li-ya-búlú-búlgí isisa  you help save +
ak. L SP, H stem, C5, 7σ (5σ)  li-ya-bulu-bulugi isisa  you save intensively +
<table>
<thead>
<tr>
<th>Root</th>
<th>Stem</th>
<th>Cx</th>
<th>Sense</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>al.</td>
<td>H</td>
<td>5σ</td>
<td>(3σ)</td>
<td>bá-ya-búú-búúúga</td>
</tr>
<tr>
<td>am.</td>
<td>H</td>
<td>6σ</td>
<td>(4σ)</td>
<td>bá-ya-búú-búúúgíisa</td>
</tr>
<tr>
<td>an.</td>
<td>H</td>
<td>7σ</td>
<td>(5σ)</td>
<td>bá-ya-bulu-buluúgiisa</td>
</tr>
<tr>
<td>ao.</td>
<td>L</td>
<td>6σ</td>
<td>(4σ)</td>
<td>li-ya-pata-patalaaga</td>
</tr>
<tr>
<td>ap.</td>
<td>L</td>
<td>7σ</td>
<td>(5σ)</td>
<td>li-ya-pata-patalágiisa</td>
</tr>
<tr>
<td>aq.</td>
<td>L</td>
<td>8σ</td>
<td>(6σ)</td>
<td>li-ya-pata-patalágiisa</td>
</tr>
<tr>
<td>ar.</td>
<td>H</td>
<td>6σ</td>
<td>(4σ)</td>
<td>bá-yá-pátá-pátálaaga</td>
</tr>
<tr>
<td>as.</td>
<td>H</td>
<td>7σ</td>
<td>(5σ)</td>
<td>bá-yá-pátá-pátálágiisa</td>
</tr>
<tr>
<td>at.</td>
<td>H</td>
<td>8σ</td>
<td>(6σ)</td>
<td>bá-yá-pata-patalágiisa</td>
</tr>
<tr>
<td>au.</td>
<td>L</td>
<td>6σ</td>
<td>(4σ)</td>
<td>li-ya-búú-búúlaaga</td>
</tr>
<tr>
<td>av.</td>
<td>L</td>
<td>7σ</td>
<td>(5σ)</td>
<td>li-ya-búú-búúlégiisa</td>
</tr>
<tr>
<td>aw.</td>
<td>L</td>
<td>8σ</td>
<td>(6σ)</td>
<td>li-ya-bu-la-bulágiisa</td>
</tr>
<tr>
<td>ax.</td>
<td>H</td>
<td>6σ</td>
<td>(4σ)</td>
<td>bá-ya-búú-búúlaaga</td>
</tr>
<tr>
<td>ay.</td>
<td>H</td>
<td>7σ</td>
<td>(5σ)</td>
<td>bá-ya-búú-búúlágiisa</td>
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<tr>
<td>az.</td>
<td>H</td>
<td>8σ</td>
<td>(6σ)</td>
<td>bá-ya-bula-bulágiisa</td>
</tr>
<tr>
<td>ba.</td>
<td>L</td>
<td>4σ</td>
<td>(2σ)</td>
<td>li-ya-gudza-gudza</td>
</tr>
<tr>
<td>bb.</td>
<td>L</td>
<td>5σ</td>
<td>(3σ)</td>
<td>li-ya-gudza-i-gudziša</td>
</tr>
<tr>
<td>bc.</td>
<td>L</td>
<td>6σ</td>
<td>(4σ)</td>
<td>li-ya-gudzi-gudziša</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
<td>Example Usage</td>
<td></td>
<td></td>
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<tr>
<td>------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>bd. H SP, L stem, C1234, 4σ (2σ)</td>
<td>bá-yá-gudzá-gudža</td>
<td>they shear +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>be. H SP, L stem, C1234, 5σ (3σ)</td>
<td>bá-yá-gudzi-gužzi isa</td>
<td>they help shear +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bf. H SP, L stem, C1234, 6σ (4σ)</td>
<td>bá-yá-gudzi-gudzi sáana</td>
<td>they help e.o. shear +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bg. L SP, H stem, C1234, 4σ (2σ)</td>
<td>li-ya-gadzá-gaadza</td>
<td>you stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bh. L SP, H stem, C1234, 5σ (3σ)</td>
<td>li-ya-gadzi-gadzi isa</td>
<td>you help stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bi. L SP, H stem, C1234, 6σ (4σ)</td>
<td>li-ya-gadzi-gadzi sáana</td>
<td>you help e.o. stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bj. H SP, H stem, C1234, 4σ (2σ)</td>
<td>bá-ya-gadzá-gaadza</td>
<td>they stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bk. H SP, H stem, C1234, 5σ (3σ)</td>
<td>bá-ya-gadzi-gadzi isa</td>
<td>they help stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bl. H SP, H stem, C1234, 6σ (4σ)</td>
<td>bá-ya-gadzi-gadzi sáana</td>
<td>they help e.o. stamp +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bm. L SP, L stem, C12345, 5σ (3σ)</td>
<td>li-ya-gudza-gudzaaga</td>
<td>you shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bn. L SP, L stem, C12345, 6σ (4σ)</td>
<td>li-ya-gudza-gudzagi sa</td>
<td>you shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bo. L SP, L stem, C12345, 7σ (5σ)</td>
<td>li-ya-gudza-gudzagi saana</td>
<td>you help e.o. shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bp. H SP, L stem, C12345, 5σ (3σ)</td>
<td>bá-yá-gudza-gúdzaaga</td>
<td>they shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bq. H SP, L stem, C12345, 6σ (4σ)</td>
<td>bá-yá-gudza-gudzági isa</td>
<td>they shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>br. H SP, L stem, C12345, 7σ (5σ)</td>
<td>bá-yá-gudza-gudzági sáana</td>
<td>they help e.o. shear indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bs. L SP, H stem, C12345, 5σ (3σ)</td>
<td>li-ya-gadza-gúdzaaga</td>
<td>you stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bt. L SP, H stem, C12345, 6σ (4σ)</td>
<td>li-ya-gadza-gadzági isa</td>
<td>you help stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bu. L SP, H stem, C12345, 7σ (5σ)</td>
<td>li-ya-gadza-gadzági sáana</td>
<td>you help e.o. stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bv. H SP, H stem, C12345, 5σ (3σ)</td>
<td>bá-ya-gadza-gadzaága</td>
<td>they stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bw. H SP, H stem, C12345, 6σ (4σ)</td>
<td>bá-ya-gadza-gadzági isa</td>
<td>they help stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bx. H SP, H stem, C12345, 7σ (5σ)</td>
<td>bá-ya-gadza-gadzági sáana</td>
<td>they help e.o. stamp indiscriminately +</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Paradigm B: Present Indicative, long form *reduplicate*

(10) **Verb Paradigm Template** III

**Modal stems, with OP** 20

a. L SP, L stem, OP, 3σ (1σ) li-ya-tí-nyá-tüi-nya 21 you excrete them +

b. (ditto) li-ya-tí-nyá-tüi-nya (ditto)

c. L SP, L stem, OP, 4σ (2σ) li-ya-tí-líná-liima you cultivate them +

d. L SP, L stem, OP, 5σ (3σ) li-ya-tí-límá-límíisa you help them cultivate +

e. L SP, L stem, OP, 6σ (4σ) li-ya-tí-líbá-líbátiisa you delay them +

f. H SP, L stem, OP, 3σ (1σ) bá-ya-tí-nyá-tüi-nya they excrete them +

g. (ditto) bá-ya-tí-nyá-tüi-nya (ditto)

h. H SP, L stem, OP, 4σ (2σ) bá-ya-tí-líná-liima they cultivate them +

i. H SP, L stem, OP, 5σ (3σ) bá-ya-tí-límá-límíisa they help them cultivate +

j. H SP, L stem, OP, 6σ (4σ) bá-ya-tí-líbá-líbátiisa they delay them +

k. L SP, H stem, OP, 3σ (1σ) li-ya-tí-phá-tüi-pha 22 you give them +

l. (ditto) li-ya-tí-phá-tüi-pha (ditto)

m. L SP, H stem, OP, 4σ (2σ) li-ya-tí-bóná-boona you see them +

n. L SP, H stem, OP, 5σ (3σ) li-ya-tí-bóní-bóníisa you show them +

o. L SP, H stem, OP, 6σ (4σ) li-ya-tí-ségé-ségétiisa you use them +

p. H SP, H stem, OP, 3σ (1σ) bá-ya-tí-phá-tüi-pha they give them +

q. (ditto) bá-ya-tí-phá-tüi-pha (ditto)

r. H SP, H stem, OP, 4σ (2σ) bá-ya-tí-bóná-boona they see them +

s. H SP, H stem, OP, 5σ (3σ) bá-ya-tí-bóní-bóníisa they show them +

t. H SP, H stem, OP, 6σ (4σ) bá-ya-tí-ségé-ségétiisa they use them +

---

20 The double identity of the OP in 1-σ stems (toneless/L or H) is analysed in Chapter 5 §5.4.2.6 (132).

21 Only in 1-σ stems (e.g.10a,b) does the base stem include a ‘dummy’ syllable (the repeated OP), to satisfy the mini- mality requirement, cf. discussion of reduplicate minimality in Chapter 4 §4.4, Chapter 8 §8.1.1, §8.2.1, and the introduction to this paradigm (B): paragraph 4.

22 Cf. footnote 21.
Paradigm B: Present Indicative, long form reduplicate

(11) Verb Paradigm Template IV
Modal stems, with 1ps OP
a. L SP, L stem, 1psOP, 1σ  li-ya-gi-nyá-gi i-nya  you excrete me +
b. L SP, L stem, 1psOP, 2σ  li-ya-gi-hláaba  you stab me +
c. L SP, L stem, 1psOP, 3σ  li-ya-gi-límí-límíisa  you help me cultivate +
d. L SP, L stem, 1psOP, 4σ  li-ya-gi-líbá-líbátiisa  you delay me +
e. H SP, L stem, 1psOP, 1σ  bá-ya-gi-nyá-gi i-nya  they excrete me +
f. H SP, L stem, 1psOP, 2σ  bá-ya-gi-hláábá-hláaba  they stab me +
g. H SP, L stem, 1psOP, 3σ  bá-ya-gi-límí-límíisa  they help me cultivate +
h. H SP, L stem, 1psOP, 4σ  bá-ya-gi-líbá-líbátiisa  they delay me +
i. L SP, H stem, 1psOP, 1σ  li-ya-gi-phá-gi i-phá  you give me +
j. L SP, H stem, 1psOP, 2σ  li-ya-gi-bóná-boona  you see me +
k. L SP, H stem, 1psOP, 3σ  li-ya-gi-bóná-bóníísa  you show me +
l. L SP, H stem, 1psOP, 4σ  li-ya-gi-sébé-sébétiisa  you use me +
m. H SP, H stem, 1psOP, 1σ  bá-ya-gi-phá-gi i-phá  they give me +
n. H SP, H stem, 1psOP, 2σ  bá-ya-gi-bóná-boona  they see me +
o. H SP, H stem, 1psOP, 3σ  bá-ya-gi-bóná-bóníísa  they show me +
p. H SP, H stem, 1psOP, 4σ  bá-ya-gi-sébé-sébétiisa  they use me +

Paradigm B: Present Indicative, long form reduplicate

(12) Verb Paradigm Template V
Breathy / depressor stems, with OP
a. L SP, L stem, C13, OP, 3σ (1σ)  —
b. L SP, L stem, C13, OP, 4σ (2σ)  li-ya-ti-vulá-vuula  you open them +
c. L SP, L stem, C13, OP, 5σ (3σ)  li-ya-ti-vuli-vulíísa  you help open them +
d. L SP, L stem, C13, OP, 6σ (4σ)  li-ya-ti-vule-vulélaana  you open them for each other +

---

23 Cf. footnotes 12 and 13, which comment on the phonology and semantics of (5a, 5e).
e. H SP, L stem, C13, OP, 3σ (1σ) —
f. H SP, L stem, C13, OP, 4σ (2σ) bá-ya-tí-vulá-vuula they open them +
g. H SP, L stem, C13, OP, 5σ (3σ) bá-ya-tí-vuli-vulíisa they help open them +
h. H SP, L stem, C13, OP, 6σ (4σ) bá-ya-tí-vule-vulélaana they open them for each other +
i. L SP, H stem, C13, OP, 3σ (1σ) li-ya-tí-dla-tú-dla you eat them +
j. L SP, H stem, C13, OP, 4σ (2σ) li-ya-tí-vuná-vuuna you harvest them +
k. L SP, H stem, C13, OP, 5σ (3σ) li-ya-tí-vuní-vuníisa you help harvest +
l. L SP, H stem, C13, OP, 6σ (4σ) li-ya-tí-vi-ví-sísiisa you understand +
m. H SP, H stem, C13, OP, 3σ (1σ) bá-ya-tí-dla-tú-dla they eat them +
n. H SP, H stem, C13, OP, 4σ (2σ) bá-ya-tí-vuná-vuuna they harvest them +
o. H SP, H stem, C13, OP, 5σ (3σ) bá-ya-tí-vuní-vuníisa they help harvest them +
p. H SP, H stem, C13, OP, 6σ (4σ) bá-ya-tí-vi-ví-sísiisa they understand them +
q. L SP, L stem, C24, OP, 4σ (2σ) li-ya-tí-ladza-láadza you fetch them +
r. L SP, L stem, C24, OP, 5σ (3σ) li-ya-tí-ladza-ládezela you follow them +
s. L SP, L stem, C24, OP, 6σ (4σ) li-ya-tí-ladza-ládežла you pursue them +
t. H SP, L stem, C24, OP, 4σ (2σ) bá-ya-tí-ladza-láadza they fetch them +
u. H SP, L stem, C24, OP, 5σ (3σ) bá-ya-tí-ladza-ládezela they follow them +
v. H SP, L stem, C24, OP, 6σ (4σ) bá-ya-tí-ladza-ládežла they pursue them +
w. L SP, H stem, C24, OP, 4σ (2σ) li-ya-tí-tshega-tsheéga you buy them +
x. L SP, H stem, C24, OP, 5σ (3σ) li-ya-tí-tshega-tshegi isa you sell them +
y. L SP, H stem, C24, OP, 6σ (4σ) li-ya-tí-tshege-tshegeláana you buy them for e.o. +
z. H SP, H stem, C24, OP, 4σ (2σ) bá-ya-tí-tshega-tsheéga they buy them +
aa. H SP, H stem, C24, OP, 5σ (3σ) bá-ya-tí-tshega-tshegi isa they sell them +
ab. H SP, H stem, C24, OP, 6σ (4σ) bá-ya-tí-tshege-tshegeláana they buy them for each other +
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Gender</th>
<th>Number</th>
<th>Stem</th>
<th>Verb + Morpheme</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ac.</td>
<td>L</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>5σ (3σ)</td>
<td>you cultivate them indiscriminately +</td>
</tr>
<tr>
<td>ad.</td>
<td>L</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>6σ (4σ)</td>
<td>you help cultivate them indiscriminately +</td>
</tr>
<tr>
<td>ae.</td>
<td>L</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>7σ (5σ)</td>
<td>you cultivate them intensively indiscriminately +</td>
</tr>
<tr>
<td>af.</td>
<td>H</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>5σ (3σ)</td>
<td>they cultivate them indiscriminately +</td>
</tr>
<tr>
<td>ag.</td>
<td>H</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>6σ (4σ)</td>
<td>they help cultivate them indiscriminately +</td>
</tr>
<tr>
<td>ah.</td>
<td>H</td>
<td>SP, L</td>
<td>C5, OP</td>
<td>7σ (5σ)</td>
<td>they cultivate them intensively indiscriminately +</td>
</tr>
<tr>
<td>ai.</td>
<td>L</td>
<td>H</td>
<td>C5, OP</td>
<td>5σ (3σ)</td>
<td>you save/keep them +</td>
</tr>
<tr>
<td>aj.</td>
<td>L</td>
<td>H</td>
<td>C5, OP</td>
<td>6σ (4σ)</td>
<td>you help save them +</td>
</tr>
<tr>
<td>ak.</td>
<td>L</td>
<td>H</td>
<td>C5, OP</td>
<td>7σ (5σ)</td>
<td>you save them intensively +</td>
</tr>
<tr>
<td>al.</td>
<td>H</td>
<td>SP, H</td>
<td>C5, OP</td>
<td>5σ (3σ)</td>
<td>they save/keep them +</td>
</tr>
<tr>
<td>am.</td>
<td>H</td>
<td>SP, H</td>
<td>C5, OP</td>
<td>6σ (4σ)</td>
<td>they help save them +</td>
</tr>
<tr>
<td>an.</td>
<td>H</td>
<td>SP, H</td>
<td>C3, OP</td>
<td>7σ (5σ)</td>
<td>they save them intensively +</td>
</tr>
<tr>
<td>ao.</td>
<td>L</td>
<td>SP, L</td>
<td>C6, OP</td>
<td>6σ (4σ)</td>
<td>you pay them indiscriminately +</td>
</tr>
<tr>
<td>ap.</td>
<td>L</td>
<td>SP, L</td>
<td>C6, OP</td>
<td>7σ (5σ)</td>
<td>you help pay them indiscriminately +</td>
</tr>
<tr>
<td>aq.</td>
<td>L</td>
<td>SP, L</td>
<td>C6, OP</td>
<td>8σ (6σ)</td>
<td>you pay them intensively indiscriminately +</td>
</tr>
<tr>
<td>ar.</td>
<td>H</td>
<td>SP, L</td>
<td>C6, OP</td>
<td>6σ (4σ)</td>
<td>they pay them indiscriminately +</td>
</tr>
<tr>
<td>as.</td>
<td>H</td>
<td>SP, L</td>
<td>C6, OP</td>
<td>7σ (5σ)</td>
<td>they help pay them indiscriminately +</td>
</tr>
</tbody>
</table>

859
at. H SP, L stem, C6, OP, 8σ (6σ)  bá-ya-tí-pata-patalagisísa they pay them intensively indiscriminately +

au. L SP, H stem, C6, OP, 6σ (4σ) li-ya-tí-búlá-búlálaaga you kill them indiscriminately +

av. L SP, H stem, C6, OP, 7σ (5σ) li-ya-tí-búlá-búláágíisa you cause them to kill indiscriminately +

aw. L SP, H stem, C6, OP, 8σ (6σ) li-ya-tí-búla-búlalagisísa you kill them intensively indiscriminately +

ax. H SP, H stem, C6, 6σ (4σ) bá-ya-tí-búlá-búlálaaga they kill them indiscriminately +

ay. H SP, H stem, C6, 7σ (5σ) bá-ya-tí-búlá-búláágíisa they cause them to kill indiscriminately +

az. H SP, H stem, C6, 8σ (6σ) bá-ya-tí-búla-búlalagisísa they kill them intensively indiscriminately +

ba. L SP, L stem, C1234, OP, 4σ (2σ) li-ya-tí-gúdzá-gúdzá you shear them +

bb. L SP, L stem, C1234, OP, 5σ (3σ) li-ya-tí-gúdzí -gúdzí sa you help shear them +

bc. L SP, L stem, C1234, OP, 6σ (4σ) li-ya-tí-gúdzí -gúdzí sáana you help them shear each other +

bd. H SP, L stem, C1234, OP, 4σ (2σ) bá-ya-tí-gúdzá-gúdzá they shear them +

be. H SP, L stem, C1234, OP, 5σ (3σ) bá-ya-tí-gúdzí -gúdzí sa they help shear them +

bf. H SP, L stem, C1234, OP, 6σ (4σ) bá-ya-tí-gúdzí -gúdzí sáana they help them shear each other +

bg. L SP, H stem, C1234, OP, 4σ (2σ) li-ya-tí-gúdzá-gaadza you stamp them +

bh. L SP, H stem, C1234, OP, 5σ (3σ) li-ya-tí-gadzi-gadzi ísa you help stamp them +

bi. L SP, H stem, C1234, OP, 6σ (4σ) li-ya-tí-gadzi-gadzi sáana you help them stamp each other +

bj. H SP, H stem, C1234, OP, 4σ (2σ) bá-ya-tí-gadzá-gaadza they stamp them +

bk. H SP, H stem, C1234, OP, 5σ (3σ) bá-ya-tí-gadzi-gadzi ísa they help stamp them +

bl. H SP, H stem, C1234, OP, 6σ (4σ) bá-ya-tí-gadzi-gadzi sáana they help them stamp each other +
Paradigm B: Present Indicative, long form *reduplicate*

(13) **Verb Paradigm Template VI**

**Breathy / depressor stems, with 1ps OP**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Stem</th>
<th>Pre-prefixed</th>
<th>Transliteration</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>L SP, L stem, C13, 1psOP, 2σ(1σ)</td>
<td></td>
<td>li-ya-gi-vulá-vuula</td>
<td>you open me +</td>
</tr>
<tr>
<td>b.</td>
<td>L SP, L stem, C13, 1psOP, 4σ(2σ)</td>
<td>li-ya-gi-vulá-vuula</td>
<td>you open me +</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>L SP, L stem, C13, 1psOP, 5σ(3σ)</td>
<td>li-ya-gi-vuli-vulfísa</td>
<td>you help open me +</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>L SP, L stem, C13, 1psOP, 6σ(4σ)</td>
<td>li-ya-gi-vule-vulélaana</td>
<td>you open me for e.o. +</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>H SP, L stem, C13, 1psOP, 3σ (1σ)</td>
<td></td>
<td>bá-ya-gi-vulá-vuula</td>
<td>they open me +</td>
</tr>
<tr>
<td>f.</td>
<td>H SP, L stem, C13, 1psOP, 4σ(2σ)</td>
<td>li-ya-gi-vulá-vuula</td>
<td>they open me +</td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>H SP, L stem, C13, 1psOP, 5σ(3σ)</td>
<td>bá-ya-gi-vuli-vuliása</td>
<td>they help open me +</td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>H SP, L stem, C13, 1psOP, 6σ(4σ)</td>
<td>bá-ya-gi-vule-vulélaana</td>
<td>they open me for each other +</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>L SP, H stem, C13, 1psOP, 3σ(1σ)</td>
<td>li-ya-gi-dla-ti-ti-dla</td>
<td>you eat me +</td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>L SP, H stem, C13, 1psOP, 4σ(2σ)</td>
<td>li-ya-gi-vúna-vuuna</td>
<td>you harvest me +</td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>L SP, H stem, C13, 1psOP, 5σ(3σ)</td>
<td>li-ya-gi-vuni-vuñísa</td>
<td>you help harvest me +</td>
<td></td>
</tr>
<tr>
<td>l.</td>
<td>L SP, H stem, C13, 1psOP, 6σ(4σ)</td>
<td>li-ya-gi-visi-vísísiisa</td>
<td>you understand me +</td>
<td></td>
</tr>
<tr>
<td>m.</td>
<td>H SP, H stem, C13, 1psOP, 3σ(1σ)</td>
<td>bá-ya-gi-dla-ti-ti-dla</td>
<td>they eat me +</td>
<td></td>
</tr>
<tr>
<td>n.</td>
<td>H SP, H stem, C13, 1psOP, 4σ(2σ)</td>
<td>bá-ya-gi-vúna-vuuna</td>
<td>they harvest me +</td>
<td></td>
</tr>
<tr>
<td>o.</td>
<td>H SP, H stem, C13, 1psOP, 5σ(3σ)</td>
<td>bá-ya-gi-vuni-vuñísa</td>
<td>they help harvest me +</td>
<td></td>
</tr>
<tr>
<td>p.</td>
<td>H SP, H stem, C13, 1psOP, 6σ(4σ)</td>
<td>bá-ya-gi-visi-vísísiisa</td>
<td>they understand me +</td>
<td></td>
</tr>
<tr>
<td>q.</td>
<td>L SP, L stem, C24, 1psOP, 4σ (2σ)</td>
<td>li-ya-gi-ládza-ládza</td>
<td>you fetch me +</td>
<td></td>
</tr>
<tr>
<td>r.</td>
<td>(ditto)</td>
<td>li-ya-gi-ládza-ládza</td>
<td>(ditto)</td>
<td></td>
</tr>
</tbody>
</table>

24 The optional forms in (13q-an) extend to all C2 and C3 patterns (that is, verbs with a breathy/depressor consonant not in σ1 but in σ2 or σ3, or deeper into the stem): in each case, the first exemplar of the two provided where a breathy/depressor-bearing prefix—effectively only SP or OP (-gi-)—is found in the pre-stem position; cf. the discussion in Chapter 7 §7.7. This ‘disjointed H domains’ (§7.7.2) phenomenon is clear only in L-bearing (i.e. depressor-bearing) toneless/L stems (13q,s,u,w,y,aa), cf. §7.7.2; on the same topic cf. footnote 15 above. By contrast (13ac,ae,ag,ai,ak,am) below display only apparent overlap, or what has been analysed in §7.7.2 as ‘unincorporated H sponsors’. 
s. L SP, L stem, C24, 1psOP, 5σ (3σ) li-ya-gi-láđza-láđzeela you follow me +
t. (ditto) li-ya-gi-láđza-láđzeela (ditto)
u. L SP, L stem, C24, 1psOP, 6σ (4σ) li-ya-gi-láđza-ladzeláana you fetch me for e.o. +
v. (ditto) li-ya-gi-láđza-ladzeláana (ditto)
w. H SP, L stem, C24, 1psOP, 4σ (2σ) bá-ya-gi-láđza-láđza they fetch me +
x. (ditto) bá-ya-gi-láđza-láđza (ditto)
y. H SP, L stem, C24, 1psOP, 5σ (3σ) bá-ya-gi-láđza-láđzeela they follow me +
z. (ditto) bá-ya-gi-láđza-láđzeela (ditto)
aa. H SP, L stem, C24, 1psOP, 6σ (4σ) bá-ya-gi-láđza-ladzel:la they pursue me +
ab. (ditto) bá-ya-gi-láđza-ladzel:la (ditto)
ac. L SP, H stem, C24, 1psOP, 4σ (2σ) li-ya-gi-tshega-tshegá you buy me +
ad. (ditto) li-ya-gi-tshega-tshegá (ditto)
ae. L SP, H stem, C24, 1psOP, 5σ (3σ) li-ya-gi-tshega-tshegi isa you sell me +
af. (ditto) li-ya-gi-tshega-tshegi isa (ditto)
ag. L SP, H stem, C24, 1psOP, 6σ (4σ) li-ya-gi-tshege-tshegeláana you buy me for e.o. +
ah. (ditto) li-ya-gi-tshege-tshegeláana (ditto)
ai. H SP, H stem, C24, 1psOP, 4σ (2σ) bá-ya-gi-tshega-tshegá they buy me +
aj. (ditto) bá-ya-gi-tshega-tshegá (ditto)
ak. H SP, H stem, C24, 1psOP, 5σ (3σ) bá-ya-gi-tshega-tshegi isa they sell me +
al. (ditto) bá-ya-gi-tshega-tshegi isa (ditto)
am. H SP, H stem, C24, 1psOP, 6σ (4σ) bá-ya-gi-tshege-tshegeláana they buy me for e.o. +
an. (ditto) bá-ya-gi-tshege-tshegeláana (ditto)
ao. L SP, L stem, C5, 1psOP, 5σ (3σ) li-ya-gi-límá-límaaga you cultivate me indiscriminately +
ap. L SP, L stem, C5, 1psOP, 6σ (4σ) li-ya-gi-límá-límágiisa you help me cultivate indiscriminately +
<table>
<thead>
<tr>
<th>Language</th>
<th>Person</th>
<th>Voice</th>
<th>Root Stem</th>
<th>Punctuation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aq. L SP, L stem, C5, 1psOP, 7σ (5σ)</td>
<td>li-ya-gi-líma-limagisísa</td>
<td>you cultivate me intensively indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ar. (ditto)</td>
<td>li-ya-gi-líma-limagisísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>as. H SP, L stem, C5, 1psOP, 5σ (3σ)</td>
<td>bá-ya-gi-líma-límaaga</td>
<td>they cultivate me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at. H SP, L stem, C5, 1psOP, 6σ (4σ)</td>
<td>bá-ya-gi-líma-límagiisa</td>
<td>they help cultivate me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>au. H SP, L stem, C5, 1psOP, 7σ (5σ)</td>
<td>bá-ya-gi-líma-limagisísa</td>
<td>they cultivate them intensively indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>av. (ditto)</td>
<td>bá-ya-gi-líma-limagisísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aw. L SP, H stem, C5, 1psOP, 5σ (3σ)</td>
<td>li-ya-gi-búlu-búluúga</td>
<td>you save/keep me +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ax. L SP, H stem, C5, 1psOP, 6σ (4σ)</td>
<td>li-ya-gi-búlu-búluúgiisa</td>
<td>you help save me +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ay. L SP, H stem, C5, 1psOP, 7σ (5σ)</td>
<td>li-ya-gi-búlu-buluúgiisísa</td>
<td>you save me intensively +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>az. (ditto)</td>
<td>li-ya-gi-búlu-buluúgiisísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ba. H SP, H stem, C5, 1psOP, 5σ (3σ)</td>
<td>bá-ya-gi-búlu-búluúga</td>
<td>they save/keep me +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bb. H SP, H stem, C5, 1psOP, 6σ (4σ)</td>
<td>bá-ya-gi-búlu-búluúgiisa</td>
<td>they help save me +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bc. H SP, H stem, C5, 1psOP, 7σ (5σ)</td>
<td>bá-ya-gi-búlu-buluúgiisísa</td>
<td>they save me intensively +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bd. (ditto)</td>
<td>bá-ya-gi-búlu-buluúgiisísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>be. L SP, L stem, C6, 1psOP, 6σ (4σ)</td>
<td>li-ya-gi-pátá-pátáalaaga</td>
<td>you pay me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bf. L SP, L stem, C6, 1psOP, 7σ (5σ)</td>
<td>li-ya-gi-pátá-pátálágiisísa</td>
<td>you help pay me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bg. L SP, L stem, C6, 1psOP, 8σ (6σ)</td>
<td>li-ya-gi-pata-patalagisísa</td>
<td>you pay me intensively indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bh. (ditto)</td>
<td>li-ya-gi-pata-patalagisísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bi. H SP, L stem, C6, 1psOP, 6σ (4σ)</td>
<td>bá-ya-gi-pátá-pátáalaaga</td>
<td>they pay me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bj. H SP, L stem, C6, 1psOP, 7σ (5σ)</td>
<td>bá-ya-gi-pátá-pátálágiisísa</td>
<td>they help pay me indiscriminately +</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
bk. H SP, L stem, C6, 1psOP, 8σ (6σ)  

bá-ya-gí-páta-patalagisíisa

they pay me intensively indiscriminately +

bl. (ditto)  

bá-ya-gí-pata-patalagisíisa

(ditto)

bm. L SP, H stem, C6, 1psOP, 6σ (4σ)  

li-ya-gí-búlá-bülalaaga

you kill me indiscriminately +

bn. L SP, H stem, C6, 1psOP, 7σ (5σ)  

li-ya-gí-búlá-búlágisíisa

you cause me to kill indiscriminately +

bo. L SP, H stem, C6, 1psOP, 8σ (6σ)  

li-ya-gí-búla-bulagisíisa

you kill me intensively indiscriminately +

bp. (ditto)  

li-ya-gí-bula-bulagisíisa

(ditto)

bq. H SP, H stem, C6, 1psOP, 6σ (4σ)  

bá-ya-gí-búlá-bülalaaga

they kill indiscriminately +

br. H SP, H stem, C6, 1psOP, 7σ (5σ)  

bá-ya-gí-búlá-búlágisíisa

they cause me to kill indiscriminately +

bs. H SP, H stem, C6, 1psOP, 8σ (6σ)  

bá-ya-gí-búla-bulagisíisa

they kill me intensively indiscriminately +

bt. (ditto)  

bá-ya-gí-bula-bulagisíisa

(ditto)

bu. L SP, L stem, C1234, 1psOP, 4σ(2σ)  

li-ya-gí-bhebhá-bhebha

you carry me on your backs +

bv. L SP, L stem, C1234, 1psOP, 5σ(3σ)  

li-ya-gí-bhebhi-bhebhi isa

you help carry me on your backs +

bw. L SP, L stem, C1234, 1psOP, 6σ(4σ)  

li-ya-gí-bhebhi-bhebhi sísá

you carry me on your backs tightly +

bx. H SP, L stem, C1234, 1psOP, 4σ(2σ)  

bá-ya-gí-bhebhá-bhebha

they carry me on their backs +

by. H SP, L stem, C1234, 1psOP, 5σ(3σ)  

bá-ya-gí-bhebhi-bhebhi isa

they help carry me on their backs +

bz. H SP, L stem, C1234, 1psOP, 6σ(4σ)  

bá-ya-gí-bhebhi-bhebhi sísá

they carry me on their backs tightly +

ca. L SP, H stem, C1234, 1psOP, 4σ(2σ)  

li-ya-gí-gadzá-gaadza

you flatten me +

cb. L SP, H stem, C1234, 1psOP, 5σ(3σ)  

li-ya-gí-gadzi-gadziisa

you help me flatten +

cc. L SP, H stem, C1234, 1psOP, 6σ(4σ)  

li-ya-gí-gadzi-gadziísá

you flatten me completely +
cd. H SP, H stem, C1234, 1psOP, 4σ(2σ) bá-ya-gi-gadzá-gaadza they flatten me +
ce. H SP, H stem, C1234, 1psOP, 5σ(3σ) bá-ya-gi-gadzi-gadziása they help me flatten +
cf. H SP, H stem, C1234, 1psOP, 6σ(4σ) bá-ya-gi-gadzi-gadzísísa they flatten me completely +

- **Note:** reduplication as a morphological strategy to implement a certain kind of verb aspect—e.g. an action that is repeated or performed intermittently) is in principle fully productive for all verb paradigms (cf. footnote 3, this appendix). But it is not deemed practical to offer the reduplicate stems of each verb paradigm given in this appendix (that is, in the way that I have just given the ‘B’ paradigm corresponding to the present indicative long form ‘A’). Very little reduplicative paradigm data is invoked in the dissertation, other than the present indicative long form (although there are a few examples in Chapters 4 and 5 from the present indicative short form reduplicate, and the perfective reduplicate).

[turn to the next page for **Appendix A, Paradigm C: Present Indicative short form**]
Paradigm C: Present Indicative, short form (phrase-medial form)

- SP + (OP) + {ROOT (+suffixes) + -a\textsuperscript{stem}} ...
- As discussed in Chapter 4 §4.5.2, the properties of the Sigxodo present indicative short (phrase-medial) form are distinct from those of the main dialect drawn on in this work, of Mpapa. Specifically, the Sigxodo form retains the right-edge H tone extension target on the antepenult syllable, as in the phrase-final (‘long’) present indicative given in A above. Thus, the data in this section—Paradigm C—is drawn from the Mpapa dialect.
- Characteristic of the present indicative short form, there is no phonological lengthening: this allows the penult (not antepenult) syllable to be the rightwards H extension target. Such non-lengthening also prevents the penult syllable from ever being tonally complex (here HL or LH) because it is always monomoraic; this also allows depressor shift and block effects from a depressed penult to the ultima. Finally, the distinction between toneless/low and H paradigm verb stems—which was maintained even in the presence of a H prefix—is now neutralised, as the right-edge extension target is always the penult.
- In the data below, ‘...’ indicates the incompleteness of the verb phrases. Most of the phrase-medial forms below were elicited with the post-verbal adverb kakgúulú (or kakgúúlu) ‘very, much’; cf. phrase-medial data with kakgúúlu in Chapter 7 §7.4.1.3.

(14) Verb Paradigm Template I
Modal stems
a. L SP, L stem, 1σ li-ta... you come...
b. L SP, L stem, 2σ li-líma... you cultivate...
c. L SP, L stem, 3σ li-límiisa... you help cultivate...
d. L SP, L stem, 4σ li-límisí... you help cultivate...
e. L SP, L stem, 4σ li-límelána... you cultivate for e.o...
f. H SP, L stem, 1σ bá-ta... they come...
g. H SP, L stem, 2σ bá-líma... they cultivate...
h. H SP, L stem, 3σ bá-límiisa... they help cultivate...
i. H SP, L stem, 4σ bá-límelána... they cultivate for each other...
j. L SP, H stem, 1σ  
li-phá...  
you give...

k. L SP, H stem, 2σ  
li-bóna...  
you see...

l. L SP, H stem, 3σ  
li-bónísa...  
you show...

m. L SP, H stem, 4σ  
li-sébétísa...  
you use...

n. H SP, H stem, 1σ  
bá-phá...  
they give...

o. (ditto)  
bá-phá...  
(ditto)

p. H SP, H stem, 2σ  
bá-bóna...  
you see...

q. H SP, H stem, 3σ  
bá-bónísa...  
you show...

r. H SP, H stem, 4σ  
bá-sébétísa...  
you use...

Paradigm C: Present Indicative, short form

(15) Verb Paradigm Template II
Breathy / depressor stems

a. L SP, L stem, C1, 1σ  
—

b. L SP, L stem, C1, 2σ  
li-vula...  
you open...

c. L SP, L stem, C1, 3σ  
li-vulísa...  
you help open...

d. L SP, L stem, C1, 4σ  
li-yulelana...  
you open for e.o...

e. H SP, L stem, C1, 1σ  
—

f. H SP, L stem, C1, 2σ  
bá-vulá...  
they open...

g. H SP, L stem, C1, 3σ  
bá-vulísa...  
they help open...

h. H SP, L stem, C1, 4σ  
bá-yulélána...  
they open for e.o...

i. L SP, H stem, C1, 1σ  
li-dlá (ká’kgúulu)  
you eat (a lot)

---

25 The data in (15i) and (15m) is on occasion difficult to categorise phonologically: sometimes the H stem sponsor syllable seems to surface as still significantly rising high, with only a very short falling intonation curve on the initial of the following word (here: ká-). I suggest this may be a combination of perhaps two factors: (1) a certain lexical-phonological resistance on the part of a stem—even a 1σ stem such as here—to completely surrendering its contrastive tone property (H) to a successive syntactic unit; (2) there may also be articulatory phonetic grounds on which this intonation ‘transfer’ from ultima to initial is not a grounded process, especially given...
j. L SP, H stem, C1, 2σ  li-vuná... you harvest...

k. L SP, H stem, C1, 3σ  li-vunísa... you help harvest...

l. L SP, H stem, C1, 4σ  li-vísísísa... you understand...

m. H SP, H stem, C1, 1σ  bá-dlä (kā'kgǔúlu) they eat (a lot)

n. H SP, H stem, C1, 2σ  bá-vuná... they harvest...

o. H SP, H stem, C1, 3σ  bá-vunísa... they help harvest...

p. H SP, H stem, C1, 4σ  bá-vísísísa... they understand...

q. L SP, L stem, C2, 2σ  li-ladža... you fetch...

r. L SP, L stem, C2, 3σ  li-ladžela... you follow...

s. L SP, L stem, C2, 4σ  li-ladžella... you pursue...

t. H SP, L stem, C2, 2σ  bá-ládža... they fetch...

u. H SP, L stem, C2, 3σ  bá-ladželá... they follow...

v. H SP, L stem, C2, 4σ  bá-ladžella... they pursue...

w. L SP, H stem, C2, 2σ  li-tšégä... you buy...

x. L SP, H stem, C2, 3σ  li-tšegi sá... you sell...

y. L SP, H stem, C2, 4σ  li-tšegelána... you buy for e.o...

z. H SP, H stem, C2, 2σ  bá-tšégä... they buy...

aa. H SP, H stem, C2, 3σ  bá-tšegi sá... they sell...

ab. H SP, H stem, C2, 4σ  bá-tšegelána... they buy for e.o...

the articulatory impediment of but a single mora in which to execute the transferred pitch.
... you cultivate indiscriminately...

... you help cultivate indiscriminately...

... you cultivate intensively indiscriminately...

... they cultivate indiscriminately...

... they help cultivate indiscriminately...

... they cultivate intensively indiscriminately...

... you save / keep...

... you help save...

... you save intensively...

... they save / keep...

... they help save...

... they save intensively...

... you pay indiscriminately...

... you help pay indiscriminately...

... you pay intensively indiscriminately...

... they pay indiscriminately...

... they help pay indiscriminately...

... they pay intensively indiscriminately...
you kill indiscriminately...

you cause to kill indiscriminately...

you kill intensively indiscriminately...

they kill indiscriminately...

they cause to kill indiscriminately...

they kill intensively indiscriminately...

you shear...

you help shear...

you shear for e.o...

they shear...

they help shear...

they shear for e.o...

you stamp...

you help stamp...

you help e.o. stamp...

they stamp...

they help stamp...

they help e.o. stamp...

you help stamp indiscriminately for e.o...

they help stamp indiscriminately for e.o...
**Paradigm C: Present Indicative, short form**

(16) **Verb Paradigm Template III**

**Modal stems, with OP**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>L SP, L stem, OP, 1σ</td>
<td>li-tí-nya...</td>
<td>you excrete them...</td>
</tr>
<tr>
<td>b.</td>
<td>L SP, L stem, OP, 2σ</td>
<td>li-tí-líma...</td>
<td>you cultivate them...</td>
</tr>
<tr>
<td>c.</td>
<td>L SP, L stem, OP, 3σ</td>
<td>li-tí-límísa...</td>
<td>you help them cultivate...</td>
</tr>
<tr>
<td>d.</td>
<td>L SP, L stem, OP, 4σ</td>
<td>li-tí-líbátísa...</td>
<td>you delay them...</td>
</tr>
<tr>
<td>e.</td>
<td>H SP, L stem, OP, 1σ</td>
<td>bá-tí-nya...</td>
<td>they excrete them...</td>
</tr>
<tr>
<td>f.</td>
<td>H SP, L stem, OP, 2σ</td>
<td>bá-tí-líma...</td>
<td>they cultivate them...</td>
</tr>
<tr>
<td>g.</td>
<td>H SP, L stem, OP, 3σ</td>
<td>bá-tí-límísa...</td>
<td>they help them cultivate...</td>
</tr>
<tr>
<td>h.</td>
<td>H SP, L stem, OP, 4σ</td>
<td>bá-tí-líbátísa...</td>
<td>they delay them...</td>
</tr>
<tr>
<td>i.</td>
<td>L SP, H stem, OP, 1σ</td>
<td>li-tí-pha...</td>
<td>you give them...</td>
</tr>
<tr>
<td>j.</td>
<td>L SP, H stem, OP, 2σ</td>
<td>li-tí-bóna...</td>
<td>you see them...</td>
</tr>
<tr>
<td>k.</td>
<td>L SP, H stem, OP, 3σ</td>
<td>li-tí-bónísa...</td>
<td>you show them...</td>
</tr>
<tr>
<td>l.</td>
<td>L SP, H stem, OP, 4σ</td>
<td>li-tí-sëbétísa...</td>
<td>you use them...</td>
</tr>
<tr>
<td>m.</td>
<td>H SP, H stem, OP, 1σ</td>
<td>bá-tí-pha...</td>
<td>they give them...</td>
</tr>
<tr>
<td>n.</td>
<td>H SP, H stem, OP, 2σ</td>
<td>bá-tí-bóna...</td>
<td>they see them...</td>
</tr>
<tr>
<td>o.</td>
<td>H SP, H stem, OP, 3σ</td>
<td>bá-tí-bónísa...</td>
<td>they show them...</td>
</tr>
<tr>
<td>p.</td>
<td>H SP, H stem, OP, 4σ</td>
<td>bá-tí-sëbétísa...</td>
<td>they use them...</td>
</tr>
</tbody>
</table>

---

**Paradigm C: Present Indicative, phrase-medial**

(17) **Verb Paradigm Template IV**

**Modal stems, with 1ps OP**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>L SP, L stem, 1psOP, 1σ</td>
<td>li-gí-nya...</td>
<td>you excrete me...</td>
</tr>
<tr>
<td>b.</td>
<td>L SP, L stem, 1psOP, 2σ</td>
<td>li-gí-líma...</td>
<td>you cultivate me...</td>
</tr>
<tr>
<td>c.</td>
<td>L SP, L stem, 1psOP, 3σ</td>
<td>li-gí-límísa...</td>
<td>you help me cultivate...</td>
</tr>
<tr>
<td>d.</td>
<td>L SP, L stem, 1psOP, 4σ</td>
<td>li-gí-líbátísa...</td>
<td>you delay me...</td>
</tr>
</tbody>
</table>
e. H SP, L stem, 1psOP, 1σ  
   bá-gi-nyá...  
   they excrete me...

f. H SP, L stem, 1psOP, 2σ  
   bá-gi-líma...  
   they cultivate me...

g. H SP, L stem, 1psOP, 3σ  
   bá-gi-límísa...  
   they help me cultivate...

h. H SP, L stem, 1psOP, 4σ  
   bá-gi-líbátísa...  
   they delay me...

i. L SP, H stem, 1psOP, 1σ  
   li-gi-phá...  
   you give me...

j. L SP, H stem, 1psOP, 2σ  
   li-gi-bóna...  
   you see me...

k. L SP, H stem, 1psOP, 3σ  
   li-gi-bónísa...  
   you show me...

l. L SP, H stem, 1psOP, 4σ  
   li-gi-sébéítísa...  
   you use me...

m. H SP, H stem, 1psOP, 1σ  
   bá-gi-phá...  
   they give me...

n. H SP, H stem, 1psOP, 2σ  
   bá-gi-bóna...  
   they see me...

o. H SP, H stem, 1psOP, 3σ  
   bá-gi-bónísa...  
   they show me...

p. H SP, H stem, 1psOP, 4σ  
   bá-gi-sébéítísa...  
   they use me...

Paradigm C: Present Indicative, short form

(18) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. L SP, L stem, C1, OP, 1σ  
   —

b. L SP, L stem, C1, OP, 2σ  
   li-tí-vulá...  
   you open them...

c. L SP, L stem, C1, OP, 3σ  
   li-tí-vulísa...  
   you help open them...

d. L SP, L stem, C1, OP, 4σ  
   li-tí-vulélána...  
   you open them for each other...

e. H SP, L stem, C1, OP, 1σ  
   —

f. H SP, L stem, C1, OP, 2σ  
   bá-tí-vulá...  
   they open them...

g. H SP, L stem, C1, OP, 3σ  
   bá-tí-vulísa...  
   they help open them...

h. H SP, L stem, C1, OP, 4σ  
   bá-tí-vulélána...  
   they open them for each other...
i. L SP, H stem, C1, OP, 1σ  
li-tí-dla... (ká’kgűúlu)  
you eat them...

j. L SP, H stem, C1, OP, 2σ  
li-tí-vuná...  
you harvest them...

k. L SP, H stem, C1, OP, 3σ  
li-tí-vunísa...  
you help harvest them...

l. L SP, H stem, C1, OP, 4σ  
li-tí-visísísa...  
you understand them...

m. H SP, H stem, C1, OP, 1σ  
bá-tí-dla... (ká’kgűúlu)  
they eat them...

n. H SP, H stem, C1, OP, 2σ  
bá-tí-vuná...  
they harvest them...

o. H SP, H stem, C1, OP, 3σ  
bá-tí-vunísa...  
they help harvest them...

p. H SP, H stem, C1, OP, 4σ  
bá-tí-visísísa...  
they understand them...

q. L SP, L stem, C2, OP, 2σ  
li-tí-ládza...  
you fetch them...

r. L SP, L stem, C2, OP, 3σ  
li-tí-ladzelá...  
you follow them...

s. L SP, L stem, C2, OP, 4σ  
li-tí-ladzelá...  
you pursue them...

t. H SP, L stem, C2, OP, 2σ  
bá-tí-ládza...  
they fetch them...

u. H SP, L stem, C2, OP, 3σ  
bá-tí-ladzelá...  
they follow them...

v. H SP, L stem, C2, OP, 4σ  
bá-tí-ladzelá...  
they pursue them...

w. L SP, H stem, C2, OP, 2σ  
li-tí-tshegə...  
you buy them...

x. L SP, H stem, C2, OP, 3σ  
li-tí-tshegi sá...  
you sell them...

y. L SP, H stem, C2, OP, 4σ  
li-tí-tshegelána...  
you buy them for e.o...

z. H SP, H stem, C2, OP, 2σ  
bá-tí-tshegə...  
they buy them...

aa. H SP, H stem, C2, OP, 3σ  
bá-tí-tshegi sá...  
they sell them...

ab. H SP, H stem, C2, OP, 4σ  
bá-tí-tshegelána...  
they buy them for each other...

ac. L SP, L stem, C3, OP, 3σ  
li-tí-límága...  
you cultivate them indiscriminately...

ad. L SP, L stem, C3, OP, 4σ  
li-tí-limagisá...  
you help cultivate them indiscriminately...
| ae. | L SP, L stem, C3, OP, 5σ | li-tí-limagi sísa... | you cultivate them intensively indiscriminately... |
| af. | H SP, L stem, C3, OP, 3σ | bá-tí-limagá... | they cultivate them indiscriminately... |
| ag. | H SP, L stem, C3, OP, 4σ | bá-tí-limagi sá... | they help cultivate them indiscriminately... |
| ah. | H SP, L stem, C3, OP, 5σ | bá-tí-limagi sísa... | they cultivate them intensively indiscriminately... |
| ai. | L SP, H stem, C3, OP, 3σ | li-tí-bülüga... | you save/keep them... |
| aj. | L SP, H stem, C3, OP, 4σ | li-tí-bülügi sá... | you help save them... |
| ak. | L SP, H stem, C3, OP, 5σ | li-tí-bülügi sísa... | you save them intensively... |
| al. | H SP, H stem, C3, OP, 3σ | bá-tí-bülüga... | they save them... |
| am. | H SP, H stem, C3, OP, 4σ | bá-tí-bülügi sá... | they help save them... |
| an. | H SP, H stem, C3, OP, 5σ | bá-tí-bülügi sísa... | they save them intensively... |
| ao. | L SP, L stem, C4, OP, 4σ | li-tí-pátálága... | you pay them indiscriminately... |
| ap. | L SP, L stem, C4, OP, 5σ | li-tí-patalagi sá... | you help pay them indiscriminately... |
| aq. | L SP, L stem, C4, OP, 6σ | li-tí-patalagisísa... | you pay them intensively indiscriminately... |
| ar. | H SP, L stem, C4, OP, 4σ | bá-tí-pátálága... | they pay them indiscriminately... |
| as. | H SP, L stem, C4, OP, 5σ | bá-tí-patalagi sá... | they help pay them indiscriminately... |
| at. | H SP, L stem, C4, OP, 6σ | bá-tí-patalagi sísa... | they pay them intensively indiscriminately... |
au. L SP, H stem, C4, OP, 4σ  li-tí-bůlálága... you kill them indiscriminately...

av. L SP, H stem, C4, OP, 5σ  li-tí-bulalagi sá... you cause them to kill indiscriminately...

aw. L SP, H stem, C4, OP, 6σ  li-tí-bulalagi sísa... you kill them intensively indiscriminately...

ax. H SP, H stem, C4, OP, 4σ  bá-tí-bůlálága... they kill them indiscriminately...

ay. H SP, H stem, C4, OP, 5σ  bá-tí-bulalagi sá... they cause them to kill indiscriminately...

az. H SP, H stem, C4, OP, 6σ  bá-tí-bulalagi sísa... they kill them indiscriminately...

ba. L SP, L stem, C12, OP, 2σ  li-tí-gůdza... you shear them...

bb. L SP, L stem, C12, OP, 3σ  li-tí-gudzi sá... you help shear them...

bc. L SP, L stem, C12, OP, 4σ  li-tí-gudzelána... you shear for e.o...

bd. H SP, L stem, C12, OP, 2σ  bá-tí-gůdza... they shear them...

be. H SP, L stem, C12, OP, 3σ  bá-tí-gudzi sá... they help shear them...

bf. H SP, L stem, C12, OP, 4σ  bá-tí-gudzelána... they shear them for e.o...

bg. L SP, H stem, C12, OP, 2σ  li-tí-gádza... you flatten them...

bh. L SP, H stem, C12, OP, 3σ  li-tí-gadzi sá... you help flatten them...

bi. L SP, H stem, C12, OP, 4σ  li-tí-gadzi sína... you help e.o. flatten them...

bj. H SP, H stem, C12, OP, 2σ  bá-tí-gádza... they flatten them...

bk. H SP, H stem, C12, OP, 3σ  bá-tí-gadzi sá... they help flatten them...

bl. H SP, H stem, C12, OP, 4σ  bá-tí-gadzi sína... they help e.o. flatten them...

bm. L SP, H stem, C123, OP, 6σ  li-tí-gadzagisélána... you help flatten them indiscriminately for each other...
bn. H SP, H stem, C123, OP, 6σ 

bá-tí-gadzagi sélána... 

they help flatten them indiscriminately for each other...

Paradigm C: Present Indicative, short form

(19) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP

a. L SP, L stem, C1, 1psOP, 1σ —

b. L SP, L stem, C1, 1psOP, 2σ li-ğ-i-bheká... 26 you look at me...

c. L SP, L stem, C1, 1psOP, 3σ li-ğ-i-vulísà... you help me open...

d. L SP, L stem, C1, 1psOP, 4σ li-ğ-i-bhekísísà... you look at me intensely...

e. H SP, L stem, C1, 1psOP, 1σ —

26 Throughout set VI (19) of this paradigm, the depressed 1psOP will be seen—as well as the typical OP-stem configuration according to tone parameters argued for in Chapters 4 and 5—to trigger either (i) a disjoint HD, when attached to toneless/low stems (cf. discussion in Chapter 7 §7.7.2.1, especially footnote 125); or (ii) an unincorporated HD, when attached to H stems (cf. discussion in Chapter 7 §7.7.1). But the blocking effect is much harder to achieve (more marked) when the depressed 1ps OP is preceded by a toneless SP (here: li-), and when the stem has as depressor in C1. Thus in (19), disjoint li-ğ-i-bheká... is possible, but much more marked than li-ğ-i-bheká... Whereas, the disjoint bá-ğ-i-vulá... (alongside non-disjoint bá-ğ-i-vulá...) is much more likely, given the preceding high SP bá-. Now this may be further testimony to the unstable nature of the OP: (i) OP is underlyingly H; (ii) all other syllables being equal obligatorily surface-low in the present indicative long form (paradigm A III-IV above); (iii) all other things being equal, OP is surface-high in the present indicative short form (this appendix, paradigm C, III-IV). But even this surface-high-ness tendency fails to produce the otherwise expected disjoint HD, where the first excursion of the disjoint H is at the (depression-displaced) prefix boundary. There has been further discussion of OP-instability in Chapter 7 §7.6.3. A second possible reason for the OP’s failure to express as H in this last mentioned present indicative short form context \{low SP + 1psOP + C_stem....\} is a kind of plateauing effect, as also seen in parallel data from the present relative paradigm (cf. introduction to paradigm H in this appendix, and paradigm H template III, footnote 55). Cf. similar distribution of OP H interacting with depression in paradigm J (short perfective). And cf. Chapter 7 §7.8.1.8 for analysis of depressed OPs adjacent to depressor-bearing stems forcing LD fusion (‘Lexical tone category conflation by LD fusion’).
The first of the pairs in (19f-k) are the non-disjoint forms, that is, where the single UR H sponsor (the OP itself) corresponds to a single (albeit rightwards-displaced) span of H surface expression. The second of each pair (19g,i,k) is the disjoint form, where both the prefix is expressed H (from the ‘blocking’ effect of depressed prefix and depressed σ1 of the verb stem) and there is H expression inside the stem. Cf. Chapter 7 §7.7.2 for full discussion of disjoint HDs.

The first of the pairs in (19q-v) are the non-unincorporated forms (that is, where the OP UR H sponsor and the stem H tone together correspond to the single span of H surface expression, inside a fused L domain {OP+stem)—and thus also a fused H domain (19q,s,u). The second of each pair is the unincorporation-blocked form, where both the 1ps OP prefix is expressed H, depressor-blocked as it is preceding the σ1 depressor consonant, and the UR stem H is also expressed H (19r,t,v). Cf. Chapter §7.7.1 for full discussion of unincorporated HDs. The monosyllabic stem yields only the depressor-blocked non-unincorporated form (19p), because fusing the OP and stem LDs is blocked across the penult-ultima boundaries. Cf. §7.8.1.8 - 7.8.1.9 for full discussion of LD fusion.
u. H SP, H stem, C1, 1psOP, 4σ bá-gi-visísís... they understand me...

v. (ditto) bá-gi-... (ditto)

w. L SP, L stem, C2, 1psOP, 2σ li-gi-ládza... you fetch me...

x. L SP, L stem, C2, 1psOP, 3σ li-gi-ladzelá... you follow me...

y. (ditto) li-gi-ladzelá... (ditto)

z. L SP, L stem, C2, 1psOP, 4σ li-gi-ladzellá... you pursue me...

aa. (ditto) li-gi-ladzellá... (ditto)

ab. H SP, L stem, C2, 1psOP, 2σ bá-gi-ládza... they fetch me...

ac. H SP, L stem, C2, 1psOP, 3σ bá-gi-ladzelá... they follow me...

ad. (ditto) bá-gi-ladzelá... (ditto)

ae. H SP, L stem, C2, 1psOP, 4σ bá-gi-ladzellá... they pursue me...

af. (ditto) bá-gi-ladzellá... (ditto)

ag. L SP, H stem, C2, 1psOP, 2σ li-gi-tshéga... you buy me...

ah. L SP, H stem, C2, 1psOP, 3σ li-gi-tshégi sá... you sell me...

ai. (ditto) li-gi-tshégi sá... (ditto)

aj. L SP, H stem, C2, 1psOP, 4σ li-gi-tshégélána... you buy me for e.o...

ak. (ditto) li-gi-tshégélána... (ditto)

al. H SP, H stem, C2, 1psOP, 2σ bá-gi-tshéga... they buy me...

am. H SP, H stem, C2, 1psOP, 3σ bá-gi-tshégi sá... they sell me...

an. (ditto) bá-gi-tshégi sá... (ditto)

ao. H SP, H stem, C2, 1psOP, 4σ bá-gi-tshégélána... they buy me for e.o...

ap. (ditto) bá-gi-tshégélána... (ditto)

---

29 In Cσ1 (here: C2, C3, C4) stems, both toneless/low and H, the depressed 1ps OP successfully allows the disjoint HD ‘shift’ effect (19y,aa,ad,af,ar,as,au,ax,az,bm,bo,br,bt) and the corresponding unincorporation ‘shift’ effect (19ai,ak,an,ap,bc,be,bh,bj,bw,by,cd,cd). This optional pattern is theoretically manifested for all stem lengths—including 2-σ C2 stems (19w,ab,ag,al), 3-σ C3 stems (19aq,av,ba,bf,) and 4-σ C4 stems (19bk,bp,bu,bz)—but in these last cases the disjoint or unincorporated variant coincides with the ‘normal’ variant; thus, in these cases, each datum is provided just once.
<table>
<thead>
<tr>
<th>Case</th>
<th>Stem</th>
<th>Person</th>
<th>Number</th>
<th>Tense</th>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aq.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límága...</td>
<td>you cultivate me indiscriminately...</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>stem,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límagisá...</td>
<td>you help cultivate me indiscriminately...</td>
</tr>
<tr>
<td>ar.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límagisá...</td>
<td>(ditto)</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>stem,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límagisása...</td>
<td>you cultivate me intensively indiscriminately...</td>
</tr>
<tr>
<td>as.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límagisá...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>at.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-límagisása...</td>
<td>you cultivate me intensively indiscriminately...</td>
</tr>
<tr>
<td>au.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>li-gi-límagisása...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>av.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-límága...</td>
<td>they cultivate me indiscriminately...</td>
</tr>
<tr>
<td>aw.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-límagisá...</td>
<td>they help cultivate me indiscriminately...</td>
</tr>
<tr>
<td>ax.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>bá-gi-límagisá...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>ay.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-límagisása...</td>
<td>they cultivate me intensively indiscriminately...</td>
</tr>
<tr>
<td>az.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>bá-gi-límagisása...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>ba.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-búlúga...</td>
<td>you save / keep me...</td>
</tr>
<tr>
<td>bb.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-búlugi-sá...</td>
<td>you help save me...</td>
</tr>
<tr>
<td>bc.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>li-gi-búlugi-sá...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>bd.</td>
<td>L</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>li-gi-búlugisása...</td>
<td>you save me intensively...</td>
</tr>
<tr>
<td>be.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>li-gi-búlugisása...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>bf.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-búlúga...</td>
<td>they save me...</td>
</tr>
<tr>
<td>bg.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-búlugisá...</td>
<td>they help save me...</td>
</tr>
<tr>
<td>bh.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>bá-gi-búlugisá...</td>
<td>(ditto)</td>
</tr>
<tr>
<td>bi.</td>
<td>H</td>
<td>SP,</td>
<td>C3</td>
<td>1psOP</td>
<td>bá-gi-búlugisása...</td>
<td>they save me intensively...</td>
</tr>
<tr>
<td>bj.</td>
<td></td>
<td>(ditto)</td>
<td></td>
<td></td>
<td>bá-gi-búlugisása...</td>
<td>(ditto)</td>
</tr>
</tbody>
</table>
bk. L SP, L stem, C4, 1psOP, 4σ  li-gí-pátálága... you pay me indiscriminately...
bl. L SP, L stem, C4, 1psOP, 5σ  li-gí-patalagisá... you help pay me indiscriminately...

bm. (ditto)  li-gí-patalagisá... (ditto)
bn. L SP, L stem, C4, 1psOP, 6σ  li-gí-patalagisá... you pay me intensively indiscriminately...
bo. (ditto)  li-gí-patalagisá... (ditto)

bp. H SP, L stem, C4, 1psOP, 4σ  bà-gí-pátálága... they pay me indiscriminately...
 bq. H SP, L stem, C4, 1psOP, 5σ  bà-gí-patalagisá... they help pay me indiscriminately...
br. (ditto)  bà-gí-patalagisá... (ditto)
bs. H SP, L stem, C4, 1psOP, 6σ  bà-gí-patalagisá... they pay me intensively indiscriminately...
bt. (ditto)  bà-gí-patalagisá... (ditto)

bu. L SP, H stem, C4, 1psOP, 4σ  li-gí-búlálága... you kill me indiscriminately...

bv. L SP, H stem, C4, 1psOP, 5σ  li-gí-bulagísá... you cause me to kill indiscriminately...
 bw. (ditto)  li-gí-bulagísá... (ditto)

bx. L SP, H stem, C4, 1psOP, 6σ  li-gí-bulagísá... you kill me intensively indiscriminately...
by. (ditto)  li-gí-bulagísá... (ditto)

bz. H SP, H stem, C4, 1psOP, 4σ  bà-gí-búlálága... they kill me indiscriminately...

ca. H SP, H stem, C4, 1psOP, 5σ  bà-gí-bulagísá... they cause me to kill indiscriminately...
cb. (ditto)  bà-gí-bulagísá... (ditto)
cc. H SP, H stem, C4, 1psOP, 6σ  bà-gí-bulagísá... they kill me intensively indiscriminately...
cd. (ditto)  bà-gí-bulagísá... (ditto)
ce. L SP, L stem, C12, 1psOP, 2σ  li-gi-bhébha... you carry me on your backs...

cf. L SP, L stem, C12, 1psOP, 3σ  li-gi-bhehbi sá... you help carry me on your backs...

cg. L SP, L stem, C12, 1psOP, 4σ  li-gi-bhehbi sísá... you carry me on your backs tightly...

ch. H SP, L stem, C12, 1psOP, 2σ  bá-gi-bhébha... they carry me on their backs...

ci. (ditto)  bá-gí-bhébha... (ditto)

cj. H SP, L stem, C12, 1psOP, 3σ  bá-gi-bhehbi sá... they help carry me on their backs...

ck. (ditto)  bá-gí-bhehbi sá... (ditto)

cl. H SP, L stem, C12, 1psOP, 4σ  bá-gi-bhehbi sísá... they carry me on their backs tightly...

cm. (ditto)  bá-gí-bhehbi sísá... (ditto)

cn. L SP, H stem, C12, 1psOP, 2σ  li-gi-gádza... you flatten me...

cn. L SP, H stem, C12, 1psOP, 3σ  li-gi-gadzisá... you help flatten me...

cp. L SP, H stem, C12, 1psOP, 4σ  li-gi-gadzisána... you help each other flatten me...

cq. H SP, H stem, C12, 1psOP, 2σ  bá-gi-gádza... they flatten me...

cr. (ditto)  bá-gí-gádza... (ditto)

cs. H SP, H stem, C12, 1psOP, 3σ  bá-gi-gadzi sá... they help flatten me...

cs. H SP, H stem, C12, 1psOP, 3σ  bá-gí-gadzi sá... (ditto)

cu. H SP, H stem, C12, 1psOP, 4σ  bá-gi-gadzi sáná... they help e.o. flatten me...

cv. (ditto)  bá-gí-gadzi sáná... (ditto)

cw. L SP, H stem, C123, 1psOP, 6σ  li-gi-gadzagi sélána... you help flatten them indiscriminately for each other...

cx. H SP, H stem, C123, 1psOP, 6σ  bá-gi-gadzagi sélána... they help flatten me indiscriminately for each other...

[turn to the next page for Appendix A, Paradigm D: Infinitive]
Paradigm D: Infinitive (long form)

- \textit{ku} - + OP + \{ROOT (+suffixes) + -a\}_stem

- The infinitive paradigm has both nominal and verbal properties. It functions frequently as a Class 15 noun (cf. Chapter 2 §2.2.1), but also all the verb morphology of the non-finite (non-indicative) moods (cf. §2.2.4.9). Thus, the infinitive lacks the range of prefix morphology that indicative verbs have, most saliently: there is no non-H infinitive prefix. This is because the infinitive prefix is non-anaphoric and is also nominal, fixed as \textit{kú}-.

- Thus, there can be no L SP vs. H SP distinction\textsuperscript{30}. The only prefix is a H NP (noun prefix).

- The infinitive also has the (non-prefix) stem morphology of a grammatical paradigm verb (cf. properties of grammatical paradigms in §2.2.4.7, and cf. Chapter 6).

- Although transitive infinitives can take nominal objects, and thus can function phrase-medially (a ‘short’ form), there is no interesting addition to the short form information provided for the present indicative short form (paradigm C) above. Thus, the data in this infinitive paradigm is given in phrase-final (‘long’) form alone.

- The tone properties of the infinitive paradigm are essentially identical to those of the present indicative long form, only that the infinitive lacks the intervening (toneless) syllable \textit{-ya-} which separates SP from OP or stem in the present indicative. The verb tone morphology in the infinitive does not conflict with that of NPs, as all devervative nouns take verbal tone morphology patterns (Chapter 5 §5.6.2).

(20) Verb Paradigm Template I

\begin{tabular}{lll}
\textbf{Modal stems} & \\
\text{a.} & H NP, L stem, 1\textsigma & kúú-ta & to come, coming\textsuperscript{31} \\
\text{b.} & H NP, L stem, 2\textsigma & kú-liima & to cultivate \\
\end{tabular}

\textsuperscript{30} In other Nguni languages, including Xhosa and Zulu, a noun prefix can be induced to lose its H tone status, thus giving insight into the tonal behaviour of the stem alone (cf. data in Chapter 4 §4.1.1.1); here, \textit{kú}- should lose its H, while remaining segmentally \textit{ku}-). The typical elicitation frame is the negative polarity ‘there is no X-ing’, where X is the infinitive verb / devervative NP; negative existential phrases in Nguni languages typically eliminate the H tone on all noun prefixes (which H tone seems to indicate specificity and/or definiteness). While this syntactic possibility exists in Phuthi, it is very difficult to elicit this axiomatic negative form in the Class 15 infinitive (due to extremely low frequency in this morphosyntactic frame); thus, no thorough attempt was made to elicit the infinitives in this appendix in such a frame.

\textsuperscript{31} All infinitives can be translated as either phrasal ‘to X’, or gerund(ive) ‘X-ing’.

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c. H NP, L stem, 3σ  kú-líbaala  to forget

d. H NP, L stem, 4σ  kú-límélaana  to cultivate for e.o.

e. H NP, H stem, 1σ  kúu-phá  to give

f. H NP, H stem, 2σ  kú-bóôna  to see

g. H NP, H stem, 3σ  kú-bóníisa  to show

*h. H NP, H stem, 4σ  kú-ségétiisa  to use

Paradigm D: Infinitive

(21)  Verb Paradigm Template II
Breathy / depressor stems

a. H NP, L stem, C1, 1σ  —

b. H NP, L stem, C1, 2σ  kú-vuula  to open

c. H NP, L stem, C1, 3σ  kú-vulíisa  to open for

d. H NP, L stem, C1, 4σ  kú-vulélaana  to open for each other

e. H NP, L stem, C1, 5σ  kú-getísísaana  to add together intensively

f. H NP, L stem, C1, 6σ  kú-getísísísaana  to help add together intensively

g. H NP, H stem, C1, 1σ  kú-dlā  to eat

h. H NP, H stem, C1, 2σ  kú-vuůna  to harvest

i. H NP, H stem, C1, 3σ  kú-vuníisa  to help harvest

---

32  Phonologically predictable downsteps are not indicated in this appendix (cf. Chapter 5 §5.5 for discussion of all downstep effects not triggered by depression), e.g. in (21d) post-depressor -lél- is automatically downstepped (by Chapter 7 §7.9: Principle D). Contrastive downsteps will be seen in the participial (G), present negative (U) and inclusive (V) paradigms. Cf. further comments in footnotes 47, 48.

33  The custom in this appendix has been to exemplify verb stems of up to 4-σ in length (except for stems with more deeply embedded depressors: C3, C4). But I provide here additional 5-σ and 6-σ stems in this infinitive data set, in order to reveal a pattern masked by the insufficient stem length (discussed in Chapter 7 §7.2.2.1 (14-18) as Depression Pattern 1c): the effect of a depressed syllable is—all other things being equal—a merely local effect. Thus, all non-depressed syllables following the depressor site inside the HD return to being expressed as H.

34  Cf. paradigm A (II), footnote 6, on rising-H properties of a 1-σ depressor H stem.
j. H NP, H stem, C1, 4σ  kū-viśiśiśa  to understand

k. H NP, H stem, C1, 5σ  kū-yhalisīśaana  to refuse e.o. intensively

l. H NP, H stem, C1, 6σ  kū-yhalisīśiśaana  to help refuse e.o. intensively

m. H NP, L stem, C2, 2σ  kū-łaadža  to fetch

n. H NP, L stem, C2, 3σ  kū-lādzeela  to follow

o. H NP, L stem, C2, 4σ  kū-ladželāla  to pursue

p. H NP, H stem, C2, 2σ  kū-tshēgea  to buy

q. H NP, H stem, C2, 3σ  kū-tshegiśa  to sell

r. H NP, H stem, C2, 4σ  kū-tshegelāana  to buy for e.o.

s. H NP, L stem, C3, 3σ  kū-līmaaga  to cultivate indiscriminately

t. H NP, L stem, C3, 4σ  kū-limāgiśiśa  to help cultivate indiscriminately

u. H NP, L stem, C3, 5σ  kū-limagisīśa  to cultivate intensively indiscriminately

v. H NP, H stem, C3, 3σ  kū-bulūúga  to save / keep

w. H NP, H stem, C3, 4σ  kū-bulūgiśiśa  to help save

x. H NP, H stem, C3, 5σ  kū-bulugiśiśa  to save intensively

y. H NP, L stem, C4, 4σ  kū-pátālaaga  to pay indiscriminately

z. H NP, L stem, C4, 5σ  kū-pátalāgiśiśa  to help pay indiscriminately

aa. H NP, L stem, C4, 6σ  kū-patalagisīśa  to pay intensively indiscriminately

ab. H NP, H stem, C4, 4σ  kū-bulālaaga  to kill indiscriminately

ac. H NP, H stem, C4, 5σ  kū-bulāgliśiśa  to cause to kill indiscriminately
ad. H NP, H stem, C4, 6σ  kū-bulalagi sísa  to kill intensively indiscriminately

ae. H NP, L stem, C12, 2σ  kū-guḍza  to shear

af. H NP, L stem, C12, 3σ  kū-guḍzi iša  to help shear

ag. H NP, L stem, C12, 4σ  kū-guḍzeláana  to shear for e.o.

ah. H NP, H stem, C12, 2σ  kū-gaádza  to stamp

ai. H NP, H stem, C12, 3σ  kū-gadziša  to help stamp

aj. H NP, H stem, C12, 4σ  kū-gadzisáana  to help e.o. stamp

ak. H NP, L stem, C123, 6σ  kū-guḍzagi sélaana  to help shear indiscriminately for e.o.

al. H NP, H stem, C123, 6σ  kū-guḍzagi sélaana  to help stamp indiscriminately for e.o.

Paradigm D: Infinitive

(22) Verb Paradigm Template III

Modal stems, with OP

a. H NP, L stem, OP, 1σ  kū-tú-nya  to excrete them

b. H NP, L stem, OP, 2σ  kū-tú-liima  to cultivate them

c. H NP, L stem, OP, 3σ  kū-tú-límiisa  to help them cultivate

d. H NP, L stem, OP, 4σ  kū-tú-lábátiisa  to delay them

e. H NP, H stem, OP, 1σ  kū-tú-phá  to give them

f. H NP H stem, OP, 2σ  kū-tú-bóóna  to see them

g. H NP, H stem, OP, 3σ  kū-tú-bóníísa  to show them

h. H NP, H stem, OP, 4σ  kū-tú-ségbétiisa  to use them

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Paradigm D: Infinitive

(23) Verb Paradigm Template IV
Modal stems, with 1ps OP
a. H NP, L stem, 1psOP, 1σ kū-ɡīŋ-nya to excrete me
b. H NP, L stem, 1psOP, 2σ kū-ɡī-liima to cultivate me
c. H NP, L stem, 1psOP, 3σ kū-ɡī-lǐmiisa to help me cultivate
d. H NP, L stem, 1psOP, 4σ kū-ɡī-lībātiisa to delay me
e. H NP, H stem, 1psOP, 1σ kū-ɡī-phā to give me
f. H NP, H stem, 1psOP, 2σ kū-ɡī-bóōna to see me
g. H NP, H stem, 1psOP, 3σ kū-ɡī-bōnǐsā to show me
h. H NP, H stem, 1psOP, 4σ kū-ɡī-sēbētiisa to use me

Paradigm D: Infinitive

(24) Verb Paradigm Template V
Breathy / depressor stems, with OP
a. H NP, L stem, C1, OP, 1σ —
b. H NP, L stem, C1, OP, 2σ kū-ɡī-bheeka to look at them
c. H NP, L stem, C1, OP, 3σ kū-ɡī-vulőisa to help open them
d. H NP, L stem, C1, OP, 4σ kū-ɡī-bhekɪsiisa to look at them intensely
e. H NP, H stem, C1, OP, 1σ kū-ɡī-dlā to eat them
f. H NP, H stem, C1, OP, 2σ kū-ɡī-vuńna to harvest them
g. H NP, H stem, C1, OP, 3σ kū-ɡī-vunůisā to help harvest them
h. H NP, H stem, C1, OP, 4σ kū-ɡī-wisísısıisa to understand them
i. H NP, L stem, C2, OP, 2σ kū-ɡī-laadza to fetch them
j. H NP, L stem, C2, OP, 3σ kū-ɡī-ládzeela to follow them
k. H NP, L stem, C2, OP, 4σ kū-ɡī-ladžeilā to pursue them

Cf. note 13 at (5a), in paradigm A, on the marked semantics of such data.

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l. H NP, H stem, C2, OP, 2σ kú-tí-tshéégga to buy them
m. H NP, H stem, C2, OP, 3σ kú-tí-tshegísa to sell them
n. H NP, H stem, C2, OP, 4σ kú-tí-tshegéláana to buy them for e.o.
o. H NP, L stem, C3, OP, 3σ kú-tí-límaaga to cultivate them indiscriminately
p. H NP, L stem, C3, OP, 4σ kú-tí-límágíiṣa to help cultivate them indiscriminately
q. H NP, L stem, C3, OP, 5σ kú-tí-límagíisíṣa to cultivate them intensively indiscriminately
r. H NP, H stem, C3, OP, 3σ kú-tí-búlúúga to save / keep them
s. H NP, H stem, C3, OP, 4σ kú-tí-búlúgiíṣa to help save them
t. H NP, H stem, C3, OP, 5σ kú-tí-bulúgiisíṣa to save them intensively
u. H NP, L stem, C4, OP, 4σ kú-tí-pátálaaga to pay them indiscriminately
v. H NP, L stem, C4, OP, 5σ kú-tí-pátálágiíṣa to help pay them indiscriminately
w. H NP, L stem, C4, OP, 6σ kú-tí-patalágiisíṣa to pay them intensively indiscriminately
x. H NP, H stem, C4, OP, 4σ kú-tí-búlalaaga to kill them indiscriminately
y. H NP, H stem, C4, OP, 5σ kú-tí-búlalágiíṣa to cause them to kill indiscriminately
z. H NP, H stem, C4, OP, 6σ kú-tí-bулalágiisíṣa to kill them intensively indiscriminately
aa. H NP, L stem, C12, OP, 2σ kú-tí-gûdža to shear them
ab. H NP, L stem, C12, OP, 3σ kú-tí-gûdzíiṣa to help shear them
ac. H NP, L stem, C12, OP, 4σ kú-tí-gûdzeláana to shear them for e.o.

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ad. H NP, H stem, C12, OP, 2σ kū-ti-gaádzá to flatten them
ae. H NP, H stem, C12, OP, 3σ kū-ti-gadzišá to help flatten them
af. H NP, H stem, C12, OP, 4σ kū-ti-gadzišáana to help e.o. flatten them

Paradigm D: Infinitive

- The H depressed 1ps OP allows some variation in C2, C3, etc stems, where the first stem becomes available to be ‘spread’ onto (i.e. to receive the unincorporated H tone from the depressed H OP), e.g. (25l,p,t,x,ab,af).

(25) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP
a. H NP, L stem, C1, 1psOP, 1σ —
b. H NP, L stem, C1, 1psOP, 2σ kū-gī-bheeka to look at me
c. H NP, L stem, C1, 1psOP, 3σ kū-gī-vulíśa to help me open
d. H NP, L stem, C1, 1psOP, 4σ kū-gī-bheksišá to look at me intensely
e. H NP, H stem, C1, 1psOP, 1σ kū-gī-dlā to eat me
f. H NP, H stem, C1, 1psOP, 2σ kū-gī-vūūśa to awaken me
g. H NP, H stem, C1, 1psOP, 3σ kū-gī-vusíśa to help me awaken
h. H NP, H stem, C1, 1psOP, 4σ kū-gī-vísíśiša to understand me
i. H NP, L stem, C2, 1psOP, 2σ kū-gī-láadza to fetch me
j. H NP, L stem, C2, 1psOP, 3σ kū-gī-ládzeela to follow me
k. H NP, L stem, C2, 1psOP, 4σ kū-gī-ládzelːla to pursue me
l. (ditto) kū-gī-ládzelːla (ditto)
m. H NP, H stem, C2, 1psOP, 2σ kū-gī-tshééga to buy me
n. H NP, H stem, C2, 1psOP, 3σ kū-gī-tshegišá to sell me
o. H NP, H stem, C2, 1psOP, 4σ kū-gī-tshegláana to buy me for e.o.
p. (ditto) kū-gī-tshegláana (ditto)
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>q.</td>
<td>H NP, L stem, C3, 1psOP, 3σ</td>
<td>kū-gí-límaaga</td>
<td>to cultivate me indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r.</td>
<td>H NP, L stem, C3, 1psOP, 4σ</td>
<td>kū-gí-límágiisa</td>
<td>to help cultivate me indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>s.</td>
<td>H NP, L stem, C3, 1psOP, 5σ</td>
<td>kū-gí-limagísísa</td>
<td>to cultivate me intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t.</td>
<td>(ditto)</td>
<td>kū-gí-limagísísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u.</td>
<td>H NP, H stem, C3, 1psOP, 3σ</td>
<td>kū-gí-búlúúga</td>
<td>to save / keep me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>H NP, H stem, C3, 1psOP, 4σ</td>
<td>kū-gí-búlúgiisa</td>
<td>to help save me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w.</td>
<td>H NP, H stem, C3, 1psOP, 5σ</td>
<td>kū-gí-bulugísísa</td>
<td>to save me intensively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x.</td>
<td>(ditto)</td>
<td>kū-gí-bulugísísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>y.</td>
<td>H NP, L stem, C4, 1psOP, 4σ</td>
<td>kū-gí-pátalaaga</td>
<td>to pay me indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>z.</td>
<td>H NP, L stem, C4, 1psOP, 5σ</td>
<td>kū-gí-pátálágíisa</td>
<td>to help pay me indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aa.</td>
<td>H NP, L stem, C4, 1psOP, 6σ</td>
<td>kū-gí-patalagísísa</td>
<td>to pay me intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ab.</td>
<td>(ditto)</td>
<td>kū-gí-patalagísísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ac.</td>
<td>H NP, H stem, C4, 1psOP, 4σ</td>
<td>kū-gí-búlalaaga</td>
<td>to kill me indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ad.</td>
<td>H NP, H stem, C4, 1psOP, 5σ</td>
<td>kū-gí-búlágíisa</td>
<td>to cause me to kill indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ae.</td>
<td>H NP, H stem, C4, 1psOP, 6σ</td>
<td>kū-gí-bulágísísa</td>
<td>to kill me intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>af.</td>
<td>(ditto)</td>
<td>kū-gí-bulágísísa</td>
<td>(ditto)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ag.</td>
<td>H NP, L stem, C12, 1psOP, 2σ</td>
<td>kū-gí-bheebha</td>
<td>to carry me on the back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ah.</td>
<td>H NP, L stem, C12, 1psOP, 3σ</td>
<td>kū-gí-bhébhi isa</td>
<td>to help carry me on the back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ai.</td>
<td>H NP, L stem, C12, 1psOP, 4σ</td>
<td>kū-gí-bhebhi síisa</td>
<td>to carry me on the back tightly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
aj. H NP, H stem, C12, 1psOP, 2σ  kú-gi-gádza  to flatten me

ak. H NP, H stem, C12, 1psOP, 3σ  kú-gi-gadziísa  to help flatten me

al. H NP, H stem, C12, 1psOP, 4σ  kú-gi-gadzíísá  to flatten me completely

[turn to the next page for Appendix A, Paradigm E: Perfective Indicative, long form]
Paradigm E: Perfective Indicative, long form

- SP + (OP) + \{ROOT (+suffixes) + -iye\}_stem
- The perfective indicative phrase-final (‘long’) form displays essentially identical tone behaviour to the lexical paradigms in sections A, B, D in this Appendix.
- Like all Nguni languages, the Phuthi perfective has a toneless two-syllable suffix, in Phuthi: -(i)iye. However, a subset of the verbs with an appropriate /-aC-/ phonological shape, e.g. with the reciprocal suffix -an-, select an ‘imbricated’ perfective suffix (cf. Chapter 2 §2.2.4.8), e.g. (26d below). For this reason, imbricated suffixes are mostly avoided, as they are a syllable shorter than the default perfective suffix, thus rendering the expository pattern of incrementally increasing stem length harder to maintain.
- Unlike all other Nguni languages, the first vowel of the Phuthi perfective suffix is potentially susceptible to harmonisation (i.e. effectively: stem-controlled harmony), as part of the general root-controlled progressive superclose harmony in the language (cf. Chapter 2 §2.1.6.1).
- This long perfective paradigm displays a sharp tonal contrast with the short perfective which is a ‘grammatical paradigm’ (paradigm J below).
- Some data fragments from the long perfective have been adduced in Chapters 4, 5 and 7.

(26) Verb Paradigm Template I

Modal stems

a. L SP, L stem, 2σ  li-t-iiye 

b. L SP, L stem, 3σ  li-lim-iiye you have cultivated

c. L SP, L stem, 4σ  li-limis-iiye you have helped cultivate

d. L SP, L stem, 4σ  li-limel-eene you have cultivated for each other

e. L SP, L stem, 5σ  li-limisis-iiye you have cultivated intensively

36 Counting of stem syllables now includes the perfective suffix. Thus, there can be no 1-σ stems in this paradigm. For expository clarity, a non-imbricated perfective example will be followed in a few instances by an imbricated one of the same stem length, in order to provide a comparison (e.g. 26c,d; 26h,i).

37 The perfective data has been systematically glossed with ‘have X-ed’, as befits a perfective paradigm. But items from this paradigm also convey aorist (preterite) meaning.
f. H SP, L stem, 2σ  
   bá-t-iiye  
   *(bá-t-)ííye  
   they have come

g. H SP, L stem, 3σ  
   bá-lím-iiye  
   they have cultivated

h. H SP, L stem, 4σ  
   bá-límís-iiye  
   they have helped cultivate

i. H SP, L stem, 4σ  
   bá-límél-eene  
   they have cultivated for each other

j. H SP, L stem, 5σ  
   bá-límísís-iiye  
   they have cultivated intensively

k. L SP, H stem, 2σ  
   li-ph-ííye  
   you have given

l. L SP, H stem, 3σ  
   li-bóñ-ííye  
   you have seen  
   *(li-bón-iiye

m. L SP, H stem, 4σ  
   li-bóñís-iiye  
   you have shown

n. L SP, H stem, 5σ  
   li-ségbétís-iiye  
   you have used

o. H SP, H stem, 2σ  
   bá-ph-ííye  
   they have given

p. H SP, H stem, 3σ  
   bá-bóñ-ííye  
   they have seen

q. H SP, H stem, 4σ  
   bá-bóñís-iiye  
   they have shown

r. H SP, H stem, 5σ  
   bá-ségbétís-iiye  
   they have used

Paradigm E: Perfective Indicative, long form

(27)  

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. L SP, L stem, C1, 2σ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. L SP, L stem, C1, 3σ</td>
<td>li-vul-iiye</td>
<td>you have opened</td>
<td></td>
</tr>
<tr>
<td>c. L SP, L stem, C1, 4σ</td>
<td>li-vulis-iiye</td>
<td>you have helped open</td>
<td></td>
</tr>
<tr>
<td>d. L SP, L stem, C1, 4σ</td>
<td>li-vulel-eene</td>
<td>you have opened for each other</td>
<td></td>
</tr>
<tr>
<td>e. L SP, L stem, C1, 5σ</td>
<td>li-vulisis-iiye</td>
<td>you have opened intensively</td>
<td></td>
</tr>
</tbody>
</table>

38 For discussion of this data, cf. Chapter 4 §4.3.2.1 (99,101).

39 Analytically, the short H stem (not the perfective suffix) sponsors the expressed H tone. But only the root onset of the lexical stem remains, forcing the ‘floating’ H to be anchored to the first nucleus of the perfective suffix -iiye. Thus, sponsoring (reflected in graphical underlining) is shifted to the host nucleus.
f. H SP, L stem, C1, 2σ
   σ
   —

g. H SP, L stem, C1, 3σ
   σ
   bá-vul-íiye
   they have opened

h. H SP, L stem, C1, 4σ
   σ
   bá-vulís-iiye
   they have helped

i. H SP, L stem, C1, 4σ
   σ
   bá-vulél-eene
   they have opened for each other

j. H SP, L stem, C1, 5σ
   σ
   bá-vulísís-iiye
   they have opened intensively

k. L SP, H stem, C1, 2σ
   σ
   li-dl-iýe
   you have eaten

l. L SP, H stem, C1, 3σ
   σ
   li-vun-íiye
   you have harvested

m. L SP, H stem, C1, 4σ
   σ
   li-vunís-iiye
   you have helped harvest

n. L SP, H stem, C1, 5σ
   σ
   li-visísís-iiye
   you have understood

o. H SP, H stem, C1, 2σ
   σ
   bá-dl-iýe
   they have eaten

p. H SP, H stem, C1, 3σ
   σ
   bá-vun-íiye
   they have harvested

q. H SP, H stem, C1, 4σ
   σ
   bá-vunís-iiye
   they have helped harvest

r. H SP, H stem, C1, 5σ
   σ
   bá-visísís-iiye
   they have understood

s. L SP, L stem, C2, 3σ
   σ
   li-ladz-iýe
   you have fetched

t. L SP, L stem, C2, 4σ
   σ
   li-ladzel-iýe
   you have followed

u. L SP, L stem, C2, 5σ
   σ
   li-ladzell-iýe
   you have pursued

v. H SP, L stem, C2, 3σ
   σ
   bá-ladz-iýe
   they have fetched

w. H SP, L stem, C2, 4σ
   σ
   bá-ladzel-iýe
   they have followed

x. H SP, L stem, C2, 5σ
   σ
   bá-ladzell-iýe
   they have pursued

y. L SP, H stem, C2, 3σ
   σ
   li-tsheğ-iýe
   you have bought

z. L SP, H stem, C2, 4σ
   σ
   li-tsheği s-íiye
   you have sold

aa. L SP, H stem, C2, 4σ
    li-tshegel-êene
   you have bought for each other

ab. L SP, H stem, C2, 5σ
    li-tsheği sís-iiye
   you have bought intensively
ac. H SP, H stem, C2, 3σ  

bá-tsheg-iię  

ey they have bought

ad. H SP, H stem, C2, 4σ  

bá-tshegi s-ỉiye  

ey they have sold

ae. H SP, H stem, C2, 4σ  

bá-tshegel-éene  

ey they have bought for each other

af. H SP, H stem, C2, 5σ  

bá-tshegi sis-ỉiye  

ey they have bought intensively

ag. L SP, L stem, C3, 4σ  

li-limag-ỉiye  

eyou have cultivated

ah. L SP, L stem, C3, 5σ  

li-limag-ỉiye  

eyou have helped cultivate indiscriminately

ai. L SP, L stem, C3, 6σ  

li-limag sis-ỉiye  

eyou have cultivated intensively indiscriminately

aj. H SP, L stem, C3, 4σ  

bá-límág-ỉiye  

ey they have cultivated indiscriminately

ak. H SP, L stem, C3, 5σ  

bá-limag-ỉiye  

ey they have helped cultivate indiscriminately

al. H SP, L stem, C3, 6σ  

bá-limag sis-ỉiye  

ey they have cultivated intensively indiscriminately

am. L SP, H stem, C3, 4σ  

li-búlug-ỉiye  

eyou have saved / kept

an. L SP, H stem, C3, 5σ  

li-bulugi s-ỉiye  

eyou have helped save

ao. L SP, H stem, C3, 6σ  

li-bulugi sis-ỉiye  

eyou have saved intensively

ap. H SP, H stem, C3, 4σ  

bá-búlug-ỉiye  

ey they have saved/kept

aq. H SP, H stem, C3, 5σ  

bá-bulugi s-ỉiye  

ey they have helped save

ar. H SP, H stem, C3, 6σ  

bá-bulugi sis-ỉiye  

ey they have saved intensively
as. L SP, L stem, C4, 5σ  li-patalag-i i ye  you have paid indiscriminately
at. L SP, L stem, C4, 6σ  li-patalagi s-iiye  you have helped pay indiscriminately
au. L SP, L stem, C4, 7σ  li-patalagi sis-iiye  you have paid intensively indiscriminately
av. H SP, L stem, C4, 5σ  bá-pátálág i i ye  they have paid indiscriminately
aw. H SP, L stem, C4, 6σ  bá-patalagi s-iiye  they have helped pay indiscriminately
ax. H SP, L stem, C4, 7σ  bá-patalagi sis-iiye  they have paid intensively indiscriminately
ay. L SP, H stem, C4, 5σ  li-búlálág-i i ye  you have killed indiscriminately
az. L SP, H stem, C4, 6σ  li-bulalagi s-iiye  you have caused to kill indiscriminately
ba. L SP, H stem, C4, 7σ  li-bulalagi sís-iiye  you have killed intensively indiscriminately
bb. H SP, H stem, C4, 5σ  bá-búlálág-i i ye  they have killed indiscriminately
bc. H SP, H stem, C4, 6σ  bá-bulalagi s-iiye  they have caused to kill indiscriminately
bd. H SP, H stem, C4, 7σ  bá-bulalagi sís-iiye  they have killed intensively indiscriminately
be. L SP, L stem, C12, 3σ  li-gudz-į i ye  you have sheared
bf. L SP, L stem, C12, 4σ  li-gudzi s-įį ye  you have helped shear
bg. L SP, L stem, C12, 4σ  li-gudzel-eene  you have sheared for each other
bh. L SP, L stem, C12, 5σ  li-gudzi sį sįį ye  you have sheared intensively
bi. H SP, L stem, C12, 3σ  bá-gudz-į i ye  they have sheared
bj. H SP, L stem, C12, 4σ  bá-gudzi s-įį ye  they have helped shear
bk. H SP, L stem, C12, 4σ  bá-gudzel-éene  they have sheared for each other
bl. H SP, L stem, C12, 5σ  bá-gudzištįįj ye  they have sheared intensively
bm.L SP, H stem, C12, 3σ  li-gadz-įiy e  you have flattened
bn. L SP, H stem, C12, 4σ  li-gadzištįiy e  you have helped flatten
bo. L SP, H stem, C12, 4σ  li-gadzištįiye  you have helped e.o. flatten
bp. L SP, H stem, C12, 5σ  li-gadzištįiye  you have flattened completely
bq. H SP, H stem, C12, 3σ  bá-gadz-įiy e  they have flattened
br. H SP, H stem, C12, 4σ  bá-gadzisįiy e  they have helped flatten
bs. H SP, H stem, C12, 4σ  bá-gadzis-éene  they have helped e.o. flatten
bt. H SP, H stem, C12, 5σ  bá-gadzis-íiye  they have flattened completely
bu. L SP, H stem, C123, 6σ  li-gadzagištįiye  you have helped flatten indiscriminately for e.o.
bv. H SP, H stem, C123, 6σ  bá-gadzagištįiye  they have helped flatten indiscriminately for e.o.

Paradigm E: Perfective Indicative, long form

(28)  Verb Paradigm Template III
      Modal stems, with OP
a.  L SP, L stem, OP, 2σ  li-tį-ny-iiye  you have excreted them
b.  L SP, L stem, OP, 3σ  li-tį-lįm-iiye  you have cultivated them
c.  L SP, L stem, OP, 4σ  li-tį-lįmįs-iiye  you have helped them cultivate
d.  L SP, L stem, OP, 4σ  li-tį-lįmél-ene  you have cultivated them for each other
e. L SP, L stem, OP, 5σ  
li-tį-li[m̥i̯]-sís-iiye  
you have cultivated them intensively

f. H SP, L stem, OP, 2σ  
bá-tį-ny-iiye  
*bá-tį-ny-îîye  
they have excreted them

g. H SP, L stem, OP, 3σ  
bá-tį-lǐm-iiye  
they have cultivated them

h. H SP, L stem, OP, 4σ  
bá-tį-li[m̥i̯]-sís-iiye  
they have helped them cultivate

i. H SP, L stem, OP, 4σ  
bá-tį-li[m̥i̯]-m̥el-ene  
they have cultivated them for each other

j. H SP, L stem, OP, 5σ  
bá-tį-li[m̥i̯]-sís-iiye  
they have cultivated them intensively

k. L SP, H stem, OP, 2σ  
li-tį-ph-îîye  
you have given them

l. L SP, H stem, OP, 3σ  
li-tį-bón-îîye  
you have seen them

m. L SP, H stem, OP, 4σ  
li-tį-bón-ís-iiye  
you have shown them

n. L SP, H stem, OP, 5σ  
li-tį-sebētís-iiye  
you have used them

o. H SP, H stem, OP, 2σ  
bá-tį-ph-îîye  
they have given them

p. H SP, H stem, OP, 3σ  
bá-tį-bón-îîye  
they have seen them

q. H SP, H stem, OP, 4σ  
bá-tį-bón-ís-iiye  
they have shown them

r. H SP, H stem, OP, 5σ  
bá-tį-sebētís-iiye  
they have used them

**Paradigm E: Perfective Indicative, long form**

(29) **Verb Paradigm Template IV**

*Modal stems, with 1ps OP*

a. L SP, L stem, 1psOP, 2σ  
li- gió-ny-îîye  
you have excreted me

b. L SP, L stem, 1psOP, 3σ  
li- gió-lǐm-iiye  
you have cultivated me

c. L SP, L stem, 1psOP, 4σ  
li- gió-li[m̥i̯]-sís-iiye  
you have helped me cultivate them

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Paradigm E: Perfective Indicative, long form

(30) Verb Paradigm Template V
  Breathy / depressor stems, with OP
a. L SP, L stem, C1, OP, 2σ  li-ːgi-ːph-ííye  you have given me
b. L SP, L stem, C1, OP, 3σ  li-ːgi-ːbón-ííye  you have seen me
c. L SP, L stem, C1, OP, 4σ  li-ːgi-ːbónís-ííye  you have shown me
d. L SP, L stem, 1psOP, 4σ  li-ːgi-ːlímél-eene  you have cultivated me for each other
e. L SP, L stem, 1psOP, 5σ  li-ːgi-ːlímísís-ííye  you have cultivated me intensively
f. H SP, L stem, 1psOP, 2σ  báːgi-ːny-ííye  they have excreted me
  *báːgi-ːny-ííye
g. H SP, L stem, 1psOP, 3σ  báːgi-ːlím-ííye  they have cultivated me
h. H SP, L stem, 1psOP, 4σ  báːgi-ːlímís-ííye  they have helped me cultivate
i. H SP, L stem, 1psOP, 4σ  báːgi-ːlímél-eene  they have cultivated me for each other
j. H SP, L stem, 1psOP, 5σ  báːgi-ːlímísís-ííye  they have cultivated me intensively
k. L SP, H stem, 1psOP, 2σ  li-ːgi-ːph-ííye  you have given me
l. L SP, H stem, 1psOP, 3σ  li-ːgi-ːbón-ííye  you have seen me
m. L SP, H stem, 1psOP, 4σ  li-ːgi-ːbónís-ííye  you have shown me
n. L SP, H stem, 1psOP, 5σ  li-ːgi-ːsèbétís-ííye  you have used me
o. H SP, H stem, 1psOP, 2σ  báːgi-ːph-ííye  they have given me
p. H SP, H stem, 1psOP, 3σ  báːgi-ːbón-ííye  they have seen me
q. H SP, H stem, 1psOP, 4σ  báːgi-ːbónís-ííye  they have shown me
r. H SP, H stem, 1psOP, 5σ  báːgi-ːsèbétís-ííye  they have used me
d. L SP, L stem, C1, OP, 4σ  li-ti-vulél-eene  you have opened them for each other

e. L SP, L stem, C1, OP, 5σ  li-ti-vulísís-iiye  you have opened them intensively

f. H SP, L stem, C1, OP, 2σ  —

g. H SP, L stem, C1, OP, 3σ  bá-ti-vul-íiye  they have opened them

h. H SP, L stem, C1, OP, 4σ  bá-ti-vulís-iiye  they have helped them open

i. H SP, L stem, C1, OP, 4σ  bá-ti-vulél-eene  they have opened them for each other

j. H SP, L stem, C1, OP, 5σ  bá-ti-vulísís-iiye  they have opened them intensively

k. L SP, H stem, C1, OP, 2σ  li-ti-dl-íiye  you have eaten them

l. L SP, H stem, C1, OP, 3σ  li-ti-vun-íiye  you have harvested them

m. L SP, H stem, C1, OP, 4σ  li-ti-vunís-iiye  you have helped them harvest

n. L SP, H stem, C1, OP, 5σ  li-ti-vísísís-iiye  you have understood them

o. H SP, H stem, C1, OP, 2σ  bá-ti-dl-íiye  they have eaten them

p. H SP, H stem, C1, OP, 3σ  bá-ti-vun-íiye  they have harvested them

q. H SP, H stem, C1, OP, 4σ  bá-ti-vunís-iiye  they have helped them harvest

r. H SP, H stem, C1, OP, 5σ  bá-ti-vísísís-iiye  they have understood them

s. L SP, L stem, C2, OP, 3σ  li-ti-ládz-i y e  you have fetched them

t. L SP, L stem, C2, OP, 4σ  li-ti-ladzel-íiye  you have followed them

u. L SP, L stem, C2, OP, 5σ  li-ti-ladzél-íiye  you have pursued them
v.  H SP, L stem, C2, OP, 3σ  bà-ti-ládz-iiye  they have fetched them
w.  H SP, L stem, C2, OP, 4σ  bà-ti-ladzel-íye  they have followed them
x.  H SP, L stem, C2, OP, 5σ  bà-ti-ladżeńl-íye  they have pursued them

y.  L SP, H stem, C2, OP, 3σ  li-ti-tsheg-íye  you have bought them
z.  L SP, H stem, C2, OP, 4σ  li-ti-tshegì s-íye  you have sold them
aa. L SP, H stem, C2, OP, 4σ  li-ti-tshegel-éene  you have bought them for each other
ab. L SP, H stem, C2, OP, 5σ  li-ti-tshegì sís-íye  you have bought them intensively

ac. H SP, H stem, C2, OP, 3σ  bà-ti-tsheg-íye  they have bought them
ad. H SP, H stem, C2, OP, 4σ  bà-ti-tshegì s-íye  they have sold them
ae. H SP, H stem, C2, OP, 4σ  bà-ti-tshegel-éene  they have bought them for each other
af. H SP, H stem, C2, OP, 5σ  bà-ti-tshegì sís-íye  they have bought them intensively

ag. L SP, L stem, C3, OP, 4σ  li-ti-límág-íiye  you have cultivated them indiscriminately
ah. L SP, L stem, C3, OP, 5σ  li-ti-límagì s-íye  you have helped them cultivate indiscriminately
ai. L SP, L stem, C3, OP, 6σ  li-ti-límagì sís-íiye  you have cultivated them intensively indiscriminately
aj. H SP, L stem, C3, OP, 4σ  bà-ti-límág-íiye  they have cultivated them indiscriminately
ak. H SP, L stem, C3, OP, 5σ  bà-ti-límagì s-íye  they have helped them cultivate indiscriminately
al. H SP, L stem, C3, OP, 6σ  bà-ti-límagì sís-íiye  they have cultivated
them intensively indiscriminately

am. L SP, H stem, C3, OP, 4σ li-ti-buluğ-iyi ye you have saved them
an. L SP, H stem, C3, OP, 5σ li-ti-bulugi s-kiye you have helped save them
ao. L SP, H stem, C3, OP, 6σ li-ti-bulugi sıısı-iye you have saved them intensively
ap. H SP, H stem, C3, OP, 4σ bā-ti-buluğ-iyi ye they have saved/kept them
aq. H SP, H stem, C3, OP, 5σ bā-ti-bulugi s-kiye they have helped save them
ar. H SP, H stem, C3, OP, 6σ bā-ti-bulugi sıısı-iye they have saved them intensively
as. L SP, L stem, C4, OP, 5σ li-ti-patalág-iyi ye you have paid them indiscriminately
at. L SP, L stem, C4, OP, 6σ li-ti-patalagı s-kiye you have helped pay them indiscriminately
au. L SP, L stem, C4, OP, 7σ li-ti-patalagı sıısı-iye you have paid them intensively indiscriminately
av. H SP, L stem, C4, OP, 5σ bā-ti-patalág-iyi ye they have paid them indiscriminately
aw. H SP, L stem, C4, OP, 6σ bā-ti-patalagı s-kiye they have helped pay them indiscriminately
ax. H SP, L stem, C4, OP, 7σ bā-ti-patalagı sıısı-iye they have paid them intensively indiscriminately
ay. L SP, H stem, C4, OP, 5σ li-ti-bu-lalág-iyi ye you have killed them indiscriminately
az. L SP, H stem, C4, OP, 6σ li-ti-bu-lalagi s-kiye you have caused them to kill indiscriminately
ba. L SP, H stem, C4, OP, 7σ li-ti-bu-lalagi sıısı-iye you have killed them intensively indiscriminately
bb. H SP, H stem, C4, OP, 5σ \( \text{bá-tí-búlálág-i} \) ye they have killed them indiscriminately

bc. H SP, H stem, C4, OP, 6σ \( \text{bá-tí-bulalagi} \) s-íye they have caused them to kill indiscriminately

bd. H SP, H stem, C4, OP, 7σ \( \text{bá-tí-bulalagi} \) sís-íye they have killed them intensively indiscriminately

be. L SP, L stem, C12, OP, 3σ \( \text{li-tí-gúdz-i} \) ye you have sheared them

bf. L SP, L stem, C12, OP, 4σ \( \text{li-tí-gudzi} \) s-íye you have helped shear them

bg. L SP, L stem, C12, OP, 4σ \( \text{li-tí-gudzel-éene} \) you have sheared them for each other

bh. L SP, L stem, C12, OP, 5σ \( \text{li-tí-gudzi sís-í} \) ye you have sheared them intensively

bi. H SP, L stem, C12, OP, 3σ \( \text{bá-tí-gúdz-i} \) ye they have sheared them

bj. H SP, L stem, C12, OP, 4σ \( \text{bá-tí-gudzi s-í} \) ye they have helped shear them

bk. H SP, L stem, C12, OP, 4σ \( \text{bá-tí-gudzel-éene} \) they have sheared them for each other

bl. H SP, L stem, C12, OP, 5σ \( \text{bá-tí-gudzi sís-í} \) ye they have sheared them intensively

bm. L SP, H stem, C12, OP, 3σ \( \text{li-tí-gadz-i} \) íye you have flattened them

bn. L SP, H stem, C12, OP, 4σ \( \text{li-tí-gadzi s-íye} \) you have helped flatten them

bo. L SP, H stem, C12, OP, 4σ \( \text{li-tí-gadzi s-éene} \) you have helped e.o. flatten them

bp. L SP, H stem, C12, OP, 5σ \( \text{li-tí-gadzi sís-síiye} \) you have flattened them completely

bq. H SP, H stem, C12, OP, 3σ \( \text{bá-tí-gadz-i} \) íye they have flattened them

br. H SP, H stem, C12, OP, 4σ \( \text{bá-tí-gadzi s-íye} \) they have helped
bs. H SP, H stem, C12, OP, 4σ  

bá-tí-gadzi-éene

they have helped e.o. flatten them

bt. H SP, H stem, C12, OP, 5σ  

bá-tí-gadzi-síiye

they have flattened them completely

bu. L SP, H stem, C123, OP, 6σ  

li-tí-gadzagi sél-eene

you have helped them flatten indiscriminately for e.o.

bv. H SP, H stem, C123, OP, 6σ  

bá-tí-gadzagi sél-eene

they have helped them flatten indiscriminately for e.o.

**Paradigm E: Perfective Indicative, long form**

(31)  **Verb Paradigm Template VI**

  **Breathy / depressor stems, with 1ps OP**

  a. L SP, L stem, C1, 1psOP, 2σ  

  li-gi-úul-iyie

  you have opened me

  b. L SP, L stem, C1, 1psOP, 3σ  

  li-gi-vul-úiye

  you have helped me open

  c. L SP, L stem, C1, 1psOP, 4σ  

  li-gi-vulís-iyie

  you have helped me open for each other

  d. L SP, L stem, C1, 1psOP, 4σ  

  li-gi-vulél-eene

  you have opened me intensively

  e. L SP, L stem, C1, 1psOP, 5σ  

  li-gi-vulísís-iyie

  you have opened me intensively

  f. H SP, L stem, C1, 1psOP, 2σ  

  —

  they have opened me

  g. H SP, L stem, C1, 1psOP, 3σ  

  bá-gi-vul-úiye

  they have opened me

  h. H SP, L stem, C1, 1psOP, 4σ  

  bá-gi-vulís-iyie

  they have helped me open

  i. H SP, L stem, C1, 1psOP, 4σ  

  bá-gi-vulél-eene

  they have opened me for each other

  j. H SP, L stem, C1, 1psOP, 5σ  

  bá-gi-vulísís-iyie

  they have opened me intensively

  k. L SP, H stem, C1, 1psOP, 2σ  

  li-gi-dl-iyie

  you have eaten me

  l. L SP, H stem, C1, 1psOP, 3σ  

  li-gi-vun-íyie

  you have harvested me
m. L SP, H stem, C1, 1psOP, 4σ li-ги-vuníš-iíye you have helped me harvest
n. L SP, H stem, C1, 1psOP, 5σ li-ги-visíšís-iíye you have understood me
o. H SP, H stem, C1, 1psOP, 2σ bá-ги-dl-ííye they have eaten me
p. H SP, H stem, C1, 1psOP, 3σ bá-ги-vun-ííye they have harvested me
q. H SP, H stem, C1, 1psOP, 4σ bá-ги-vuníš-iíye they have helped me harvest
r. H SP, H stem, C1, 1psOP, 5σ bá-ги-visíšís-iíye they have understood me
s. L SP, L stem, C2, 1psOP, 3σ li-ги-ládz-ííye you have fetched me
t. L SP, L stem, C2, 1psOP, 4σ li-ги-ládzel-ííye you have followed me
u. L SP, L stem, C2, 1psOP, 5σ li-ги-ládzél-ííye you have pursued me
v. H SP, L stem, C2, 1psOP, 3σ bá-ги-ládz-ííye they have fetched me
w. H SP, L stem, C2, 1psOP, 4σ bá-ги-ládzel-ííye they have followed me
x. H SP, L stem, C2, 1psOP, 5σ bá-ги-ládzél-ííye they have pursued me
y. L SP, H stem, C2, 1psOP, 3σ li-ги-tsheg-ííye you have bought me
z. L SP, H stem, C2, 1psOP, 4σ li-ги-tshegi-s-ííye you have sold me
aa. L SP, H stem, C2, 1psOP, 4σ li-ги-tshegel-éene you have bought me for each other
ab. L SP, H stem, C2, 1psOP, 5σ li-ги-tshegi sís-ííye you have bought me intensively
ac. H SP, H stem, C2, 1psOP, 3σ bá-ги-tsheg-ííye they have bought me
ad. H SP, H stem, C2, 1psOP, 4σ bá-ги-tshegi-s-ííye they have sold me
ae. H SP, H stem, C2, 1psOP, 4σ bá-ги-tshegel-éene they have bought me for each other
af. H SP, H stem, C2, 1psOP, 5σ bá-ги-tshegi sís-ííye they have bought me intensively
ag. L SP, L stem, C3, 1psOP, 4σ  li-gi-límág-i ye  you have cultivated me indiscriminately

ah. L SP, L stem, C3, 1psOP, 5σ  li-gi-limag i-i ye  you have helped me cultivate indiscriminately

ai. L SP, L stem, C3, 1psOP, 6σ  li-gi-limag sis-i ye  you have cultivated me intensively

aj. H SP, L stem, C3, 1psOP, 4σ  bá-gi-límág-i i ye  they have cultivated me indiscriminately

ak. H SP, L stem, C3, 1psOP, 5σ  bá-gi-limag s-i ye  they have helped me cultivate indiscriminately

al. H SP, L stem, C3, 1psOP, 6σ  bá-gi-limag sis-i ye  they have cultivated me intensively

am. L SP, H stem, C3, 1psOP, 4σ  li-gi-búlúg-i i ye  you have saved/kept me

an. L SP, H stem, C3, 1psOP, 5σ  li-gi-bulugi s-i ye  you have helped save me

ao. L SP, H stem, C3, 1psOP, 6σ  li-gi-bulugi sis-i ye  you have saved me intensively

ap. H SP, H stem, C3, 1psOP, 4σ  bá-gi-búlúg-i i ye  they have saved me

aq. H SP, H stem, C3, 1psOP, 5σ  bá-gi-bulugi s-i ye  they have helped save me

ar. H SP, H stem, C3, 1psOP, 6σ  bá-gi-bulugi sis-i ye  they have saved me intensively

as. L SP, L stem, C4, 1psOP, 5σ  li-gi-pátálág-i i ye  you have paid me indiscriminately

at. L SP, L stem, C4, 1psOP, 6σ  li-gi-patalagi s-i ye  you have helped pay me indiscriminately

au. L SP, L stem, C4, 1psOP, 7σ  li-gi-patalagi sis-i ye  you have paid me intensively indiscriminately

av. H SP, L stem, C4, 1psOP, 5σ  bá-gi-pátálág-i i ye  they have paid me indiscriminately
aw. H SP, L stem, C4, 1psOP, 6σ  bá-gī-patalagi s-īiye  they have helped pay me indiscriminately

ax. H SP, L stem, C4, 1psOP, 7σ  bá-gī-patalagi sís-īiye  they have paid me intensively indiscriminately

ay. L SP, H stem, C4, 1psOP, 5σ  li-gi-būlālāg-īi ye  you have killed me indiscriminately

az. L SP, H stem, C4, 1psOP, 6σ  li-gi-bulagag s-īiye  you have caused me to kill indiscriminately

ba. L SP, H stem, C4, 1psOP, 7σ  li-gi-bulagag sís-īiye  you have killed me intensively indiscriminately

bb. H SP, H stem, C4, 1psOP, 5σ  bá-gī-būlālāg-īi ye  they have killed me indiscriminately

bc. H SP, H stem, C4, 1psOP, 6σ  bá-gī-bulagag s-īiye  they have caused me to kill indiscriminately

bd. H SP, H stem, C4, 1psOP, 7σ  bá-gī-bulagag sís-īiye  they have killed me intensively indiscriminately

be. L SP, L stem, C12, 1psOP, 3σ  li-gi-gūdz-ī j ye  you have sheared me

bf. L SP, L stem, C12, 1psOP, 4σ  li-gi-gūdz-s-ī j ye  you have helped shear me

bg. L SP, L stem, C12, 1psOP, 4σ  li-gi-gūdzel-ēene  you have sheared me for each other

bh. L SP, L stem, C12, 1psOP, 5σ  li-gi-gūdz s-ī s-ī j ye  you have sheared me intensively

bi. H SP, L stem, C12, 1psOP, 3σ  bá-gī-gūdz-ī j ye  they have sheared me

bj. H SP, L stem, C12, 1psOP, 4σ  bá-gī-gūdz s-ī j ye  they have helped shear me

bk. H SP, L stem, C12, 1psOP, 4σ  bá-gī-gūdzel-ēene  they have sheared me for each other

bl. H SP, L stem, C12, 1psOP, 5σ  bá-gī-gūdz s-ī s-ī j ye  they have sheared me intensively
bm.L SP, H stem, C12, 1psOP, 3σ  li-ți-gadz-ííye  you have flattened me
bn. L SP, H stem, C12, 1psOP, 4σ  li-ți-gadzís-ííye  you have helped flatten me
bo. L SP, H stem, C12, 1psOP, 4σ  li-ți-gadzís-éene  you have helped e.o. flatten me
bp. L SP, H stem, C12, 1psOP, 5σ  li-ți-gadzísí-síiye  you have flattened me completely
bq. H SP, H stem, C12, 1psOP, 3σ  bá-ți-gadz-ííye  they have flattened me
br. H SP, H stem, C12, 1psOP, 4σ  bá-ți-gadzís-ííye  they have helped flatten me
bs. H SP, H stem, C12, 1psOP, 4σ  bá-ți-gadzís-éene  they have helped e.o. flatten me
bt. H SP, H stem, C12, 1psOP, 5σ  bá-ți-gadzísí-síiye  they have flattened me completely
bu. L SP, H stem, C123, 1psOP, 6σ  li-ți-gadzagi sél-éene  you have helped me flatten indiscriminately for e.o.
bv. H SP, H stem, C123, 1psOP, 6σ  bá-ți-gadzagi sél-éene  they have helped me flatten indiscriminately for e.o.

[turn to the next page for Appendix A, Paradigm F: General Future]
Paradigm F: General Future

- **SP + -to- + (OP) + {ROOT (+suffixes) + -a}stem**
- The ‘general future’ is so named because it covers any future reference—in Chapter 2 §2.2.4.7 (116c)—in contrast with the ‘proximal future’ and the ‘distal future’, both of which are more explicitly time-bound (proximally, and distally, respectively).
- The general future may be a morphological contraction of the proximal future, with respect to the morphemes given in bold: e.g general future li-to-liim-a ‘you will cultivate’, from proximal future li-ta-kó-liim-a ‘you will cultivate (soon)’, vs. distal future li-ya-kó-liim-a ‘you will cultivate (at a later point)’.
- Even if the general future is seems historically to be a contracted product of the proximal future, both paradigms survive, with distinct meaning ranges. Cf. data in §2.2.4.7, footnote 256.
- A central distinction between these two future paradigms: in the non-contracted ‘proximal future’, the infinitive-like prefix kó- is H, whereas the general future has no such H tone.
- Proximal and distal futures are not catalogued here, because they amount uninterestingly to the structure <SP + toneless -ta- + {kó- + infinitive stem}>, that is, the tonal infinitive (paradigm D), preceded by inert prefixes. The general future in this section, by contrast, allows toneless -to- to be incorporated, where eligible, into a rightwards-extending HD, exactly parallel to the present indicative long form data in paradigm A.

(32) **Verb Paradigm Template**

**Modal stems**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. L SP, L stem, 1σ</td>
<td>li-too-ta</td>
<td>you will come</td>
</tr>
<tr>
<td>b. L SP, L stem, 2σ</td>
<td>li-to-liima</td>
<td>you will cultivate</td>
</tr>
<tr>
<td>c. L SP, L stem, 3σ</td>
<td>li-to-limiisa</td>
<td>you will help</td>
</tr>
<tr>
<td>d. L SP, L stem, 4σ</td>
<td>li-to-limelaana</td>
<td>you will cultivate for each other</td>
</tr>
<tr>
<td>e. H SP, L stem, 1σ</td>
<td>bá-tóó-ta</td>
<td>they will come</td>
</tr>
<tr>
<td>f. H SP, L stem, 2σ</td>
<td>bá-tó-liima</td>
<td>they will cultivate</td>
</tr>
</tbody>
</table>

---

40 I use ‘will’ throughout as the English auxiliary gloss, as is the gloss in the standard English variety native to the author; ‘shall’ is excessively high-register (and highly marked).
g. H SP, L stem, 3σ  
bá-tó-libaala  
they will forget
h. H SP, L stem, 4σ  
bá-tó-límélaana  
they will cultivate for each other
i. L SP, H stem, 1σ  
li-too-phá  
you will give
j. L SP, H stem, 2σ  
li-to-bóóna  
you will see
k. L SP, H stem, 3σ  
li-to-bóníísa  
you will show
l. L SP, H stem, 4σ  
li-to-sébétiisa  
you will use
m. H SP, H stem, 1σ  
bá-too-phá  
they will give
n. H SP, H stem, 2σ  
bá-to-bóóna  
they will see
o. H SP, H stem, 3σ  
bá-to-bóníísa  
they will show
p. H SP, H stem, 4σ  
bá-to-sébétiisa  
they will use

Paradigm F: General Future

(33) Verb Paradigm Template II
Breathy / depressor stems
a. L SP, L stem, C1, 1σ  
—
b. L SP, L stem, C1, 2σ  
li-to-vuula  
......  
you will open
c. L SP, L stem, C1, 3σ  
li-to-vuliísa  
......  
you will help open
d. L SP, L stem, C1, 4σ  
li-to-vulelaana  
......  
you will open for e.o.

e. H SP, L stem, C1, 1σ  
—
f. H SP, L stem, C1, 2σ  
bá-tó-vuula  
......  
they will open
g. H SP, L stem, C1, 3σ  
bá-tó-vulíísa  
......  
they will help open
h. H SP, L stem, C1, 4σ  
bá-tó-vulélaana  
......  
they will open for e.o.
i. L SP, H stem, C1, 1σ  
li-too-dlá  
......  
you will eat
j. L SP, H stem, C1, 2σ  
li-to-vuúna  
......  
you will harvest
k. L SP, H stem, C1, 3σ  
li-to-vuníísa  
......  
you will help harvest
l. L SP, H stem, C1, 4σ  
li-to-vísíísiisa  
......  
you will understand
m. H SP, H stem, C1, 1σ bá-too-dlā they will eat
n. H SP, H stem, C1, 2σ bá-to-vuúna they will harvest
o. H SP, H stem, C1, 3σ bá-to-vunísa they will help harvest
p. H SP, H stem, C1, 4σ bá-to-vísísiisa they will understand
q. L SP, L stem, C2, 2σ li-to-laadza you will fetch
r. L SP, L stem, C2, 3σ li-to-ladzeela you will follow
s. L SP, L stem, C2, 4σ li-to-ladzeláana you will follow e.o.
t. H SP, L stem, C2, 2σ bá-tó-laadza they will fetch
u. H SP, L stem, C2, 3σ bá-tó-ládzeela they will follow
v. H SP, L stem, C2, 4σ bá-tó-ladzeláana they will follow e.o.
w. L SP, H stem, C2, 2σ li-to-tsheéga you will buy
x. L SP, H stem, C2, 3σ li-to-tshegi ísa you will sell
y. L SP, H stem, C2, 4σ li-to-tshegeláana you will buy for e.o.
z. H SP, H stem, C2, 2σ bá-tó-tsheéga they will buy
aa. H SP, H stem, C2, 3σ bá-tó-tshegi ísa they will sell
ab. H SP, H stem, C2, 4σ bá-to-tshegeláana they will buy for e.o.
ac. L SP, L stem, C3, 3σ li-to-limaaga you will cultivate indiscriminately
ad. L SP, L stem, C3, 4σ li-to-limagí i sa you will help cultivate indiscriminately
ae. L SP, L stem, C3, 5σ li-to-limagí siisa you will cultivate intensively indiscriminately
af. H SP, L stem, C3, 3σ bá-tó-límaaga they will cultivate indiscriminately
ag. H SP, L stem, C3, 4σ bá-tó-límági i sa they will help cultivate indiscriminately
ah. H SP, L stem, C3, 5σ bá-tó-limági síisa they will cultivate intensively indiscriminately
ai. L SP, H stem, C3, 3σ li-to-búlúúga you will save / keep
aj. L SP, H stem, C3, 4σ li-to-búlúgi i sa you will help save
ak. L SP, H stem, C3, 5σ li-to-búlugi síisa you will save intensively
al. H SP, H stem, C3, 3σ bá-to-búlúúga they will save / keep
am. H SP, H stem, C3, 4σ bá-to-búlígi i sa they will help save
an. H SP, H stem, C3, 5σ bá-to-bulúgi síisa they will save intensively
ao. L SP, L stem, C4, 4σ li-to-patalaaga you will pay indiscriminately
ap. L SP, L stem, C4, 5σ li-to-patalagi i sa you will help pay indiscriminately
aq. L SP, L stem, C4, 6σ li-to-patalagi síisa you will pay intensively indiscriminately
ar. H SP, L stem, C4, 4σ bá-tó-pátálaaga they will pay indiscriminately
as. H SP, L stem, C4, 5σ bá-tó-patalága i sa they will help pay indiscriminately
at. H SP, L stem, C4, 6σ bá-tó-patalagi síisa they will pay intensively indiscriminately
au. L SP, H stem, C4, 4σ li-to-búlalaaga you will kill indiscriminately
av. L SP, H stem, C4, 5σ li-to-búlálági i sa you will cause to kill indiscriminately
aw. L SP, H stem, C4, 6σ li-to-bulalagi síisa you will kill intensively indiscriminately
ax. H SP, H stem, C4, 4σ  
   bá-to-búlálagá
   they will kill indiscriminately

ay. H SP, H stem, C4, 5σ  
   bá-to-búlálági i sa
   they will cause to kill indiscriminately

az. H SP, H stem, C4, 6σ  
   bá-to-bulalagísísa
   they will kill intensively indiscriminately

ba. L SP, L stem, C1C2, 1σ  
   li-to-guúdža
   you will shear

bb. L SP, L stem, C1C2, 2σ  
   li-to-gudzi i sa
   you will help shear

bc. L SP, L stem, C1C2, 3σ  
   li-to-gudzi saana
   you will help each other shear

bd. L SP, L stem, C1C2, 4σ  
   li-to-gūdzeláana
   you will shear for e.o.

be. H SP, L stem, C1C2, 2σ  
   bá-tó-guúdža
   they will shear

bf. H SP, L stem, C1C2, 3σ  
   bá-tó-gudzi i sa
   they will help shear

bg. H SP, L stem, C1C2, 4σ  
   bá-tó-gudzeláana
   they will shear for e.o.

bh. L SP, H stem, C1C2, 2σ  
   li-to-gáádža
   you will flatten

bi. L SP, H stem, C1C2, 3σ  
   li-to-gadzi ísa
   you will help flatten

bj. L SP, H stem, C1C2, 4σ  
   li-to-gadzi sáana
   you will help each other flatten

bk. L SP, H stem, C1C2, 5σ  
   li-to-gadzi séláana
   you will help flatten for each other

bl. H SP, H stem, C1C2, 2σ  
   bá-to-gáádža
   they will flatten

bm. H SP, H stem, C1C2, 3σ  
   bá-to-gadzi ísa
   they will help flatten

bn. H SP, H stem, C1C2, 4σ  
   bá-to-gadzi sáana
   they will help e.o. flatten

bo. H SP, H stem, C1C2, 5σ  
   bá-to-gadzi séláana
   they will help flatten for each other

bp. L SP, H stem, C1C2C3, 6σ  
   li-to-gadzagi séláana
   you will help flatten indiscriminately for each other
bq. H SP, H stem, C1C2C3, 6σ  bá-to-gadzagi sélaana  they will help flatten indiscriminately for each other

Paradigm F: General Future

(34)  **Verb Paradigm Template III**

**Modal stems, with OP**

a.  L SP, L stem, OP, 1σ  li-to-tíí-nya  you will excrete them

b.  L SP, L stem, OP, 2σ  li-to-tí-liima  you will cultivate them

c.  L SP, L stem, OP, 3σ  li-to-tí-límiisa  you will help them cultivate

d.  L SP, L stem, OP, 4σ  li-to-tí-líbátiisa  you will delay them

e.  H SP, L stem, OP, 1σ  bá-to-tíí-nya  they will excrete them

f.  H SP, L stem, OP, 2σ  bá-to-tí-liima  they will cultivate them

g.  H SP, L stem, OP, 3σ  bá-to-tí-límiisa  they will help them cultivate

h.  H SP, L stem, OP, 4σ  bá-to-tí-líbátiisa  they will delay them

i.  L SP, H stem, OP, 1σ  li-to-tíí-phá  you will give them

j.  L SP, H stem, OP, 2σ  li-to-tí-bóóna  you will see them

k.  L SP, H stem, OP, 3σ  li-to-tí-bóníísa  you will show them

l.  L SP, H stem, OP, 4σ  li-to-tí-sébátiisa  you will use them

m.  H SP, H stem, OP, 1σ  bá-to-tíí-phá  they will give them

n.  H SP, H stem, OP, 2σ  bá-to-tí-bóóna  they will see them

o.  H SP, H stem, OP, 3σ  bá-to-tí-bóníísa  they will show them

p.  H SP, H stem, OP, 4σ  bá-to-tí-sébátiisa  they will use them
Paradigm F: General Future

(35) Verb Paradigm Template IV
Modal stems, with 1ps OP

a. L SP, L stem, 1ps OP, 1σ li-to-gí-nya you will excrete me
b. L SP, L stem, 1ps OP, 2σ li-to-gí-hláaba you will stab me
c. L SP, L stem, 1ps OP, 3σ li-to-gí-límiisa you will help me cultivate
d. L SP, L stem, 1ps OP, 4σ li-to-gí-líbátiisa you will delay me
e. H SP, L stem, 1ps OP, 1σ bá-to-gí-nya they will excrete me
f. H SP, L stem, 1ps OP, 2σ bá-to-gí-hláaba they will stab me
g. H SP, L stem, 1ps OP, 3σ bá-to-gí-límiisa they will help me cultivate
h. H SP, L stem, 1ps OP, 4σ bá-to-gí-líbátiisa they will delay me
i. L SP, H stem, 1ps OP, 1σ li-to-gí-phá you will give me
j. L SP, H stem, 1ps OP, 2σ li-to-gí-bóóna you will see me
k. L SP, H stem, 1ps OP, 3σ li-to-gí-bóñíisa you will show me
l. L SP, H stem, 1ps OP, 4σ li-to-gí-sébétiisa you will use me
m. H SP, H stem, 1ps OP, 1σ bá-to-gí-phá they will give me
n. H SP, H stem, 1ps OP, 2σ bá-to-gí-bóóna they will see me
o. H SP, H stem, 1ps OP, 3σ bá-to-gí-bóñíisa they will show me
p. H SP, H stem, 1ps OP, 4σ bá-to-gí-sébétiisa they will use me

Paradigm F: General Future

(36) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. L SP, L stem, C1, OP, 2σ li-to-tí-vuula you will open them
b. L SP, L stem, C1, OP, 3σ  li-to-ti-vulíisa you will help open them

c. L SP, L stem, C1, OP, 4σ  li-to-ti-vulélaana you will open them for each other

d. H SP, L stem, C1, OP, 1σ  —

e. H SP, L stem, C1, OP, 2σ  bá-to-tí-vuula they will open them

f. H SP, L stem, C1, OP, 3σ  bá-to-tí-vulfíisa they will help open them

g. H SP, L stem, C1, OP, 4σ  bá-to-ti-vulélaana they will open them for each other

h. L SP, H stem, C1, OP, 1σ  li-to-tíí-dl a you will eat them

i. L SP, H stem, C1, OP, 2σ  li-to-tí-vuúna you will harvest them

j. L SP, H stem, C1, OP, 3σ  li-to-tí-vuníísa you will help harvest them

k. L SP, H stem, C1, OP, 4σ  li-to-tí-vísíísa you will understand them

l. H SP, H stem, C1, OP, 1σ  bá-to-tíí-dl a they will eat them

m. H SP, H stem, C1, OP, 2σ  bá-to-tí-vuúna they will harvest them

n. H SP, H stem, C1, OP, 3σ  bá-to-tí-vuníísa they will help harvest them

o. H SP, H stem, C1, OP, 4σ  bá-to-tí-vísíísa they will understand them

p. L SP, L stem, C2, OP, 2σ  li-to-tí-laadza you will fetch them

q. L SP, L stem, C2, OP, 3σ  li-to-tí-ládzeela you will follow them

r. L SP, L stem, C2, OP, 4σ  li-to-tí-ládzeláana you will follow e.o.

s. H SP, L stem, C2, OP, 2σ  bá-to-tí-laadza they will fetch them

t. H SP, L stem, C2, OP, 3σ  bá-to-tí-ládzeela they will follow them

915
u. H SP, L stem, C2, OP, 4σ  bá-to-tí-ladzeláana  they will fetch them for each other

v. L SP, H stem, C2, OP, 2σ  li-to-tí-tshééga  you will buy them

w. L SP, H stem, C2, OP, 3σ  li-to-tí-tségiísá  you will sell them

x. L SP, H stem, C2, OP, 4σ  li-to-tí-tségeláana  they will fetch them for each other

y. H SP, H stem, C2, OP, 2σ  bá-to-tí-tshééga  they will buy them

z. H SP, H stem, C2, OP, 3σ  bá-to-tí-tségiísá  they will sell them

aa. H SP, H stem, C2, OP, 4σ  bá-to-tí-tségeláana  they will buy them for each other

ab. L SP, L stem, C3, OP, 3σ  li-to-tí-límaaga  you will cultivate them indiscriminately

ac. L SP, L stem, C3, OP, 4σ  li-to-tí-límagíísá  you will help cultivate them indiscriminately

ad. L SP, L stem, C3, OP, 5σ  li-to-tí-límagíísíisa  you will cultivate them intensively indiscriminately

ae. H SP, L stem, C3, OP, 3σ  bá-to-tí-límaaga  they will cultivate them indiscriminately

af. H SP, L stem, C3, OP, 4σ  bá-to-tí-límagíísá  they will help cultivate them indiscriminately

ag. H SP, L stem, C3, OP, 5σ  bá-to-tí-límagíísíisa  they will cultivate them intensively indiscriminately

ah. L SP, H stem, C3, OP, 3σ  li-to-tí-búlúúga  you will save them

ai. L SP, H stem, C3, OP, 4σ  li-to-tí-búlugííisa  you will help save them

aj. L SP, H stem, C3, OP, 5σ  li-to-tí-búlugíísíisa  you will save them intensively

ak. H SP, H stem, C3, OP, 3σ  bá-to-tí-búlúúga  they will save them
<table>
<thead>
<tr>
<th>al.</th>
<th>H SP, H stem, C3, OP, 4σ</th>
<th>bá-to-tí-búlúgi i sa</th>
<th>they will help save them</th>
</tr>
</thead>
<tbody>
<tr>
<td>am.</td>
<td>H SP, H stem, C3, OP, 5σ</td>
<td>bá-to-tí-bulugi sísa</td>
<td>they will save them intensively</td>
</tr>
<tr>
<td>an.</td>
<td>L SP, L stem, C4, OP, 4σ</td>
<td>li-to-tí-pátáalaaga</td>
<td>you will pay them indiscriminately</td>
</tr>
<tr>
<td>ao.</td>
<td>L SP, L stem, C4, OP, 5σ</td>
<td>li-to-tí-pátálági i sa</td>
<td>you will help pay them indiscriminately</td>
</tr>
<tr>
<td>ap.</td>
<td>L SP, L stem, C4, OP, 6σ</td>
<td>li-to-tí-patalagi sísa</td>
<td>you will pay them intensively indiscriminately</td>
</tr>
<tr>
<td>aq.</td>
<td>H SP, L stem, C4, OP, 4σ</td>
<td>bá-to-tí-pátáalaaga</td>
<td>they will pay them indiscriminately</td>
</tr>
<tr>
<td>ar.</td>
<td>H SP, L stem, C4, OP, 5σ</td>
<td>bá-to-tí-pátálági i sa</td>
<td>they will help pay them indiscriminately</td>
</tr>
<tr>
<td>as.</td>
<td>H SP, L stem, C4, OP, 6σ</td>
<td>bá-to-tí-patalagi sísa</td>
<td>they will pay them intensively indiscriminately</td>
</tr>
<tr>
<td>at.</td>
<td>L SP, H stem, C4, OP, 4σ</td>
<td>li-to-tí-búlalaaga</td>
<td>you will kill them indiscriminately</td>
</tr>
<tr>
<td>au.</td>
<td>L SP, H stem, C4, OP, 5σ</td>
<td>li-to-tí-búlálági i sa</td>
<td>you will cause them to kill indiscriminately</td>
</tr>
<tr>
<td>av.</td>
<td>L SP, H stem, C4, OP, 6σ</td>
<td>li-to-tí-bulalagi sísa</td>
<td>you will kill them intensively indiscriminately</td>
</tr>
<tr>
<td>aw.</td>
<td>H SP, H stem, C4, OP, 4σ</td>
<td>bá-to-tí-búlalaaga</td>
<td>they will kill them indiscriminately</td>
</tr>
<tr>
<td>ax.</td>
<td>H SP, H stem, C4, OP, 5σ</td>
<td>bá-to-tí-búlálági i sa</td>
<td>they will cause them to kill indiscriminately</td>
</tr>
<tr>
<td>ay.</td>
<td>H SP, H stem, C4, OP, 6σ</td>
<td>bá-to-tí-bulalagi sísa</td>
<td>they will kill them intensively indiscriminately</td>
</tr>
<tr>
<td>az.</td>
<td>L SP, L stem, C1C2, OP, 2σ</td>
<td>li-to-tí-guudza</td>
<td>you will shear them</td>
</tr>
<tr>
<td>ba.</td>
<td>L SP, L stem, C1C2, OP, 3σ</td>
<td>li-to-tí-gudzi i sa</td>
<td>you will help shear them</td>
</tr>
<tr>
<td>bb.</td>
<td>L SP, L stem, C1C2, OP, 4σ</td>
<td>li-to-tí-gudzeláana</td>
<td>you will shear for e.o.</td>
</tr>
</tbody>
</table>
bc. H SP, L stem, C1C2, OP, 2σ  
> bá-to-tí-guđza
they will shear them

bd. H SP, L stem, C1C2, OP, 3σ  
> bá-to-tí-gúdži isá
they will help shear them

be. H SP, L stem, C1C2, OP, 4σ  
> bá-to-tí-gúdzeláana
they will shear them for each other

bf. L SP, H stem, C1C2, OP, 2σ  
> li-to-ti-gáádza
you will flatten them

bg. L SP, H stem, C1C2, OP, 3σ  
> li-to-ti-gádzi isá
you will help flatten them

bh. L SP, H stem, C1C2, OP, 4σ  
> li-to-ti-gádzi sáana
you will help each other stamp them

bi. H SP, H stem, C1C2, OP, 2σ  
> bá-to-tí-gáádza
they will stamp them

bj. H SP, H stem, C1C2, OP, 3σ  
> bá-to-tí-gádzi isá
they will help stamp them

bk. H SP, H stem, C1C2, OP, 4σ  
> bá-to-tí-gádzi sáana
they will help each other stamp them

bl. L SP, H stem, C1C2C3, OP 6σ  
> li-to-ti-gádzagi séláana
you will help flatten them indiscriminately for each other

bm. H SP, H stem, C1C2C3, OP, 6σ  
> bá-to-tí-gádzagi séláana
they will help flatten them indiscriminately for each other

Paradigm F: General Future

(37) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP

a. L SP, L stem, C1, 1psOP, 1σ  
> —

b. L SP, L stem, C1, 1psOP, 2σ  
> li-to-gí -bheeka
you will look at me

c. L SP, L stem, C1, 1psOP, 3σ  
> li-to-gí -vúlíisá
you will help me open

d. L SP, L stem, C1, 1psOP, 4σ  
> li-to-gí -bhekíisíisá
you will look at me intensely

e. H SP, L stem, C1, 1psOP, 1σ  
> —
f. H SP, L stem, C1, 1psOP, 2σ  bá-to-gí-bheeka  they will look at me

g. H SP, L stem, C1, 1psOP, 3σ  bá-to-gí-vuúisa  they will help me open

h. H SP, L stem, C1, 1psOP, 4σ  bá-to-gí-bhekíísíisa  they will look at me intensely

i. L SP, H stem, C1, 1psOP, 1σ  li-to-gí-dla  you will eat me

j. L SP, H stem, C1, 1psOP, 2σ  li-to-gí-vuúsa  you will awaken me

k. L SP, H stem, C1, 1psOP, 3σ  li-to-gí-vusíísa  you will help me awaken

l. L SP, H stem, C1, 1psOP, 4σ  li-to-gí-vísíísíisa  you will understand me

m. H SP, H stem, C1, 1ps OP, 1σ  bá-to-gíí-dla  they will eat me

n. H SP, H stem, C1, 1ps OP, 2σ  bá-to-gí-vuúsa  they will awaken me

o. H SP, H stem, C1, 1psOP, 3σ  bá-to-gí-vusíísa  they will help me awaken

p. H SP, H stem, C1, 1psOP, 4σ  bá-to-gí-vísíísíisa  they will understand me

q. L SP, L stem, C2, 1psOP, 2σ  li-to-gí-láadza  you will fetch me

r. L SP, L stem, C2, 1psOP, 3σ  li-to-gí-ládzeela  you will follow me

s. L SP, L stem, C2, 1psOP, 4σ  li-to-gí-ládzel:la  you will pursue me

t. (ditto)  li-to-gí-ladzel:la  (ditto)

u. H SP, L stem, C2, 1psOP, 2σ  bá-to-gí-láadza  they will fetch me

v. H SP, L stem, C2, 1psOP, 3σ  bá-to-gí-ládzeela  they will follow me

w. H SP, L stem, C2, 1psOP, 4σ  bá-to-gí-ládzel:la  they will pursue me

x. (ditto)  bá-to-gí-ladzel:la  (ditto)

y. L SP, H stem, C2, 1psOP, 2σ  li-to-gí-tshéega  you will buy me
z. L SP, H stem, C2, 1psOP, 3σ li-to-gi-tshegi ísa you will sell me

aa. L SP, H stem, C2, 1psOP, 4σ li-to-gi-tshegi sǐisa you will help me sell

ab. H SP, H stem, C2, 1psOP, 2σ bá-to-gi-tshééga they will buy me

ac. H SP, H stem, C2, 1psOP, 3σ bá-to-gi-tshegi ísa they will sell me

ad. H SP, H stem, C2, 1psOP, 4σ bá-to-gi-tshegi sǐisa they will help me sell

ae. L SP, L stem, C3, 1psOP, 3σ li-to-gi-límaaga you will cultivate me indiscriminately

af. L SP, L stem, C3, 1psOP, 4σ li-to-gi-límagíi sǐisa you will help cultivate me indiscriminately

ag. L SP, L stem, C3, 1psOP, 5σ li-to-gi-límagíi sǐisa you will cultivate me intensively indiscriminately

ah. (ditto) li-to-gi-límagíi sǐisa (ditto)

ai. H SP, L stem, C3, 1psOP, 3σ bá-to-gi-límaaga they will cultivate me indiscriminately

aj. H SP, L stem, C3, 1psOP, 4σ bá-to-gi-límagíi sǐisa they will help cultivate me indiscriminately

ak. H SP, L stem, C3, 1psOP, 5σ bá-to-gi-límagíi sǐisa they will cultivate me intensively indiscriminately

al. (ditto) bá-to-gi-límagíi sǐisa (ditto)

am. L SP, H stem, C3, 1psOP, 3σ li-to-gi-búluúga you will save me

an. L SP, H stem, C3, 1psOP, 4σ li-to-gi-bulúgi i sa you will help save me

ao. L SP, H stem, C3, 1psOP, 5σ li-to-gi-bulugi sǐisa you will save me intensively

ap. H SP, H stem, C3, 1psOP, 3σ bá-to-gi-búluúga they will save me

aq. H SP, H stem, C3, 1psOP, 4σ bá-to-gi-bulúgi i sa they will help save me

ar. H SP, H stem, C3, 1psOP, 5σ bá-to-gi-bulugi sǐisa they will save me intensively
as. L SP, L stem, C4, 1psOP, 4σ  li-to-gi-pátálaaga  you will pay me indiscriminately
at. L SP, L stem, C4, 1psOP, 5σ  li-to-gi-pátálági isa  you will help pay me indiscriminately
au. L SP, L stem, C4, 1psOP, 6σ  li-to-gi-patalagí síisa  you will pay me intensively indiscriminately
av. (ditto)  li-to-gi-patalagí síisa (ditto)
aw. H SP, L stem, C4, 1psOP, 4σ  bá-to-gi-pátálaaga  they will pay me indiscriminately
ax. H SP, L stem, C4, 1psOP, 5σ  bá-to-gi-pátálági isa  they will help pay me indiscriminately
ay. H SP, L stem, C4, 1psOP, 6σ  bá-to-gi-patalagí síisa  they will pay me intensively indiscriminately
az. L SP, H stem, C4, 1psOP, 4σ  li-to-gi-búlálaga  you will kill me indiscriminately
ba. L SP, H stem, C4, 1psOP, 5σ  li-to-gi-búlálági isa  you will cause me to kill indiscriminately
bb. L SP, H stem, C4, 1psOP, 6σ  li-to-gi-bulalagí síisa  you will kill me intensively indiscriminately
bc. H SP, H stem, C4, 1psOP, 4σ  bá-to-gi-búlálaga  they will kill me indiscriminately
bd. H SP, H stem, C4, 1psOP, 5σ  bá-to-gi-búlálági isa  they will cause me to kill indiscriminately
be. H SP, H stem, C4, 1psOP, 6σ  bá-to-gi-bulalagí síisa  they will kill me intensively indiscriminately
bf. L SP, L stem, C12, 1psOP, 2σ  li-to-gí-bheebha  you will carry me on your backs
bg. L SP, L stem, C12, 1psOP, 3σ  li-to-gí-bhébhi isa  you will help carry me on your backs
bh. L SP, L stem, C12, 1psOP, 4σ  li-to-gí-bhebhi síisa  you will carry me on your backs tightly
bi. H SP, L stem, C12, 1psOP, 2σ  bá-to-gí-bheebha  they will carry me on their backs
bj. H SP, L stem, C12, 1ps OP, 3σ  bá-to-gí-bhēbhiísa  they will help carry me on their backs
bk. H SP, L stem, C12, 1psOP, 4σ  bá-to-gí-hēbhiísisa  they will carry me on their backs tightly
bl. L SP, H stem, C12, 1psOP, 2σ  li-to-gí-gādza  you will flatten me
bm. L SP, H stem, C12, 1psOP, 3σ  li-to-gí-gadziísa  you will help me flatten
bn. L SP, H stem, C12, 1psOP, 4σ  li-to-gí-gadziísisa  you will flatten me completely
bo. H SP, H stem, C12, 1psOP, 2σ  bá-to-gí-gādzá  they will flatten me
bp. H SP, H stem, C12, 1psOP, 3σ  bá-to-gí-gadziísa  they will help me flatten
bq. H SP, H stem, C12, 1psOP, 4σ  bá-to-gí-gadziísisa  they will flatten me completely
br. L SP, H stem, C123, 1psOP, 6σ  li-to-gí-gadzgíseláana  you will help flatten me indiscriminately for each other
bs. H SP, H stem, C123, 1psOP, 6σ  bá-to-gí-gadzgíseláana  they will help flatten me indiscriminately for each other

[turn to the next page for Appendix A, Paradigm G: Present Participial]
Paradigm G: Present Participial (long form)

- \( SP_{\text{participial}} + (OP) + \{\text{ROOT} (+\text{suffixes}) + -a\}_{\text{stem}} \)
- The most distinctive feature of this paradigm is that all participial prefixes—irrespective of 3p vs. non-3p—are grammatically H (cf. Chapter 2 §2.2.4.9, and footnote 275). Thus, after an initial set of data in template I to confirm the claim just made about grammatical H, only one set of subject prefixes is given (2pp \( lî- \) ‘you’). In template I, there are thus two sets of H SPs.
- The obligatorily H prefix in this paradigm means that in the case of the 1ps prefix—the 1ps prefix being the only breathy/depressed prefix in the language—it too must now be H. Thus, for the first time in the appendix, the effect of obligatory depressor shift/block phenomena off a depressed (word-initial) prefix can be observed (analysed in Chapter 7 §7.6.2). This depressed SP category has been added to the set of templates for this paradigm.
- The participial is the only paradigm recorded which has ‘grammatically’ H word-initial prefixes—for which reason it is treated with other grammatical paradigms in Chapter 6 §6.2.1.1—and stem tone that targets the antepenultimate syllable (as in lexical paradigms A, B, D, E in this appendix).
- Present participial SPs are segmentally identical to present indicative SPs (which occur in all paradigms, by default, unless otherwise indicated), except that 3ps is typically \((k)a-\). But cf. footnote 48 below.
- The glosses are given as ‘you/them/me X-ing’, using the oblique form of the pronoun, because this dependent verb phrase functions similarly to a Latin ablative absolute, ‘(with) you coming’ or ‘it being the case that you are coming’.
- OPs in the present participial have the property of present negative L stems (under certain conditions), and of OPs in the remote past, earlier termed ‘quasi-depression’ (cf. Chapter 7 §7.6.2), that is, depressor-induced shift (in this case: off a depressed SP) onto an apparently segmentally non-depressed syllable (in this case: OP) is blocked; at the same time these quasi-depressed OPs are termed ‘quasi’ because they fail themselves to trigger depressor shift; cf. (40m) and footnote 49 below for first clear data that OP is at least quasi-depressed).
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>(38) Verb Paradigm Template I</td>
<td>Modal stems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>H SP, L stem, 1σ</td>
<td>líí-ta</td>
<td>you coming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>H SP, L stem, 2σ</td>
<td>lí-liima</td>
<td>you cultivating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>H SP, L stem, 3σ</td>
<td>lí-libaala</td>
<td>you forgetting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>H SP, L stem, 4σ</td>
<td>lí-libátiisa</td>
<td>you delaying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>H SP, L stem, 1σ</td>
<td>báá-ta</td>
<td>them coming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>H SP, L stem, 2σ</td>
<td>bá-liima</td>
<td>them cultivating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>H SP, L stem, 3σ</td>
<td>bá-libaala</td>
<td>them forgetting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>H SP, L stem, 4σ</td>
<td>bá-libátiisa</td>
<td>them delaying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>H 1psSP, L stem, 1σ</td>
<td>gií-ta</td>
<td>me coming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>H 1psSP, L stem, 2σ</td>
<td>gi-líima</td>
<td>me cultivating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>H 1psSP, L stem, 3σ</td>
<td>gi-libaala</td>
<td>me forgetting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l.</td>
<td>H 1psSP, L stem, 4σ</td>
<td>gi-libátiisa</td>
<td>me delaying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m.</td>
<td>H SP, H stem, 1σ</td>
<td>líí-phá</td>
<td>you giving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n.</td>
<td>H SP, H stem, 2σ</td>
<td>lí-bóóna</td>
<td>you seeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o.</td>
<td>H SP, H stem, 3σ</td>
<td>lí-boníísa</td>
<td>you showing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p.</td>
<td>H SP, H stem, 4σ</td>
<td>lí-sébátiisa</td>
<td>you using</td>
<td></td>
<td></td>
</tr>
<tr>
<td>q.</td>
<td>H SP, H stem, 1σ</td>
<td>báa-phá</td>
<td>them giving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r.</td>
<td>H SP, H stem, 2σ</td>
<td>bá-bóiína</td>
<td>them seeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>s.</td>
<td>H SP, H stem, 3σ</td>
<td>bá-bóníísa</td>
<td>them showing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t.</td>
<td>H SP, H stem, 4σ</td>
<td>bá-sébátiisa</td>
<td>them using</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u.</td>
<td>H 1psSP, H stem, 1σ</td>
<td>gií-phá</td>
<td>me giving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>H 1psSP, H stem, 2σ</td>
<td>gi-bóiína</td>
<td>me seeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w.</td>
<td>H 1psSP, H stem, 3σ</td>
<td>gi-bóníísa</td>
<td>me showing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x.</td>
<td>H 1psSP, H stem, 4σ</td>
<td>gi-sébátiisa</td>
<td>me using</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Paradigm G: Present Participial

(39) Verb Paradigm Template II
Breathy / depressor stems

a. H SP, L stem, C1, 1σ
   lí-vuula
   you opening
b. H SP, L stem, C1, 2σ
   lí-vulísa
   you helping open
c. H SP, L stem, C1, 3σ
   lí-vulíša
   you opening for
d. H SP, L stem, C1, 4σ
   lí-vuléša
   you opening for
e. H 1psSP, L stem, C1, 1σ
   —
f. H 1psSP, L stem, C1, 2σ
   gí-vuula
   me opening
g. H 1psSP, L stem, C1, 3σ
   gí-vulísa
   me helping open
h. H 1psSP, L stem, C1, 4σ
   gí-vuléša 41
   me opening for
i. H SP, H stem, C1, 1σ
   líi-dlā
   you eating
j. H SP, H stem, C1, 2σ
   lí-vuúna
   you harvesting
k. H SP, H stem, C1, 3σ
   lí-vunísa
   you helping harvest
l. H SP, H stem, C1, 4σ
   lí-vísíšisa
   you understanding
m. H 1psSP, H stem, C1, 1σ
   gíi-dlā 42
   me eating
n. H 1psSP, H stem, C1, 2σ
   gí-vuúna 43
   me harvesting

41 Cf. fn. 45 for unincorporated/disjoint options to (39f-h) configurations, but in C12 stems.
42 This is the unique instance in which a 1-σ depressor H stem surface-expresses H despite being immediately preceded by a H prefix (here, remarkably: a H SP). Compare (6i,m), (7i,m), (9i,m), (12i,m), (13i,m) (15i,m), (18i,m). (15m) and (18m) are the most closely contrasting data.
43 Speakers’ judgements on this 1ps SP C1 data are not fully coherent: in these depressor-commencing High stems, (i) with 1-σ stems, the depressed 1ps SP is always H (here it is phonetically rising-falling), as in (39m), as expected; (ii) with 2-σ stems, the 1ps SP is always H (true depressor block); but with 3-σ and 4-σ stems (and longer), as in (39n-p), we are perhaps surprised that the H SP gí- seems unable to fuse with the stem H domain, electing instead to express surface-H, as a result of the ‘blocking’ effect (that is, in fact: the anti-unincorporation effect, cf. discussion in Chapter 7 §7.7.1; cf. footnote 44 here). But (39n-p) are thus not perfectly analogous to the behaviour of the toneless/low stems just illustrated: although (39f) predictably demonstrates real depression block, (39g-i) fail to yield the expected ‘block’ effect (in fact: the anti-disjoint HD effect, cf. discussion in Chapter 7 §7.7.2). We expect, as alternative forms, at
least the following:
(39g') *gí-vuníísa and (39h') *gí-vulélaana (with ‘blocked’ H SPs), or, for the H stems:
(39o') *gí-vuníísa, (39p') *gí-visííisa. But no such alternative forms are forthcoming.

(39v) is the first of a series of unambiguous exemplars of the faux depressor shift discussed at length in Chapter 7 §7.7 (and cf. the footnote just preceding here). The participial provides a nearly unique source in the verbal paradigms of (i) disjoint H domains—where a depressed prefix preceding a toneless/low stem both extends to its paradigmatic rightwards target (here: to the antepenult), and also ‘shifts’ a copy of itself into the stem σ1 position (39v,ak,ay); and of (ii) H unincorporation (e.g. 39ab,ad,ar,bf)—where a depressed prefix preceding a H stem similarly both extends to its paradigmatic rightwards target (the antepenult) and also ‘shifts’ a copy of itself into the stem σ1 position, where normally the stem-sponsored H tone domain should commence. With these H 1ps SPs there is no ‘non-shifted’ (block) alternative to disjoint HDs (39w,al,az) or unincorporated Hs (39ac,ae,as,bg): for the participials, it appears vital that the H SP always manifest itself at the prefix-stem edge, cf. discussion of EXPRESSPREFIX in §7.7.2.
<table>
<thead>
<tr>
<th>Verb Type</th>
<th>Stem</th>
<th>Person</th>
<th>root</th>
<th>aux</th>
<th>Deser</th>
<th>Participle</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ad.</td>
<td>H</td>
<td>1psSP</td>
<td>C2</td>
<td>4σ</td>
<td>gi-tshégi síisa</td>
<td>me helping sell</td>
<td></td>
</tr>
<tr>
<td>ae.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>3σ</td>
<td>lí-límaaga</td>
<td>you cultivating indiscriminately</td>
<td></td>
</tr>
<tr>
<td>af.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>4σ</td>
<td>lí-límági isa</td>
<td>you helping cultivate indiscriminately</td>
<td></td>
</tr>
<tr>
<td>ag.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>5σ</td>
<td>lí-limagi síisa</td>
<td>you cultivating intensively indiscriminately</td>
<td></td>
</tr>
<tr>
<td>ah.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>3σ</td>
<td>gi-límaaga</td>
<td>me cultivating indiscriminately</td>
<td></td>
</tr>
<tr>
<td>ai.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>4σ</td>
<td>gi-límági isa</td>
<td>me helping cultivate indiscriminately</td>
<td></td>
</tr>
<tr>
<td>aj.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>5σ</td>
<td>gi-límagi síisa</td>
<td>me cultivating intensively indiscriminately</td>
<td></td>
</tr>
<tr>
<td>ak.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>3σ</td>
<td>gi-límaaga</td>
<td>me cultivating indiscriminately</td>
<td></td>
</tr>
<tr>
<td>al.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>5σ</td>
<td>lí-bulúúga</td>
<td>you saving</td>
<td></td>
</tr>
<tr>
<td>am.</td>
<td>H</td>
<td>H</td>
<td>C3</td>
<td>3σ</td>
<td>lí-bulúúga</td>
<td>you saving</td>
<td></td>
</tr>
<tr>
<td>an.</td>
<td>H</td>
<td>H</td>
<td>C3</td>
<td>4σ</td>
<td>lí-bulúgi isa</td>
<td>you helping save</td>
<td></td>
</tr>
<tr>
<td>ao.</td>
<td>H</td>
<td>H</td>
<td>C3</td>
<td>5σ</td>
<td>lí-bulugi síisa</td>
<td>you saving intensively</td>
<td></td>
</tr>
<tr>
<td>ap.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>3σ</td>
<td>gi-bulúúga</td>
<td>me saving</td>
<td></td>
</tr>
<tr>
<td>aq.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>4σ</td>
<td>gi-bulúgi isa</td>
<td>me helping save</td>
<td></td>
</tr>
<tr>
<td>ar.</td>
<td>H</td>
<td>1psSP</td>
<td>C3</td>
<td>5σ</td>
<td>gi-bulugi síisa</td>
<td>me saving intensively</td>
<td></td>
</tr>
<tr>
<td>as.</td>
<td>H</td>
<td>L</td>
<td>C3</td>
<td>3σ</td>
<td>gi-bulugi síisa</td>
<td>me saving intensively</td>
<td></td>
</tr>
<tr>
<td>at.</td>
<td>H</td>
<td>L</td>
<td>C4</td>
<td>4σ</td>
<td>lí-pátalaaga</td>
<td>you paying indiscriminately</td>
<td></td>
</tr>
<tr>
<td>au.</td>
<td>H</td>
<td>L</td>
<td>C4</td>
<td>5σ</td>
<td>lí-pátalágisa</td>
<td>you helping pay indiscriminately</td>
<td></td>
</tr>
<tr>
<td>av.</td>
<td>H</td>
<td>L</td>
<td>C4</td>
<td>6σ</td>
<td>lí-patalagi síisa</td>
<td>you paying intensively indiscriminately</td>
<td></td>
</tr>
</tbody>
</table>
Surprisingly distinct from the behaviour of data in the previous footnote, the 1ps SP here under conditions of depressor ‘blocking’ at the SP-stem junction seems less insistent on being surface H: thus, the default here is to a surface non-H 1ps prefix in (39bl,bn)—that is, down-playing, as it were, the prefix-stem boundary; a surface-H 1ps prefix (39bm,bo) is also tolerated.
bm.(ditto)  
gí-bhébbhi ñisá  
(ditto)

bn. H 1psSP, L stem, C12, 4σ  
gí-bhebbhi sísá  
me carrying on  
my back tightly

bo. (ditto)  
gí-bhebbhi sísá  
(ditto)

bp. H SP, H stem, C12, 2σ  
lí-gáádzá  
you flattening

bq. H SP, H stem, C12, 3σ  
lí-gádzíísá  
you helping to flatten

br. H SP, H stem, C12, 4σ  
lí-gádzí sísá  
you flattening completely

bs. H 1psSP, H stem, C12, 2σ  
gí-gáádzá  
me flattening

bt. H 1psSP, H stem, C12, 3σ  
gí-gádzíísá  
me helping to flatten

bu. H 1psSP, H stem, C12, 4σ  
gí-gádzí sísá  
me flattening completely

Paradigm G: Present Participial

(40)  
Verb Paradigm Template III  
Modal stems, with OP

a. H SP, L stem, OP, 1σ  
lí-(³)tíí-nya  
you excreting them

b. H SP, L stem, OP, 2σ  
lí-tí-liima  
you cultivating them

c. H SP, L stem, OP, 3σ  
lí-tí-³líbaala  
you forgetting them

d. H SP, L stem, OP, 4σ  
lí-tí-³líbátiisa  
you delaying them

e. H 1psSP, L stem, OP, 1σ  
gí-tíí-nya  
me excreting them

f. H 1psSP, L stem, OP, 2σ  
gí-tí-liima  
me cultivating them

g. H 1psSP, L stem, OP, 3σ  
gí-tí-³líbaala  
me forgetting them

h. H 1psSP, L stem, OP, 4σ  
gí-tí-³líbátiisa  
me delaying them

These depressor-initial H stems absolutely require the depressed H 1ps SP to surface H, a  
kind of anti-LD-fusion (in light of footnote 45).

(40b) is the only example of contrastive (non-predictable) downstep in (40a-d): we do not  
expect any downsteps in positions other than at the antepenult-penult boundary, or simply where  
a new HD left edge occurs. But (40b) highlights an obligatory intonational separation that the  
participial SP seems to require from whatever follows (i.e. the OP or stem), cf. footnote 48. The  
other downstep instances are provided here merely for comparison: (40a) is downstepped by  
Register Domain Principle A (cf. Chapter 7 §7.9): at the fresh HD left edge, because fusion of  
HDs adjacent across the antepenult-penult boundary fails (cf. Chapter 4 §4.3.2), (40c,d) is
i. H SP, H stem, OP, 1σ  lí-(σ)tí-pha you giving them
j. H SP, H stem, OP, 2σ  lí-tí-(σ)bóóna you seeing them
k. H SP, H stem, OP, 3σ  lí-tí-(σ)bóníísa you showing them
l. H SP, H stem, OP, 4σ  lí-tí-(σ)sèbètiisa you using them
m. H 1ps SP, H stem, OP, 1σ  gị-tú-pha 49 me giving them
n. H 1ps SP, H stem, OP, 2σ  gị-tí-bóóna me seeing them
o. H 1ps SP, H stem, OP, 3σ  gị-tí-bóníísa me showing them
p. H 1ps SP, H stem, OP, 4σ  gị-tí-sèbètiisa me using them

Paradigm G: Present Participial
• There can be a non-1ps SP in this paradigm, but no 1ps SP with the template IV forms, since these forms require a 1ps OP.

(41) Verb Paradigm Template IV
Modal stems, with 1ps OP

| a. H SP, L stem, 1ps OP, 1σ | lí-gíí-nya | you excreting me |
| b. H SP, L stem, 1ps OP, 2σ | lí-gíí-liíma | you cultivating me |
| c. H SP, L stem, 1ps OP, 3σ | lí-gíí-líbaala | you forgetting me |
| d. H SP, L stem, 1ps OP, 4σ | lí-gíí-líbátiisa | you delaying me |

downstepped by Principle B (§7.9). Throughout this work, and in the data that follows (unless indicated), downsteps are indicated only when contrastive, e.g. (40b), that is, when they do not fall out of Register Domain principles A-D. Just in the present data set, predictable downsteps are given (in parentheses).

The downsteps in (40g-h) may seem to be due to the boundary between the obligatory prefix-H, which is misaligned from the depressed 1psSP onto the OP. But although this misaligned prefix H results from the EXPRESSPREFIX requirement (Chapter 7 §7.7.2), it should still fuse with the HD created by the OP (and expressed from the stem σ1 onwards), because there are adjacent HD edges to fuse (cf. discussion of fusion and anti-fusion in Chapter 7 §7.8.1.10). In fact, the anti-fusion data from L stems in (40g,h) contrasts with the properly fused adjacent HDs in the H stem data in (40o-p)—where there is no downstep. The persistent distinction between L and H stems sustained at this very low level in the present participial is akin to anti-fusion across the OP-stem boundary in the present negative toneless/L stems (§7.8.1.7; and cf. paradigm U). In fact, (40c,d) constitute a test case for the HD/LD configuration in (292c)—possibly also in (292f)—which is resolved here in favour of a fused HD across the LD right-edge. Cf. footnote 52.

The 1-σ H stem in (40i,m), as too in (41e) below, is surface non-H, contrasting with (38m,q) above (which lacks the OP) where the 1-σ stem remains H. This is the same as the indicative paradigms (e.g. A, B, C in this appendix). Of great surprise is the depressed H SP in (40m): this is clear evidence that the OP has depressed (in fact, quasi-depressed) status.
<table>
<thead>
<tr>
<th>Case</th>
<th>Voice</th>
<th>Type</th>
<th>Root</th>
<th>Participle Template</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.</td>
<td>H SP, H stem, 1psOP, 1σ</td>
<td>lí- già-phā</td>
<td>you giving me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>H SP, H stem, 1psOP, 2σ</td>
<td>lí- già-bó̄na</td>
<td>you seeing me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>H SP, H stem, 1psOP, 3σ</td>
<td>lí- già-bóníísa</td>
<td>you showing me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>H SP, H stem, 1psOP, 4σ</td>
<td>lí- già-sébětíísa</td>
<td>you using me</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Paradigm G: Present Participial**

(42) Verb Paradigm Template V

**Breathy / depressor stems, with OP**

<table>
<thead>
<tr>
<th>Case</th>
<th>Voice</th>
<th>Type</th>
<th>Root</th>
<th>Participle Template</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H SP, L stem, C1, OP, 1σ</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>H SP, L stem, C1, OP, 2σ</td>
<td>lí- 'tí-vuula 50</td>
<td>you opening them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>H SP, L stem, C1, OP, 3σ</td>
<td>lí- ti-vuľíísa</td>
<td>you helping open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>H SP, L stem, C1, OP, 4σ</td>
<td>lí- ti-vuľélaana</td>
<td>you opening for e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>H 1psSP, L stem, C1, OP, 1σ</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>H 1psSP, L stem, C1, OP, 2σ</td>
<td>gi- tí-vuula</td>
<td>me opening them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>H 1psSP, L stem, C1, OP, 3σ</td>
<td>gi- tí-vuľíísa</td>
<td>me helping open them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>H 1psSP, L stem, C1, OP, 4σ</td>
<td>gi- tí-vuľélaana</td>
<td>me opening them for each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>H SP, H stem, C1, OP, 1σ</td>
<td>lí- tí- dru</td>
<td>you eating them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>H SP, H stem, C1, OP, 2σ</td>
<td>lí- tí-vuňña</td>
<td>you harvesting them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>H SP, H stem, C1, OP, 3σ</td>
<td>lí- tí-vüníísa</td>
<td>you helping harvest them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l.</td>
<td>H SP, H stem, C1, OP, 4σ</td>
<td>lí- tí-vísííísa</td>
<td>you understanding them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m.</td>
<td>H 1psSP, H stem, C1, OP, 1σ</td>
<td>gi- tí- dru</td>
<td>me eating them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n.</td>
<td>H 1psSP, H stem, C1, OP, 2σ</td>
<td>gi- tí-vuňña</td>
<td>me harvesting them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o.</td>
<td>H 1psSP, H stem, C1, OP, 3σ</td>
<td>gi- tí-vüníísa</td>
<td>me helping harvest them</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

50 As before, only the downstep in (42b) needs explicit mentioning: it is contrastive because it requires a downstep in pre-antepenult position (here: to separate the participial SP from the OP). There is an automatic downstep between the two HDs in (42c,d).
The data in (41u-v) corresponds to (40g-h), except that here in (41u-v) the anti-fusion is obscured by the additional presence of the depressor consonant in stem σ2 position (hence: this illustrates rather the unincorporation of an HD sequence at the OP-stem boundary). The anti-fusion data is discussed under parallel conditions for the present negative in Chapter 7 §7.8.1.10, where the full typology of domain fusion is considered in (292).
<table>
<thead>
<tr>
<th>ag. H 1psSP, L stem, C3, OP, 4σ</th>
<th>gi-tí-límágisísa</th>
<th>me helping cultivate them indiscriminately</th>
</tr>
</thead>
<tbody>
<tr>
<td>ah. H 1psSP, L stem, C3, OP, 5σ</td>
<td>gi-tí-limagisísa</td>
<td>me cultivating them intensively indiscriminately</td>
</tr>
<tr>
<td>ai. H SP, H stem, C3, OP, 3σ</td>
<td>lí-tí-búlúúga</td>
<td>you saving them</td>
</tr>
<tr>
<td>aj. H SP, H stem, C3, OP, 4σ</td>
<td>lí-tí-búlúíisa</td>
<td>you helping save them</td>
</tr>
<tr>
<td>ak. H SP, H stem, C3, OP, 5σ</td>
<td>lí-tí-bulugisísa</td>
<td>you saving them intensively</td>
</tr>
<tr>
<td>al. H 1psSP, H stem, C3, OP, 3σ</td>
<td>gi-tí-búlúúga</td>
<td>me saving them</td>
</tr>
<tr>
<td>am. H 1psSP, H stem, C3, OP, 4σ</td>
<td>gi-tí-búlúíisa</td>
<td>me helping save them</td>
</tr>
<tr>
<td>an. H 1psSP, H stem, C3, OP, 5σ</td>
<td>gi-tí-bulugisísa</td>
<td>me saving them intensively</td>
</tr>
<tr>
<td>ao. H SP, L stem, C4, OP, 4σ</td>
<td>lí-tí-pátalaaga</td>
<td>you paying them indiscriminately</td>
</tr>
<tr>
<td>ap. H SP, L stem, C4, OP, 5σ</td>
<td>lí-tí-pátálíisa</td>
<td>you helping pay them indiscriminately</td>
</tr>
<tr>
<td>aq. H SP, L stem, C4, OP, 6σ</td>
<td>lí-tí-patalagisísa</td>
<td>you paying intensively indiscriminately</td>
</tr>
<tr>
<td>ar. H 1psSP, L stem, C4, OP, 4σ</td>
<td>gi-tí-pátalaaga</td>
<td>me paying them indiscriminately</td>
</tr>
<tr>
<td>as. H 1psSP, L stem, C4, OP, 5σ</td>
<td>gi-tí-pátálíisa</td>
<td>me helping pay them indiscriminately</td>
</tr>
<tr>
<td>at. H 1psSP, L stem, C4, OP, 6σ</td>
<td>gi-tí-patalagisísa</td>
<td>me paying them intensively indiscriminately</td>
</tr>
<tr>
<td>ao. H SP, H stem, C4, OP, 4σ</td>
<td>lí-tí-búlalaaga</td>
<td>you killing them indiscriminately</td>
</tr>
<tr>
<td>ap. H SP, H stem, C4, OP, 5σ</td>
<td>lí-tí-búlálíisa</td>
<td>you causing to kill them indiscriminately</td>
</tr>
<tr>
<td>aq. H SP, H stem, C4, OP, 6σ</td>
<td>lí-tí-bulalgisísa</td>
<td>you killing them intensively indiscriminately</td>
</tr>
</tbody>
</table>
ax. H 1psSP, H stem, C4, OP, 4σ  gi-tí-búlālaaga... me killing them indiscriminately

ay. H 1psSP, H stem, C4, OP, 5σ  gi-tí-búlálágiisa... me causing to kill them indiscriminately

az. H 1psSP, H stem, C4, OP, 6σ  gi-tí-bulalagísísa... me killing them intensively indiscriminately

ba. H SP, L stem, C12, OP, 2σ  lī-tí-bheebha... you carrying them on your backs

bb. H SP, L stem, C12, OP, 3σ  lī-tí-bhébhi isá... you helping carry them on your backs

bc. H SP, L stem, C12, OP, 4σ  lī-tí-bhebhi síisa... you carrying them on your backs tightly

bd. H 1psSP, L stem, C12, OP, 2σ  gi-tí-bheebha... me carrying them on my back

be. H 1psSP, L stem, C12, OP, 3σ  gi-tí-(b)hébhi isá... me helping carry them on my back

bf. H 1psSP, L stem, C12, OP, 4σ  gi-tí-bhebhi síisa... me carrying them on my back tightly

bg. H SP, H stem, C12, OP, 2σ  lī-tí-gáádzá... you flattening them

bh. H SP, H stem, C12, OP, 3σ  lī-tí-gádzi isá... you helping them to flatten

bi. H SP, H stem, C12, OP, 4σ  lī-tí-gádzi síisa... you flattening them completely

bj. H 1psSP, H stem, C12, OP, 2σ  gi-tí-gáádzá... me flattening them

bk. H 1psSP, H stem, C12, OP, 3σ  gi-tí-gádzi isá... me helping to flatten them

bl. H 1psSP, H stem, C12, OP, 4σ  gi-tí-gádzi síisa... me flattening them completely
Paradigm G: Present Participial

- There can be no 1ps SP with the template VI forms, since these require a 1ps OP, but in terms of person reference SP and OP cannot be non-reflexively coreferential (reflexives are handled separately by an invariant OP -tí-, cf. Chapter 2 §2.2.4.2).

(43) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP

a. H SP, L stem, C1, 1psOP, 1σ —

b. H SP, L stem, C1, 1psOP, 2σ lí-gí-bheeka you looking at me

c. H SP, L stem, C1, 1psOP, 3σ lí-gí-vulíisa you helping me open

d. H SP, L stem, C1, 1psOP, 4σ lí-gí-bhekísíisa you looking at me intensely

e. H SP, H stem, C1, 1psOP, 1σ lí-gí-dlä you eating me

f. H SP, H stem, C1, 1psOP, 2σ lí-gí-vúúsa you awakening me

g. H SP, H stem, C1, 1psOP, 3σ lí-gí-vuníísa you helping me harvest

h. H SP, H stem, C1, 1psOP, 4σ lí-gí-visíísa you understanding me

i. H SP, L stem, C2, 1psOP, 2σ lí-gí-láadza you fetching me

j. H SP, L stem, C2, 1psOP, 3σ lí-gí-ládeelä you following me

k. H SP, L stem, C2, 1psOP, 4σ lí-gí-ladželä you pursuing me

l. H SP, H stem, C2, 1psOP, 2σ lí-gí-tshééga you buying me

m. H SP, H stem, C2, 1psOP, 3σ lí-gí-tshegliísa you selling me

n. H SP, H stem, C2, 1psOP, 4σ lí-gí-tshegliísíisa you helping me sell

o. H SP, L stem, C3, 1psOP, 3σ lí-gí-límaaga you cultivating me indiscriminately

p. H SP, L stem, C3, 1psOP, 4σ lí-gí-límágiíisa you helping me cultivate indiscriminately

q. H SP, L stem, C3, 1psOP, 5σ lí-gí-límagísíisa you cultivating me intensively indiscriminately

r. (ditto) lí-gí-límagísíisa (ditto)
s. H SP, H stem, C3, 1psOP, 3σ  lí- gi-búlúúga  you saving me

 t. H SP, H stem, C3, 1psOP, 4σ  lí- gi-búlúúgiisa  you helping me save

 u. H SP, H stem, C3, 1psOP, 5σ  lí- gi-buluguisíisa  you saving me intensively

 v. H SP, L stem, C4, 1psOP, 4σ  lí- gi-pátalaaga  you paying me indiscriminately

 w. H SP, L stem, C4, 1psOP, 5σ  lí- gi-pátalágíisa  you helping pay me indiscriminately

 x. H SP, L stem, C4, 1psOP, 6σ  lí- gi-patalagísíisa  you paying me intensively indiscriminately

 y. (ditto)  lí- gi-patalagísíisa  (ditto)

 z. H SP, H stem, C4, 1psOP, 4σ  lí- gi-búlalaaga  you killing me indiscriminately

 aa. H SP, H stem, C4, 1psOP, 5σ  lí- gi-búlágíísa  you causing me to kill indiscriminately

 ab. H SP, H stem, C4, 1psOP, 6σ  lí- gi-bulalagísíisa  you killing me intensively indiscriminately

 ac. H SP, L stem, C1C2, 1psOP, 2σ  lí- gi-bheebha  you carrying me on your backs

 ad. H SP, L stem, C1C2, 1psOP, 3σ  lí- gi-bhébhiísa  you helping carry me on your backs

 ae. H SP, L stem, C1C2, 1psOP, 4σ  lí- gi-bhebbíísa  you carrying me on your backs tightly

 af. H SP, H stem, C1C2, 1psOP, 2σ  lí- gi-gaádza  you flattening me

 ag. H SP, H stem, C1C2, 1psOP, 3σ  lí- gi-gadziísa  you helping me flatten

 ah. H SP, H stem, C1C2, 1psOP, 4σ  lí- gi-gadzísíisa  you flattening me completely

 [turn to the next page for Appendix A, Paradigm H: Present Relative]
Paradigm H: Present Relative (long form)

- \{[\text{lä}^- + \text{SP}]_{\text{relativeSP}} + (\text{OP}) + \{\text{ROOT} (+\text{suffixes}) + -a(a)\}_{\text{stem}} + -k\dot{a}_{\text{relative suffix}}\}

- Most remarkably, the lexical verb stem tone classes H vs. toneless/low are neutralised in this mood (cf. also subjunctions, in the following paradigm I), but I include both sets of stems here, indicating the elsewhere lexically H stem syllable here in italics.

Neutralisation of stem tone is examined in Chapter 7 §7.6.2.1, §7.6.2.2, §7.8.2.1, Chapter 8 §8.3.9, §8.3.11.

- The 'short relative'—that is, phrase-medial relative—is not exemplified here. Unlike some other paradigms, it entails exactly the same tone and word structures except for the absence of the final clitic -k\dot{a}.

- Bantu ‘relatives’ are typically considered to form part of the morphosyntactic class of ‘qualificatives’—the term coined by Doke (1935:181). Whereas qualificatives refer to all morphological forms that can be subsumed in the class of adjectival phrases (predicative, or not)—that is, that modify nouns and other nominals, relatives form a lexical and morphological open subclass, as opposed to the small closed class of adjectives.

Adjective prefixes—for the 14 adjective stems in Phuthi—are distinct from relative prefixes, cf. Chapter 2 §2.2.3.1 (85), and further subsections in §2.2.3.

- The relative paradigm is typically considered an independent grammatical mood (as is the subjunctive), cf. Chapter 2 §2.2.4.9 (126).

- The tonology of the relative has been examined in Chapter 6 §6.2.2.1. Given that the 2pp and 3pp prefixes (and in fact all non-depressor prefixes) display exactly the same surface pattern, after an initial data set in (44), no further data from the 3pp will be supplied. This follows the practice of the previous paradigm G (participial) where too there was no 1pp/3pp tone distinction. Also as in paradigm G, the present relative 1ps SP (which becomes H from the relative prefix) will yield an additional data template, e.g. (44i-l) ff.

- Downsteps are not indicated for the present relative, unless contrastive (consistent with comments in this appendix, paradigm A, footnote 32, and paradigm G, footnotes 47,48).

- There is a minor tone pattern (not discussed in Chapter 6 or elsewhere) that emerges in the present relative paradigm relating to the variable expression of the OP, that might be termed ‘plateauing’ (but is analysed instead as LD-minimality). Cf. template III, footnote...
55. Unlike the present indicative long form (paradigm A), this present relative paradigm does not require an OP to be surface-toneless (cf. Chapter 5 §5.4.2.6, fn. 64), cf. footnotes 55-57, nor does it require the OP to be surface-high. Cf. other paradigms including C, H, I, J, for similar variation.

(44) **Verb Paradigm Template I**

**Modal stems**

a. H 2ppSP, L stem, 1σ  
   lélf-taa-kó  (you) who come

b. H 2ppSP, L stem, 2σ  
   lélf-límaa-kó  (you) who cultivate

c. H 2ppSP, L stem, 3σ  
   lélf-líbálaa-kó  (you) who forget

d. H 2ppSP, L stem, 4σ  
   lélf-líbátísaa-kó  (you) who delay

e. H 3psSP, L stem, 1σ  
   lábá-taa-kó 53  (they) who come

f. H 3psSP, L stem, 2σ  
   lábá-límaa-kó  (they) who cultivate

g. H 3psSP, L stem, 3σ  
   lábá-líbálaa-kó  (they) who forget

h. H 3psSP, L stem, 4σ  
   lábá-líbátísaa-kó  (they) who delay

i. H 1psSP, L stem, 1σ  
   légi-táa-kó 53  (I) who come

j. H 1psSP, L stem, 2σ  
   légi-límaa-kó  (I) who cultivate

k. H 1psSP, L stem, 3σ  
   légi-líbálaa-kó  (I) who forget

l. H 1psSP, L stem, 4σ  
   légi-líbátísaa-kó  (I) who delay

m. H 2ppSP, H stem, 1σ  
   lélf-phaa-kó 54  (you) who give

n. H 2ppSP, H stem, 2σ  
   lélf-bónaa-kó  (you) who see

o. H 2ppSP, H stem, 3σ  
   lélf-bónísaa-kó  (you) who show

53 This present relative is the only paradigm in the appendix where the 3p SP can be either one or two syllables in length: in Chapter 6 §6.2.2.1 I used 3ps lá- ‘(s/he who...’; here, I use 2pp leli-, 1ps legi-, and just initially in (44) also 3pp laba- (44e-h), as tone/voice interaction between prefix and stem is more readily seen in 2-σ prefixes.

54 (44m,n) is the first of the crucial data which confirms that the lexical H stems (44m-p, et.seq.) do not function as H in this paradigm. If (44m,n) functioned here as lexically H, we may expect their elsewhere lexically H stems to express (assuming fairly highly ranked tone minimality) as -pháa-, -bónaa-. Cf. also (44q,r), (44u,v); and (45i,j,m,n,w,z,bg,bj).
p. H 2ppSP, H stem, 4σ  lélí-sebétísaa-kó (you) who use
q. H 3psSP, H stem, 1σ  lábá-phaa-kó (they) who give
r. H 3psSP, H stem, 2σ  lábá-bónaa-kó (they) who see
s. H 3psSP, H stem, 3σ  lábá-bónísaa-kó (they) who show
t. H 3psSP, H stem, 4σ  lábá-sebétísaa-kó (they) who use
u. H 1psSP, H stem, 1σ  légi-pháa-kó (I) who give
v. H 1psSP, H stem, 2σ  légi-bónaa-kó (I) who sees
w. H 1psSP, H stem, 3σ  légi-bónísaa-kó (I) who show
x. H 1psSP, H stem, 4σ  légi-sebétísaa-kó (I) who use

Paradigm H: Present Relative

(45) Verb Paradigm Template II
Breathy / depressor stems
a. H SP, L stem, C1, 1σ
b. H SP, L stem, C1, 2σ  lélí-bhekáa-kó (you) who look at
c. H SP, L stem, C1, 3σ  lélí-vulísaa-kó (you) who help open
d. H SP, L stem, C1, 4σ  lélí-bhekísísaa-kó (you) who look at intensely
e. H 1psSP, L stem, C1, 1σ
f. H 1psSP, L stem, C1, 2σ  légi-bhekáa-kó (I) who look at
g. H 1psSP, L stem, C1, 3σ  légi-vulísaa-kó (I) who help open
h. H 1psSP, L stem, C1, 4σ  légi-bhekísísaa-kó (I) who look at intensely
i. H SP, H stem, C1, 1σ  lélí-dlaa-kó (you) who eat
j. H SP, H stem, C1, 2σ  lélí-vúsáa-kó (you) who awaken
k. H SP, H stem, C1, 3σ  lélí-vúsísaa-kó (you) who help awaken
l. H SP, H stem, C1, 4σ  lélí-vísísísaa-kó (you) who understand
m. H 1psSP, H stem, C1, 1σ  

légí - dl aa-kó  

(I) who eat  

n. H 1psSP, H stem, C1, 2σ  

légí - ivusáa-kó  

(I) who awaken  

o. H 1psSP, H stem, C1, 3σ  

légí - ivusisaa-kó  

(I) who help awaken  

p. H 1psSP, H stem, C1, 4σ  

légí - visísaa-kó  

(I) who understand  

q. H SP, L stem, C2, 2σ  

lélí - lázaa-kó  

(you) who fetch  

r. H SP, L stem, C2, 3σ  

lélí - ladzeláa-kó  

(you) who follow  

s. H SP, L stem, C2, 4σ  

lélí - ladzeláa-kó  

(you) who pursue  

t. H 1psSP, L stem, C2, 2σ  

légí - lázaa-kó  

(I) who fetch  

u. H 1psSP, L stem, C2, 3σ  

légí - ladzeláa-kó  

(I) who follow  

v. H 1psSP, L stem, C2, 4σ  

légí - ladzeláa-kó  

(I) who pursue  

w. H SP, H stem, C2, 2σ  

lélí - shégaa-kó  

(you) who buy  

x. H SP, H stem, C2, 3σ  

lélí - shegi sáa-kó  

(you) who sell  

y. H SP, H stem, C2, 4σ  

lélí - shegi sísaa-kó  

(you) who help sell  

z. H 1psSP, H stem, C2, 2σ  

légí - shégaa-kó  

(I) who buy  

aa. H 1psSP, H stem, C2, 3σ  

légí - shegi sáa-kó  

(I) who sell  

ab. H 1psSP, H stem, C2, 4σ  

légí - shegi sísaa-kó  

(I) who help sell  

ac. H SP, L stem, C3, 3σ  

lélí - limágaa-kó  

(you) who cultivate indiscriminately  

ad. H SP, L stem, C3, 4σ  

lélí - limagi sáa-kó  

(you) who help cultivate indiscriminately  

ae. H SP, L stem, C3, 5σ  

lélí - limagi sísaa-kó  

(you) who cultivate intensively indiscriminately
<table>
<thead>
<tr>
<th>Root</th>
<th>Verb Form</th>
<th>Stem</th>
<th>Case</th>
<th>Gender</th>
<th>(Indefinite)</th>
<th>(Indefinite)</th>
</tr>
</thead>
<tbody>
<tr>
<td>af.</td>
<td>H 1psSP, L stem, C3, 3σ</td>
<td>légi-limágaa-kó</td>
<td>(I) who cultivate</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ag.</td>
<td>H 1psSP, L stem, C3, 4σ</td>
<td>légi-limagi síaa-kó</td>
<td>(I) who help cultivate</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ah.</td>
<td>H 1psSP, L stem, C3, 5σ</td>
<td>légi-limagi sísa-kó</td>
<td>(I) who cultivate</td>
<td>intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ai.</td>
<td>H SP, H stem, C3, 3σ</td>
<td>lélí-búlúgaa-kó</td>
<td>(you) who save</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aj.</td>
<td>H SP, H stem, C3, 4σ</td>
<td>lélí-bulugi síaa-kó</td>
<td>(you) who help save</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ak.</td>
<td>H SP, H stem, C3, 5σ</td>
<td>lélí-bulugi sísa-kó</td>
<td>(you) who save</td>
<td>intensively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>al.</td>
<td>H 1psSP, H stem, C3, 3σ</td>
<td>légi-búlúgaa-kó</td>
<td>(I) who save</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>am.</td>
<td>H 1psSP, H stem, C3, 4σ</td>
<td>légi-bulugi síaa-kó</td>
<td>(I) who help save</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>an.</td>
<td>H 1psSP, H stem, C3, 5σ</td>
<td>légi-bulugi sísa-kó</td>
<td>(I) who save</td>
<td>intensively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ao.</td>
<td>H SP, L stem, C4, 4σ</td>
<td>lélí-pátálágaa-kó</td>
<td>(you) who pay</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ap.</td>
<td>H SP, L stem, C4, 5σ</td>
<td>lélí-patalagi síaa-kó</td>
<td>(you) who help pay</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aq.</td>
<td>H SP, L stem, C4, 6σ</td>
<td>lélí-patalagi sísa-kó</td>
<td>(you) who pay</td>
<td>intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ar.</td>
<td>H 1psSP, L stem, C4, 4σ</td>
<td>légi-pátálágaa-kó</td>
<td>(I) who pay</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>as.</td>
<td>H 1psSP, L stem, C4, 5σ</td>
<td>légi-patalagi sía-kó</td>
<td>(I) who help pay</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at.</td>
<td>H 1psSP, L stem, C4, 6σ</td>
<td>légi-patalagi sísa-kó</td>
<td>(I) who pay</td>
<td>intensively indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>au.</td>
<td>H SP, H stem, C4, 4σ</td>
<td>lélí-búlálágaa-kó</td>
<td>(you) who kill</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>av.</td>
<td>H SP, H stem, C4, 5σ</td>
<td>lélí-bulalagi sía-kó</td>
<td>(you) who cause to kill</td>
<td>indiscriminately</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
aw. H SP, H stem, C4, 6σ  léli-bulalagi sísaa-kó  (you) who kill intensively indiscriminately
ax. H 1psSP, H stem, C4, 4σ légi-búlálágaa-kó  (I) who kill indiscriminately
ay. H 1psSP, H stem, C4, 5σ légi-bulalagi sáa-kó  (I) who cause to kill indiscriminately
az. H 1psSP, H stem, C4, 6σ légi-bulalagi sísaa-kó  (I) who kill intensively indiscriminately
ba. H SP, L stem, C12, 2σ léli-bhébhaa-kó  (you) who carry on your backs
bb. H SP, L stem, C12, 3σ léli-bhébhi sáa-kó  (you) who help carry on your backs
bc. H SP, L stem, C12, 4σ léli-bhébhi sísaa-kó  (you) who carry on your backs tightly
bd. H 1psSP, L stem, C12, 2σ légi-bhébhaa-kó  (I) who carry on my back
be. H 1psSP, L stem, C12, 3σ légi-bhébhi sáa-kó  (I) who help carry on my back
bf. H 1psSP, L stem, C12, 4σ légi-bhébhi sísaa-kó  (I) who carry on my back tightly
bg. H SP, H stem, C12, 2σ léli-gádzaa-kó  (you) who flatten
bh. H SP, H stem, C12, 3σ léli-gadzi sáa-kó  (you) who help flatten
bi. H SP, H stem, C12, 4σ léli-gadzi sísaa-kó  (you) who flatten completely
bj. H 1psSP, H stem, C12, 2σ légi-gádzaa-kó  (I) who flatten
bk. H 1psSP, H stem, C12, 3σ légi-gadzi sáa-kó  (I) who help flatten
bl. H 1psSP, H stem, C12, 4σ légi-gadzi sísaa-kó  (I) who flatten completely
Paradigm H: Present Relative: III - VI (with OP)

- In harmony with all other paradigms, the OP continues in the present relative to sponsor a lexical H tone, but the relative paradigm further elects in the general case to surface-express its OP as H (that is, the morpheme-specific OP anti-expression constraint motivated in Chapter 5 §5.4 is not active in this paradigm).
- However, the presence of a depressor consonant in the SP-OP sequence (always the 1ps morpheme) will be seen to interrupt H-expression. The OP patterns here correspond to similar expression effects in the present subjunctive (I) and short perfective (J) to follow.
- To maintain this standard OP-as-H analysis, both relative (pre)prefix lé- and relative SP (lí-, gi-) must sponsor a H independently. We would otherwise have no account for why the relative SP is H at all; an OCP effect—by way of HD-Min—should prevent the SP becoming H in the configuration: *lé-SP-OP- (HØH) should not be expressed HHH.

(46)  Verb Paradigm Template III
Modal stems, with OP

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H SP, L stem, OP, 1σ</td>
<td>lélí-tí-nyaa-kó</td>
</tr>
<tr>
<td>b.</td>
<td>H SP, L stem, OP, 2σ</td>
<td>lélí-tí-límaa-kó</td>
</tr>
<tr>
<td>c.</td>
<td>H SP, L stem, OP, 3σ</td>
<td>lélí-tí-libálaa-kó</td>
</tr>
<tr>
<td>d.</td>
<td>H SP, L stem, OP, 4σ</td>
<td>lélí-tí-libátísaa-kó</td>
</tr>
<tr>
<td>e.</td>
<td>H 1psSP, L stem, OP, 1σ</td>
<td>légi-tí-nyaa-kó</td>
</tr>
<tr>
<td>f.</td>
<td>H 1psSP, L stem, OP, 2σ</td>
<td>légi-tí-límaa-kó</td>
</tr>
</tbody>
</table>

Frequently in Nguni tonology, there is a tone effect termed ‘plateauing’, where a HØH (or HLH) sequence is assimilated to HHH; cf. Cassimjee (1998) for data and domains representation in Xhosa. In Phuthi, this pattern essentially does not occur, however, in the present relative paradigm for the first time, the H status of the OP corresponds to the H status of the preceding SP:

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g. H 1psSP, L stem, OP, 3σ  légi-ti-libálaa-kó  (I) who forget them
h. H 1psSP, L stem, OP, 4σ  légi-tí-libátísaa-kó  (I) who delay them
i. H SP, H stem, OP, 1σ  lélí-tí-phaa-kó  (you) who give them
j. H SP, H stem, OP, 2σ  lélí-tí-bónaa-kó  (you) who see them
k. H SP, H stem, OP, 3σ  lélí-tí-bónísaa-kó  (you) who show them
l. H SP, H stem, OP, 4σ  lélí-tí-sébétísaa-kó  (you) who use them
m. H 1psSP, H stem, OP, 1σ  légi-tí-phaa-kó  56  (I) who give them
n. H 1psSP, H stem, OP, 2σ  légi-tí-bónaa-kó  (I) who sees them
o. H 1psSP, H stem, OP, 3σ  légi-tí-bónísaa-kó  (I) who show them
p. H 1psSP, H stem, OP, 4σ  légi-tí-sébétísaa-kó  (I) who use them

Paradigm H: Present Relative

- As before, no data with 1psSP and a 1psOP is possible.

(47) Verb Paradigm Template IV

Modal stems, with 1psOP

a. H SP, L stem, 1psOP, 1σ  lélí-gi -nyáa-kó  (you) who excrete me
b. H SP, L stem, 1psOP, 2σ  lélí-gi-límaa-kó  (you) who cultivate me

(46b) lélí-tí-límaa-kó must be compared with (46f) légi-tí-límaa-kó. The high OP -tí- in (46b) appears to be an instantiation of plateauing: *-lí-tí-límaa- (with standardly anti-expressing OP in a toneless/low stem) is expressed as -lí-tí-límaa- (now ‘plateaued’). There is, however, a much more straightforward analysis without additional theoretical machinery (and without inventing yet another constraint to override the *Express_OP): (1) the OP in the present relative is always surface-H, optimally (cf. also paradigms C, H, I, J); (2) the non-H OP -tí- in (46f) is a result of Low Domain minimality (LD-Mín), that is, a single rightwards extension by the depressor SP-triggered LD (cf. Chapter 7 §7.8.1.9 for the properties of LD-Mín in verb prefixes). LD-Mín operates here (but fails in comparable toneless/low stems in §7.8.1.9) precisely because the toneless/low-vs.-H lexical tone distinction is suppressed in the present relative paradigm.

56 Despite the LD minimality effect in footnote 55, this ‘plateauing’ effect fails, unsurprisingly, in the 1-σ stem (46m), as the OP is in this case also the Head (here: the antepenult σ).
c. H SP, L stem, 1psOP, 3σ  lélí-gí-libálaa-kó  (you) who forget me

d. H SP, L stem, 1psOP, 4σ  lélí-gí-libátísaa-kó  (you) who delay me

e. H SP, H stem, 1psOP, 1σ  lélí-gí-pháa-kó  (you) who give me

f. H SP, H stem, 1psOP, 2σ  lélí-gí-bónaa-kó  (you) who see me

g. H SP, H stem, 1psOP, 3σ  lélí-gí-bónísaa-kó  (you) who show me

h. H SP, H stem, 1psOP, 4σ  lélí-gí-sebétísaa-kó  (you) who use me

Paradigm H: Present Relative

(48) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. H SP, L stem, C1, OP, 1σ  —

b. H SP, L stem, C1, OP, 2σ  lélí-tí-bhekáa-kó  57  (you) who look at them

c. H SP, L stem, C1, OP, 3σ  lélí-tí-vuíísaa-kó  (you) who help open them

d. H SP, L stem, C1, OP, 4σ  lélí-tí-bhekísísaa-kó  (you) who look at me intensely

e. H 1psSP, L stem, C1, OP, 2σ  légi-tí-bhekáa-kó  (I) who look at them

f. H 1psSP, L stem, C1, OP, 3σ  légi-tí-vuíísaa-kó  (I) who help them open

g. H 1psSP, L stem, C1, OP, 4σ  légi-tí-bhekísísaa-kó  (I) who look at them intensely

h. H SP, H stem, C1, OP, 1σ  lélí-tí-dl̓aa-kó  (you) who eat them

i. H SP, H stem, C1, OP, 2σ  lélí-tí-vusáa-kó  (you) who awaken them

j. H SP, H stem, C1, OP, 3σ  lélí-tí-vúsísaa-kó  (you) who help awaken them

57 For these stems bearing depressor consonants (template V), preceded by a non-1ps OP, all other things being equal, we expect the OPs in (48b-d) and in (48i-k) to be expressed H. And they do express H, confirming that the SP-OP morpheme complex is separate from the lexical stem.
k. H SP, H stem, C1, OP, 4σ léli-tí-vísísísaa-kó (you) who understand them

l. H 1psSP, H stem, C1, OP, 1σ légi-tí-dlaa-kó (I) who eat them

m. H 1psSP, H stem, C1, OP, 2σ légi-tí-vúsáa-kó (I) who awaken them

n. H 1psSP, H stem, C1, OP, 3σ légi-tí-vúsísísaa-kó (I) who help awaken them

o. H 1psSP, H stem, C1, OP, 4σ légi-tí-vísísísaa-kó (I) who understand them

p. H SP, L stem, C2, OP, 2σ léli-tí-ládzaa-kó (you) who fetch them

q. H SP, L stem, C2, OP, 3σ léli-tí-ladzeláa-kó (you) who follow them

r. H SP, L stem, C2, OP, 4σ léli-tí-ladzeláa-kó (you) who pursue them

s. H 1psSP, L stem, C2, OP, 2σ légi-tí-ládzaa-kó (I) who fetch them

t. H 1psSP, L stem, C2, OP, 3σ légi-tí-ladzeláa-kó (I) who follow them

u. H 1psSP, L stem, C2, OP, 4σ légi-tí-ladzeláa-kó (I) who pursue them

v. H SP, H stem, C2, OP, 2σ léli-tí-tshégaa-kó (you) who buy them

w. H SP, H stem, C2, OP, 3σ léli-tí-tshegi sáa-kó (you) who sell them

x. H SP, H stem, C2, OP, 4σ léli-tí-tshegi sísaa-kó (you) who help sell them

y. H 1psSP, H stem, C2, OP, 2σ légi-tí-tshégaa-kó (I) who buy them

z. H 1psSP, H stem, C2, OP, 3σ légi-tí-tshegi sáa-kó (I) who sell them

aa. H 1psSP, H stem, C2, OP, 4σ légi-tí-tshegi sísaa-kó (I) who help sell them

ab. H SP, L stem, C3, OP, 3σ léli-tí-límágaa-kó (you) who cultivate them indiscriminately

ac. H SP, L stem, C3, OP, 4σ léli-tí-límagi sáa-kó (you) who help them cultivate indiscriminately
ad. H SP, L stem, C3, OP, 5σ lēlī-tī-limagisí-saa-kō (you) who cultivate them intensively

ae. H 1psSP, L stem, C3, OP, 3σ lēgi-tī-límā-ga-kō (I) who cultivate them indiscriminately

af. H 1psSP, L stem, C3, OP, 4σ lēgi-tī-limagi sāa-kō (I) who help them cultivate indiscriminately

ag. H 1psSP, L stem, C3, OP, 5σ lēgi-tī-limagi sísaa-kō (I) who cultivate them intensively indiscriminately

ah. H SP, H stem, C3, OP, 3σ lēlī-tī-būlū-ga-kō (you) who save them

ai. H SP, H stem, C3, OP, 4σ lēlī-tī-bulugi sāa-kō (you) who help save them

aj. H SP, H stem, C3, OP, 5σ lēlī-tī-bulugi sísaa-kō (you) who save them intensively

ak. H 1psSP, H stem, C3, OP, 3σ lēgi-tī-būlū-ga-kō (I) who save them

al. H 1psSP, H stem, C3, OP, 4σ lēgi-tī-bulugi sāa-kō (I) who help save them

am. H 1psSP, H stem, C3, OP, 5σ lēgi-tī-bulugi sísaa-kō (I) who save them intensively

an. H SP, L stem, C4, OP, 4σ lēlī-tī-pātalā-ga-kō (you) who pay them indiscriminately

ao. H SP, L stem, C4, OP, 5σ lēlī-tī-patalagi sāa-kō (you) who help pay them indiscriminately

ap. H SP, L stem, C4, OP, 6σ lēlī-tī-patalagi sísaa-kō (you) who pay them intensively indiscriminately

aq. H 1psSP, L stem, C4, OP, 4σ lēgi-tī-pātalā-ga-kō (I) who pay them indiscriminately

ar. H 1psSP, L stem, C4, OP, 5σ lēgi-tī-patalagi sāa-kō (I) who help pay them indiscriminately
as. H 1psSP, L stem, C4, OP, 6σ légi-tí-patalagi sísaa-kó (I) who pay them intensively indiscriminately
at. H SP, H stem, C4, OP, 4σ lélí-tí-búlálágaa-kó (you) who kill indiscriminately
au. H SP, H stem, C4, OP, 5σ lélí-tí-bulalagi sáa-kó (you) who cause to kill indiscriminately
av. H SP, H stem, C4, OP, 6σ lélí-tí-bulalagi sísaa-kó (you) who kill intensively indiscriminately
aw. H 1psSP, H stem, C4, OP, 4σ légi-tí-búlálágaa-kó (I) who kill indiscriminately
ax. H 1psSP, H stem, C4, OP, 5σ légi-tí-bulalagi sáa-kó (I) who cause to kill indiscriminately
ay. H 1psSP, H stem, C4, OP, 6σ légi-tí-bulalagi sísaa-kó (I) who kill intensively indiscriminately
az. H SP, L stem, C12, OP, 2σ lélí-tí-bhébhaa-kó (you) who carry them on the back
ba. H SP, L stem, C12, OP, 3σ lélí-tí-bhébhi sáa-kó (you) who help carry them on the back
bb. H SP, L stem, C12, OP, 4σ lélí-tí-bhébhi sísaa-kó (you) who carry them on the back tightly
bc. H 1psSP, L stem, C12, OP, 2σ légi-tí-bhébhaa-kó (I) who carry them on the back
bd. H 1psSP, L stem, C12, OP, 3σ légi-tí-bhébhi sáa-kó (I) who help carry them on the back
be. H 1psSP, L stem, C12, OP, 4σ légi-tí-bhébhi sísaa-kó (I) who carry them on the back tightly
bf. H SP, H stem, C12, OP, 2σ lélí-tí-gúdzaa-kó (you) who flatten them
bg. H SP, H stem, C12, OP, 3σ lélí-tí-gadzi sáa-kó (you) who help flatten them
Paradigm H: Present Relative

As in template IV of this paradigm, it is unfortunate that no data with both 1psSP and 1psOP is possible, in order to compare a double-depressor effect.

(49) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP

a. H SP, L stem, C1, 1psOP, 1σ

b. H SP, L stem, C1, 1psOP, 2σ

c. H SP, L stem, C1, 1psOP, 3σ

d. H SP, L stem, C1, 1psOP, 4σ

e. H SP, H stem, C1, 1psOP, 1σ

f. H SP, H stem, C1, 1psOP, 2σ

g. H SP, H stem, C1, 1psOP, 3σ

h. H SP, H stem, C1, 1psOP, 4σ
| i. | H SP, L stem, C2, 1psOP, 2σ | lélí-gi-ládzaa-kó | (you) who fetch me |
| j. | H SP, L stem, C2, 1psOP, 3σ | lélí-gi-ladzeláa-kó | (you) who follow me |
| k. | H SP, L stem, C2, 1psOP, 4σ | lélí-gi-ladze llaa-kó | (you) who pursue me |
| l. | H SP, H stem, C2, 1psOP, 2σ | lélí-gi-tshégaa-kó | (you) who buy me |
| m. | H SP, H stem, C2, 1psOP, 3σ | lélí-gi-tshegií sáa-kó | (you) who sell me |
| n. | H SP, H stem, C2, 1psOP, 4σ | lélí-gi-tshegiísaa-kó | (you) who help me sell |
| o. | H SP, L stem, C3, 1psOP, 3σ | lélí-gi-límágaal-kó | (you) who cultivate me indiscriminately |
| p. | H SP, L stem, C3, 1psOP, 4σ | lélí-gi-limagií sáa-kó | (you) who help me cultivate indiscriminately |
| q. | H SP, L stem, C3, 1psOP, 5σ | lélí-gi-limagiísaa-kó | (you) who cultivate me intensively indiscriminately |
| r. | H SP, H stem, C3, 1psOP, 3σ | lélí-gi-bálúgaal-kó | (you) who save me |
| s. | H SP, H stem, C3, 1psOP, 4σ | lélí-gi-bulugií sáa-kó | (you) who help save me |
| t. | H SP, H stem, C3, 1psOP, 5σ | lélí-gi-bulugiísaa-kó | (you) who save me intensively |
| u. | H SP, L stem, C4, 1psOP, 4σ | lélí-gi-pátálágaal-kó | (you) who pay me indiscriminately |
| v. | H SP, L stem, C4, 1psOP, 5σ | lélí-gi-patalagíí sáa-kó | (you) who help pay me indiscriminately |
| w. | H SP, L stem, C4, 1psOP, 6σ | lélí-gi-patalagiísaa-kó | (you) who pay me intensively indiscriminately |
| x. | H SP, H stem, C4, 1psOP, 4σ | lélí-gi- bálálágaal-kó | (you) who kill me indiscriminately |
| y. | H SP, H stem, C4, 1psOP, 5σ | lélí-gi-bulalagií sáa-kó | (you) who cause me to kill indiscriminately |
z. H SP, H stem, C4, 1psOP, 6σ  \( \text{lélé-gi-bulalagi sísaa-kó} \) (you) who kill me intensively indiscriminately

aa. H SP, L stem, C12, 1psOP, 2σ  \( \text{lélé-gi-bhébhaa-kó} \) (you) who carry me on the back

ab. H SP, L stem, C12, 1psOP, 3σ  \( \text{lélé-gi-bhébhi sáa-kó} \) (you) who help carry me on the back

ac. H SP, L stem, C12, 1psOP, 4σ  \( \text{lélé-gi-bhébhi sísaa-kó} \) (you) who carry me on the back tightly

ad. H SP, H stem, C12, 1psOP, 2σ  \( \text{lélé-gi-gádzaa-kó} \) (you) who flatten me

ae. H SP, H stem, C12, 1psOP, 3σ  \( \text{lélé-gi-gádzi sáa-kó} \) (you) who help flatten me

af. H SP, H stem, C12, 1psOP, 4σ  \( \text{lélé-gi-gádzi sísaa-kó} \) (you) who flatten me completely

ag. H SP, H stem, C123, 1psOP, 5σ  \( \text{lélé-gi-gádzagi sísaa-kó} \) (you) who flatten me indiscriminately intensively

[turn to the next page for Appendix A, Paradigm I: Present Subjunctive long form]
Paradigm I: Present Subjunctive (long form)

- \( \{ \text{SP} \}_{\text{subjunctive SP}} + (\text{OP}) + \{ \text{ROOT} (+\text{suffixes}) + } \}_{\text{stem}} + -\hat{\epsilon}_{\text{subjunctive suffix}} \)

The tone properties of the present subjunctive have been examined in Chapter 6 §6.2.2.2. As in the preceding two paradigms G (present participial) and H (present relative), the rightwards H target in the subjunctive(-without-OP) is the antepentult syllable.

- The subjunctive(-without-OP)—as with the present relative—appears to be unique in having a distinct ultima H tone. Unlike the (even though not catalogued in this work) present relative whose short (phrase-medial) form lacks the suffix -\( \text{kpo} \), the present subjunctive ultima cannot be morphologically syncopated.

- As in the preceding paradigm H (present relative), the lexical tone classes H vs. toneless/low are neutralised in the present subjunctive (-without-OP) as well; thus lexical ‘H’ stems—only in (50-51)—appear with their regular tone sponsor syllable not underlined but in italics. I continue to provide both sets of stems here, for comparison.

- As in the preceding two paradigms (G and H), all SPs in the present subjunctive (both -with-OPs and -without-OPs) are grammatically H. Thus, beyond the first set of template I forms (50a-x), non-depressor SP data is provided only with the 2pp SP. All subjunctive items are, however, also provided with the depressor-bearing 1ps SP (sets IV, VI).

- Sunjunctive data here is glossed ‘that you X’, where ‘you’ is the 2pp SP, as in previous paradigms in this appendix, and where ‘that’ indicates the optative or hortative nature of the subjunctive (that is, with the pragmatic content of an indirect command or wish).

- Other than the matrix clause use of the subjunctive to encode a hortative expression (‘let him/her X’, ‘may you X’, etc), subjunctives are otherwise always used in a syntactic subordinate clause (including subjunctives which respond to the grammatical mood requirement of some conjunctions (subordinating conjunctions), cf. Chapter 2 §2.2.5).

\[(50) \quad \text{Verb Paradigm Template I} \]

\textbf{Modal stems}

\begin{itemize}
  \item a. H 2ppSP, L stem, 1\( \sigma \) \quad \text{lîf-t-\( \epsilon \)} \quad \text{that you come}
  \item b. H 2ppSP, L stem, 2\( \sigma \) \quad \text{lî-\text{lîm}-\( \epsilon \)} \quad \text{that you cultivate}
  \item c. H 2ppSP, L stem, 3\( \sigma \) \quad \text{lî-\text{lîbaal}-\( \epsilon \)} \quad \text{that you forget}
  \item d. H 2ppSP, L stem, 4\( \sigma \) \quad \text{lî-\text{lîbátiis}-\( \epsilon \)} \quad \text{that you delay}
\end{itemize}
e. H 3ppSP, L stem, 1σ  báá-t-e  that they come
f. H 3ppSP, L stem, 2σ  bá-lífím-e  that they cultivate
g. H 3ppSP, L stem, 3σ  bá-líbaal-é  that they forget
h. H 3ppSP, L stem, 4σ  bá-líbátiis-é  that they delay
i. H 1psSP, L stem, 1σ  gií-t-e  that I come
j. H 1psSP, L stem, 2σ  gi-lífím-e  that I cultivate
k. H 1psSP, L stem, 3σ  gi-líbaal-é  that I forget
l. H 1psSP, L stem, 4σ  gi-líbátiis-é  that I delay
m. H 2ppSP, H stem, 1σ  líí-ph-e  that you give
n. H 2ppSP, H stem, 2σ  lí-bóó-n-e  that you see
o. H 2ppSP, H stem, 3σ  lí-bóniis-é  that you show
p. H 2ppSP, H stem, 4σ  lí-sébátiis-é  that you use
q. H 3ppSP, H stem, 1σ  báá-ph-e  that they give
r. H 3ppSP, H stem, 2σ  bá-bóó-n-e  that they see
s. H 3ppSP, H stem, 3σ  bá-bóniis-é  that they show
t. H 3ppSP, H stem, 4σ  bá-sébátiis-é  that they use
u. H 1psSP, H stem, 1σ  gií-ph-e  that I give
v. H 1psSP, H stem, 2σ  gi-bóó-n-e  that I see
w. H 1psSP, H stem, 3σ  gi-bóniis-é  that I show
x. H 1psSP, H stem, 4σ  gi-sébátiis-é  that I use

58 The data (50m-x)—and also (51i-p), etc—confirms that lexical ‘H’ stems do not in fact in any way parse what is in all other paradigms in this appendix the active lexical H—except the present relatives in Appendix H. In order to keep track of these elsewhere lexically H syllables, they are provided here in italics, in keeping with the practice of Chapter 6 §6.2.2.2 and the preceding appendix.

59 Data of the pattern in (50w), including (50aa, 50al) would threaten to reject the unincorporation analysis pursued in Chapter 7 §7.7.1 if the H stems under consideration here
Paradigm I: Present Subjunctive

(51) Verb Paradigm Template II
Breathy / depressor stems

a. H SP, L stem, C1, 1σ —

b. H SP, L stem, C1, 2σ lí-bheék-é that you look at

c. H SP, L stem, C1, 3σ lí-bhekíis-é that you look at

d. H SP, L stem, C1, 4σ lí-bhekíisíis-é that you look at

intensely

e. H 1psSP, L stem, C1, 1σ —

f. H 1psSP, L stem, C1, 2σ gi-bheék-é 60 that I look at

g. H 1psSP, L stem, C1, 3σ gi-bhekíis-é that I look at

intensely

h. H 1psSP, L stem, C1, 4σ gi-bhekíisíis-é that I look at

intensely

i. H SP, H stem, C1, 1σ líí-dl-é that you eat

j. H SP, H stem, C1, 2σ lí-vuím-é that you harvest

k. H SP, H stem, C1, 3σ lí-vunís-é that you help harvest

l. H SP, H stem, C1, 4σ lí-vunísíis-é that you harvest

intensively

were considered to retain their lexical H tone (I have however claimed that the lexical stem H is suppressed in the present subjunctive paradigm). In such cases as gi-bónís-é (50w), the SP H domain would then be expressed on the stem σ1 -bó-. But the lexical stem H could not then be unincorporated on σ2, given that the domain does not extend rightwards onto stem σ2. Effectively, the lexical H would be unparsed (while respecting domain structure requirements), thus countermanding the proposed unincorporation analysis, which requires at least two consecutive stem moras available for assignment to each of the two competing HDs (prefix HD, stem HD). (50w,aa,al) may thus support the proposed suppression of lexical stem Hs in this paradigm. 60 (51b-d,i-l), and below (51q-s,w-y,ac-ae,ai-ak,ao-aq,au-aw,ba-bc,bg-bi,bm), confirm that the subjunctive SP must be lexically H, and cannot be fused into the stem LD. That is, the modal (non-depressed) 2pp SP expresses its H separately from the stem H. But where the subjunctive SP is the depressed 1ps (51f-h,n-p,etc), it does indeed surface-express L (depressed, and non-H), indicating in turn that the SP in these cases does fuse onto the stem HD (and LD). Cf. footnote 67 below for distinct data that provides evidence for the H OP in this subjunctive paradigm similarly not being fusible with the stem H-domain.

954
m. H 1psSP, H stem, C1, 1σ

that I eat

n. H 1psSP, H stem, C1, 2σ

that I harvest

o. H 1psSP, H stem, C1, 3σ

that I help harvest

p. H 1psSP, H stem, C1, 4σ

that I harvest intensively

q. H SP, L stem, C2, 2σ

that you fetch

r. H SP, L stem, C2, 3σ

that you follow

s. H SP, L stem, C2, 4σ

that you pursue

t. H 1psSP, L stem, C2, 2σ

that I fetch

u. H 1psSP, L stem, C2, 3σ

that I follow

v. H 1psSP, L stem, C2, 4σ

that I pursue

w. H SP, H stem, C2, 2σ

that you buy

x. H SP, H stem, C2, 3σ

that you sell

y. H SP, H stem, C2, 4σ

that you help sell

z. H 1psSP, H stem, C2, 2σ

that I buy

aa. H 1psSP, H stem, C2, 3σ

that I sell

ab. H 1psSP, H stem, C2, 4σ

that I help sell

ac. H SP, L stem, C3, 3σ

that you cultivate indiscriminately

ad. H SP, L stem, C3, 4σ

that you help cultivate indiscriminately

ae. H SP, L stem, C3, 5σ

that you cultivate intensively indiscriminately

af. H 1psSP, L stem, C3, 3σ

that I cultivate indiscriminately
ag. H 1psSP, L stem, C3, 4σ  

\[\text{gi-límágiis-é}\]

that I help cultivate indiscriminately

ah. H 1psSP, L stem, C3, 5σ  

\[\text{gi-límagisís-é}\]

that I cultivate intensively indiscriminately

ai. H SP, H stem, C3, 3σ  

\[\text{lí-búluug-é}\]

that you save

aj. H SP, H stem, C3, 4σ  

\[\text{lí-búlúgiis-é}\]

that you help save

ak. H SP, H stem, C3, 5σ  

\[\text{lí-bulugisís-é}\]

that you save intensively

al. H 1psSP, H stem, C3, 3σ  

\[\text{gi-búluug-é}\]

that I save

am. H 1psSP, H stem, C3, 4σ  

\[\text{gi-búlúgiis-é}\]

that I help save

an. H 1psSP, H stem, C3, 5σ  

\[\text{gi-búlúgiisís-é}\]

that I save intensively

ao. H SP, L stem, C4, 4σ  

\[\text{lí-pátálaag-é}\]

that you pay indiscriminately

ap. H SP, L stem, C4, 5σ  

\[\text{lí-pátálágiis-é}\]

that you help pay indiscriminately

aq. H SP, L stem, C4, 6σ  

\[\text{lí-patalagisís-é}\]

that you pay intensively indiscriminately

ar. H 1psSP, L stem, C4, 4σ  

\[\text{gi-pátálaag-é}\]

that I pay indiscriminately

as. H 1psSP, L stem, C4, 5σ  

\[\text{gi-pátálágiis-é}\]

that I help pay indiscriminately

at. H 1psSP, L stem, C4, 6σ  

\[\text{gi-pátalagisís-é}\]

that I pay intensively indiscriminately

au. H SP, H stem, C4, 4σ  

\[\text{lí-búlálaag-é}\]

that you kill indiscriminately

av. H SP, H stem, C4, 5σ  

\[\text{lí-búlúlágiis-é}\]

that you cause to kill indiscriminately

aw. H SP, H stem, C4, 6σ  

\[\text{lí-bulúlagisís-é}\]

that you kill intensively indiscriminately

ax. H 1psSP, H stem, C4, 4σ  

\[\text{gi-búlálaag-é}\]

that I kill indiscriminately
ay. H 1psSP, H stem, C4, 5σ  gi-búlálágiis-é  that I cause to kill indiscriminately
az. H 1psSP, H stem, C4, 6σ  gi-búlalagisís-é  that I kill intensively indiscriminately
ba. H SP, L stem, C12, 2σ  lí-bheébh-e  that you carry on your backs
bb. H SP, L stem, C12, 3σ  lí-bhébhsiís-é  that you help carry on your backs
bc. H SP, L stem, C12, 4σ  lí-bhébhsís-é  that you carry on your backs tightly
bd. H 1psSP, L stem, C12, 2σ  gi-bhéébh-e  that I carry on my back
be. H 1psSP, L stem, C12, 3σ  gi-bhébhsiís-é  that I help carry on my back
bf. H 1psSP, L stem, C12, 4σ  gi-bhébhsís-é  that I carry on my back tightly
bg. H SP, H stem, C12, 2σ  lí-gaádz-e  that you flatten
bh. H SP, H stem, C12, 3σ  lí-gádziís-é  that you help flatten completely
bi. H SP, H stem, C12, 4σ  lí-gádziís-é  that you flatten completely
bj. H 1psSP, H stem, C12, 2σ  gi-gaádz-e  that I flatten
bk. H 1psSP, H stem, C12, 3σ  gi-gádziís-é  that I help flatten completely
bl. H 1psSP, H stem, C12, 4σ  gi-gádziís-é  that I flatten completely
bm. H SP, H stem, C123, 5σ  lí-gádzagiís-é  that you flatten indiscriminately intensively
bn. H 1psSP, H stem, C123, 5σ  gi-gádzagiís-é  that I flatten indiscriminately intensively
Paradigm I: Present Subjunctive

(52)  

Verb Paradigm Template III

Modal stems, with OP 63

a. H 2ppSP, L stem, OP, 1σ  
   lí-tíi-ny-é 64  
   that you excrete them

b. H 2ppSP, L stem, OP, 2σ  
   lí-tí-iim-é  
   that you cultivate them

c. H 2ppSP, L stem, OP, 3σ  
   lí-tí-libáal-é 65  
   that you forget them

d. H 2ppSP, L stem, OP, 4σ  
   lí-tí-libátís-é  
   that you delay them

e. H 1psSP, L stem, OP, 1σ  
   gi-tíi-ny-é  
   that I excrete them

f. H 1psSP, L stem, OP, 2σ  
   gi-tí-iim-é 66  
   that I cultivate them

g. H 1psSP, L stem, OP, 3σ  
   gi-tí-libáal-é  
   that I forget them

h. H 1psSP, L stem, OP, 4σ  
   gi-tí-libátís-é  
   that I delay them

i. H 2ppSP, H stem, OP, 1σ  
   lí-túi-ph-é  
   that you give them

j. H 2ppSP, H stem, OP, 2σ  
   lí-tí-bón-é 67  
   that you see them

---

63 As analysed in Chapter 6 §6.2.2.2, the subjunctive paradigm has the rare property of switching tone patterns in its stems when they are collocated with an object prefix (OP), that is, the subjunctive OP-bearing stems in (52-55) invoke a σ2-to-ultima pattern, as found in the imperative (cf. paradigm K to follow, and Chapter 6 §6.3.3.1, and also §6.2.2.2 footnote 48), which is not the pattern seen immediately above in (50-51) where the lexical stem tone distinction was systematically neutralised.

64 In this subjunctive-with-OP configuration, the general pattern is: both SPs and OPs are always expressed surface-H (as long as they are non-breathy, cf. by contrast depressed OP in (53b), etc.). As for toneless stems, the stem is entirely H, save the σ1 position. In H stems, however, every stem syllable is H, including the σ1 position. This is a σ2 paradigm, so toneless stems are entirely H save the σ1 position, cf. Chapter 6 §6.3.3.1.

65 In keeping with the practise established in §6.3.3.1, the σ2 position in H stems is marked as a sponsor syllable, given that it is the leftmost boundary of the σ2-to-ultima HD. Thus, the ‘H’ subjunctive ultima syllable in the non-OP-bearing stems is no longer a sponsor here, because in this grammatical stem tone pattern, it is not necessarily the ultima that clearly triggers the σ2-to-ultima H in this HD, but is rather either the leftmost σ2 or the rightmost ultima syllable, and I have chosen the former in consistency with the earlier analysis.

66 In toneless/low stems, the OP HD cannot fuse onto a penult stem HD (as in the present negative, cf. Chapter 7 §7.8.1), thus obliging the OP to be surface-H when the SP is depressed.

67 In this σ2-to-ultima grammatical pattern, the lexical H of H stems is again active, and hence underlined separately from the subjunctive σ2 H tone. The distinction is not clear in (52i) because the H stem tone there serves a lexical and grammatical H purpose; but in (52j-l) the stem lexical H in σ1 is clear (cf. footnote 60). A downstep precedes the OP (cf. Chapter 7 §7.6.3.2).
k. H 2ppSP, H stem, OP, 3σ \[\text{lǐ}-\text{tí}-\text{bōnūs-ē}\] that you show them
l. H 2ppSP, H stem, OP, 4σ \[\text{lǐ}-\text{tí}-\text{sēbētīs-ē}\] that you use them
m. H 1psSP, H stem, OP, 1σ \[\text{gī}-\text{tí}-\text{ph-ē}\] that I give them
n. H 1psSP, H stem, OP, 2σ \[\text{gī}-\text{tí}-\text{bōon-ē}\]
   \[68\] that I see them
o. H 1psSP, H stem, OP, 3σ \[\text{gī}-\text{tí}-\text{bōnīs-ē}\] that I show them
p. H 1psSP, H stem, OP, 4σ \[\text{gī}-\text{tí}-\text{sēbētīs-ē}\] that I use them

**Paradigm I: Present Subjunctive**

(53) **Verb Paradigm Template IV**

**Modal stems, with 1ps OP**

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| a. | H SP, L stem, 1psOP, 1σ | \[\text{lī-gīi-ny-ē}\] | that you excrete me
| b. | H SP, L stem, 1psOP, 2σ | \[\text{lī-gī-liim-ē}\] | that you cultivate me
| c. | H SP, L stem, 1psOP, 3σ | \[\text{lī-gī-liˈbāal-ē}\] | that you forget me
| d. | H SP, L stem, 1psOP, 4σ | \[\text{lī-gī-liˈbātīs-ē}\] | that you delay me
| e. | H SP, H stem, 1psOP, 1σ | \[\text{lī-gīi-ph-ē}\] | that you give me
| f. | H SP, H stem, 1psOP, 2σ | \[\text{lī-gī-bōon-ē}\]
   \[69\] | that you see me
| g. | H SP, H stem, 1psOP, 3σ | \[\text{lī-gī-bōnīs-ē}\] | that you show me
| h. | H SP, H stem, 1psOP, 4σ | \[\text{lī-gī-sēbētīs-ē}\] | that you use me

---

68 In (52n-p), \[\text{gī-ˈtī-}\] is parsed ‘pre’-fusion \[\text{[gī]}-[ˈtī]-\], domain as \[\text{[gī-ˈtī-]}\], not *[\text{gī-ˈtf-}]*. which would be fatal expression. Exactly as with the present negative (Chapter 7 §7.8.1.9), in the present subjunctive-with-OP here the SP and OP HDs must fuse with each other, and then also with the following H stem, in order to provide the inherently depressed H SP, and the ‘subsequently’ L OP (achieved by LD-MIN) with an expression domain. (52m) is an exception to this pattern, because a depressed H antepenult cannot extend onto both moras of a long penult syllable to overcome the antepenult clash problem (just the first mora is H). (52n) contrasts with the toneless/L stems in (52f-h), where the depressed SP-OP sequence cannot fuse with the stem.

69 (53f-h) display the regular unincorporated sponsors effect: the depressed 1ps H OP is expressed (and parsed) on stem-σ1; in (53f), this takes place on just the first mora of the stem domain. Again as in the present negative paradigm (Chapter 7 §7.8.1.8), a depressed 1ps OP does not extend its LD leftwards onto the SP.
Paradigm I: Present Subjunctive

(54) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. H SP, L stem, C1, OP, 1σ —

b. H SP, L stem, C1, OP, 2σ lí-tí-bheek-é — that you look at them

c. H SP, L stem, C1, OP, 3σ lí-tí-bhekís-é — that you help them look at

d. H SP, L stem, C1, OP, 4σ lí-tí-bhekísís-é — that you look at them intensely

e. H 1psSP, L stem, C1, OP, 1σ —

f. H 1psSP, L stem, C1, OP, 2σ gi-tí-bheek-é 70 — that I look at them

g. H 1psSP, L stem, C1, OP, 3σ gi-tí-bhekís-é — that I help them look at

h. H 1psSP, L stem, C1, OP, 4σ gi-tí-bhekísís-é — that I look at them intensely

i. H SP, H stem, C1, OP, 1σ lí-tíi-dl-é — that you eat them

j. H SP, H stem, C1, OP, 2σ lí-tí-vuun-é — that you harvest them

k. H SP, H stem, C1, OP, 3σ lí-tí-vunís-é — that you help harvest them

l. H SP, H stem, C1, OP, 4σ lí-tí-vunísís-é — that you harvest them intensively

m. H 1psSP, H stem, C1, OP, 1σ gi-tíi-dl-é — that I eat them

n. H 1psSP, H stem, C1, OP, 2σ gi-tí-vuun-é 71 — that I harvest them

o. H 1psSP, H stem, C1, OP, 3σ gi-tí-vunís-é — that I help harvest them

p. H 1psSP, H stem, C1, OP, 4σ gi-tí-vunísís-é — that I harvest them intensively

70 Again, there is no LD-MIN effect from the depressed SP onto the OP, which would in turn necessitate fusing both onto the stem (to find an expression site). In (52f-g), the modal toneless/L stems are grammatically depressed (cf. arguments in Chapter 7 §7.8.1.3 - 7.8.1.5); here, in (54f-h), the toneless/L stems are lexically depressed (C1 stems).

71 (54n-p) contrast tonally with (52n-p) above: unlike that earlier data, here the OP is expressed H, thus not merged with the stem HD, as these stems contain lexical L (C1 stems).
q. H SP, L stem, C2, OP, 2σ lî-tî-laadz-é that you fetch them

r. H SP, L stem, C2, OP, 3σ lî-tî-ladzeel-é that you follow them

s. H SP, L stem, C2, OP, 4σ lî-tî-ladzel:l-é that you pursue them

t. H 1psSP, L stem, C2, OP, 2σ gi-tî-laadz-é that I fetch them

u. H 1psSP, L stem, C2, OP, 3σ gi-tî-ladzeel-é that I follow them

v. H 1psSP, L stem, C2, OP, 4σ gi-tî-ladzel:l-é that I pursue them

w. H SP, H stem, C2, OP, 2σ lî-tî-tsheeg-é that you buy them

x. H SP, H stem, C2, OP, 3σ lî-tî-tshegi:s-é that you sell them

y. H SP, H stem, C2, OP, 4σ lî-tî-tshegi:sís-é that you help sell them

z. H 1psSP, H stem, C2, OP, 2σ gi-tî-tsheeg-é that I buy them

aa. H 1psSP, H stem, C2, OP, 3σ gi-tî-tshegi:s-é that I sell them

ab. H 1psSP, H stem, C2, OP, 4σ gi-tî-tshegi:sís-é that I help sell them

ac. H SP, L stem, C3, OP, 3σ lî-tî-limaag-é that you cultivate them indiscriminately

ad. H SP, L stem, C3, OP, 4σ lî-tî-limagiis-é that you help cultivate them indiscriminately

ae. H SP, L stem, C3, OP, 5σ lî-tî-limagisfís-é that you cultivate them indiscriminately intensively

af. H 1psSP, L stem, C3, OP, 3σ gi-tî-limaag-é that I cultivate them indiscriminately

ag. H 1psSP, L stem, C3, OP, 4σ gi-tî-limagiis-é that I help cultivate them indiscriminately

ah. H 1psSP, L stem, C3, OP, 5σ gi-tî-limagisfís-é that I cultivate them indiscriminately intensively
| ai. | H SP, H stem, C3, OP, 3σ | li-tí-buluug-é | that you save them |
| aj. | H SP, H stem, C3, OP, 4σ | li-tí-bulugiis-é | that you help save them |
| ak. | H SP, H stem, C3, OP, 5σ | li-tí-bulugisís-é | that you save them intensively |
| al. | H 1psSP, H stem, C3, OP, 3σ | gi-tí-buluug-é | that I save them |
| am. H 1psSP, H stem, C3, OP, 4σ | gi-tí-bulugiis-é | that I help save them |
| an. H 1psSP, H stem, C3, OP, 5σ | gi-tí-bulugisís-é | that I save them intensively |
| ao. H SP, L stem, C4, OP, 4σ | li-tí-patalaag-é | that you pay them indiscriminately |
| ap. H SP, L stem, C4, OP, 5σ | li-tí-patalagiis-é | that you help pay them indiscriminately |
| aq. H SP, L stem, C4, OP, 6σ | li-tí-patalagisís-é | that you pay them intensively indiscriminately |
| ar. H 1psSP, L stem, C4, OP, 4σ | gi-tí-patalaag-é | that I pay them indiscriminately |
| as. H 1psSP, L stem, C4, OP, 5σ | gi-tí-patalagiis-é | that I help pay them indiscriminately |
| at. H 1psSP, L stem, C4, OP, 6σ | gi-tí-patalagisís-é | that I pay them intensively indiscriminately |
| au. H SP, H stem, C4, OP, 4σ | li-tí-bulalaag-é | that you kill them indiscriminately |
| av. H SP, H stem, C4, OP, 5σ | li-tí-bulagisís-é | that you cause to kill them indiscriminately |
| aw. H SP, H stem, C4, OP, 6σ | li-tí-bulalagisís-é | that you kill them intensively indiscriminately |
| ax. H 1psSP, H stem, C4, OP, 4σ | gi-tí-bulalaag-é | that I kill them indiscriminately |
| ay. H 1psSP, H stem, C4, OP, 5σ | gi-tí-bulagisís-é | that I cause to kill them indiscriminately |
az. H 1psSP, H stem, C4, OP, 6σ gi-tí-bulalagiśís-é that I kill them indiscriminately intensively

ba. H SP, L stem, C12, OP, 2σ lí-tí-bheebh-é that you carry them on your backs

bb. H SP, L stem, C12, OP, 3σ lí-tí-bhebhiśís-é that you help carry them on your backs

c. H SP, L stem, C12, OP, 4σ lí-tí-bhebhiśís-é that you carry them on your backs tightly

d. H 1psSP, L stem, C12, OP, 2σ gi-tí-bheebh-é that I carry them on my back

e. H 1psSP, L stem, C12, OP, 3σ gi-tí-bhebhiśís-é that I help carry them on my back

f. H 1psSP, L stem, C12, OP, 4σ gi-tí-bhebhiśís-é that I carry them on my back tightly

g. H SP, H stem, C12, OP, 2σ lí-tí-gaadz-é that you flatten them

h. H SP, H stem, C12, OP, 3σ lí-tí-gadzīśís-é that you help flatten them

i. H SP, H stem, C12, OP, 4σ lí-tí-gadzīśís-é that you flatten them completely

j. H 1psSP, H stem, C12, OP, 2σ gi-tí-gaadz-é that I flatten them

k. H 1psSP, H stem, C12, OP, 3σ gi-tí-gadzīśís-é that I help flatten them

l. H 1psSP, H stem, C12, OP, 4σ gi-tí-gadzīśís-é that I flatten them completely

m. H SP, H stem, C123, OP, 5σ lí-tí-gadzagiśís-é that you flatten them indiscriminately intensively

n. H 1psSP, H stem, C123, OP, 5σ gi-tí-gadzagiśís-é that I flatten them indiscriminately intensively
Paradigm I: Present Subjunctive

(55) Verb Paradigm Template VI
Breathy / depressor stems, with 1ps OP

- a. H SP, L stem, C1, 1psOP, 1σ —  lí-ɡí-bheek-é  72 that you look at me
- b. H SP, L stem, C1, 1psOP, 2σ lí-ɡí-vulūs-é that you help open me
- c. H SP, L stem, C1, 1psOP, 3σ lí-ɡí-bhekisús-é that you look at me intensely
- d. H SP, L stem, C1, 1psOP, 4σ lí-ɡí-bhekisús-é that you look at me
- e. H SP, H stem, C1, 1psOP, 1σ lí-ɡí-dl-é that you eat me
- f. H SP, H stem, C1, 1psOP, 2σ lí-ɡí-vuun-é  73 that you harvest me
- g. H SP, H stem, C1, 1psOP, 3σ lí-ɡí-vunús-é that you help me harvest
- h. H SP, H stem, C1, 1psOP, 4σ lí-ɡí-vunúsúís-é that you harvest me intensively
- i. H SP, L stem, C2, 1psOP, 2σ lí-ɡí-láadz-é that you fetch me
- j. H SP, L stem, C2, 1psOP, 3σ lí-ɡí-ládzeeel-é that you follow me
- k. H SP, L stem, C2, 1psOP, 4σ lí-ɡí-ládzeeel:s-é that you pursue me
- l. H SP, H stem, C2, 1psOP, 2σ lí-ɡí-tshéeg-é that you buy me
- m. H SP, H stem, C2, 1psOP, 3σ lí-ɡí-tshégi s-é that you sell me
- n. H SP, H stem, C2, 1psOP, 4σ lí-ɡí-tshégi sfis-é that you help sell me

72 The OP in (55b-d) is H although lexically depressed because (i) there is a depressor block effect with the C1 stem, and (ii) no LD-fusion (and therefore no HD-fusion) can take place across the OP#stem boundary. This absence of OP#stem tone domain fusion is emerging in several paradigms as a general property of toneless/L stems, contrasting with the general property of fusability in H stems across this boundary. But cf. the following footnote.

73 There is perhaps variation in the H stems: Sigxodo Phuthi has the form given in (55f) which we expect, that is, where fusion across the OP#stem fails; whereas Mpapa Phuthi has also the form with H (blocked, depressed) OP as possible. Also cf. previous footnote.
o. H SP, L stem, C3, 1psOP, 3σ ḥlí-gi-límaag-é that you cultivate me indiscriminately
p. H SP, L stem, C3, 1psOP, 4σ ḥlí-gi-límagiis-é that you help cultivate me indiscriminately
q. H SP, L stem, C3, 1psOP, 5σ ḥlí-gi-límagisís-é that you cultivate me indiscriminately intensively
r. H SP, H stem, C3, 1psOP, 3σ ḥlí-gi-búluug-é that you save me
s. H SP, H stem, C3, 1psOP, 4σ ḥlí-gi-búlugiis-é that you help save me
t. H SP, H stem, C3, 1psOP, 5σ ḥlí-gi-búlugisís-é that you save me intensively
u. H SP, L stem, C4, 1psOP, 4σ ḥlí-gi-pátalaag-é that you pay me indiscriminately
v. H SP, L stem, C4, 1psOP, 5σ ḥlí-gi-pátalagiis-é that you help pay them indiscriminately
w. H SP, L stem, C4, 1psOP, 6σ ḥlí-gi-pátalagiisís-é that you pay me indiscriminately intensively
x. H SP, H stem, C4, 1psOP, 4σ ḥlí-gi-búlalaag-é that you kill me indiscriminately
y. H SP, H stem, C4, 1psOP, 5σ ḥlí-gi-búlalagiis-é that you cause to kill me indiscriminately
z. H SP, H stem, C4, 1psOP, 6σ ḥlí-gi-búlalagiisís-é that you kill them indiscriminately intensively
aa. H SP, L stem, C12, 1psOP, 2σ ḥlí-gi-bheebeh-é that you carry me on your backs
ab. H SP, L stem, C12, 1psOP, 3σ ḥlí-gi-bhebbiis-é that you help carry me on your backs
ac. H SP, L stem, C12, 1psOP, 4σ ḥlí-gi-bhebbisís-é that you carry me on your backs tightly
ad. H SP, H stem, C12, 1psOP, 2σ ḥlí-gi-gaadz-é that you flatten me
ae. H SP, H stem, C12, 1psOP, 3σ  lí-gí-gadzí i s-é  that you help flatten me

af. H SP, H stem, C12, 1psOP, 4σ  lí-gí-gadzi sís-é  that you flatten me completely

ag. H SP, H stem, C123, 1psOP, 5σ  lí-gí-gadzagi sís-é  that you flatten me indiscriminately intensively

[turn to the next page for Appendix A, Paradigm J: Perfective Indicative short form]
Paradigm J: Perfective Indicative, short form

- SP + (OP) + \{ROOT (+suffixes) + -\textit{iye}\}_{stem} ...
- As observed already in Chapter 2 §2.2.4.7 (117) and footnote 261, the short perfective indicative in Phuthi is not segmentally different from the long perfective in any way (apart from the morphosyntactically predictable absence of phrasal-final length on the penult). This contrasts with all other documented Nguni languages, where the same short perfective indicative paradigm is formed with a distinct -\textit{e} suffix, contrasting morphologically with the long perfective -\textit{ile} ~ -\textit{iye}).
- Unlike all other documented Nguni languages (most certainly all other Zunda Nguni languages), the Phuthi short perfective is not segmentally distinct from the long perfective in any non-post-lexical fashion. This tonal but not segmental distinction does, however, correspond to the Sotho short perfective (field notes). The long perfective has been examined in this appendix, paradigm E.
- The short perfective has already been examined to some extent in Chapter 6 §6.3.1.1.
- The short perfective is a $\sigma_2$-to-penult paradigm, that is: a grammatical H extends from stem $\sigma_2$ to the penultimate syllable, when the stems are not overshort ($2\sigma$) and when they do not carry any depressor consonants in any position except the ultima. In this case, stems cannot carry a depressor on the ultima because the ultima is always part of the paradigm segment template (-\textit{iye}), unless the stem is imbricated, and then only one verbal suffix can contain a depressor consonant: extensive -\textit{ag}-.

(56) Verb Paradigm Template I

<table>
<thead>
<tr>
<th>Modal stems</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. L SP, L stem, 2$\sigma$ 74</td>
<td>li-t-\textit{fye}...</td>
<td>you have come...</td>
<td></td>
</tr>
<tr>
<td>b. L SP, L stem, 3$\sigma$</td>
<td>li-lim-\textit{fye}...</td>
<td>you have cultivated...</td>
<td></td>
</tr>
<tr>
<td>c. L SP, L stem, 4$\sigma$</td>
<td>li-limǐs-\textit{fye}...</td>
<td>you have helped cultivate...</td>
<td></td>
</tr>
</tbody>
</table>

74 As in paradigm E (the long perfective), counting of stem syllables again includes the perfective suffix. Thus, there can be no 1-$\sigma$ stems in this paradigm. In order to illustrate the irrelevance of the segmental morphology for the tone profile of the short perfective paradigm, in a few instances in these data sets a non-imbricated -\textit{iye} perfective example will be followed by an imbricated one of the same stem length, e.g. (56c,d,h,i), etc. On imbrication, cf. Chapter 2 §2.2.4.8.
d. L SP, L stem, 4σ li-limél-éne... you have cultivated for each other...

e. L SP, L stem, 5σ li-limísís-íye... you have cultivated intensively

f. H SP, L stem, 2σ bá-t-íye... they have come...
g. H SP, L stem, 3σ bá-lim-íye... they have cultivated...
h. H SP, L stem, 4σ bá-limís-íye... they have helped cultivate...
i. H SP, L stem, 4σ bá-limél-éne... they have cultivated for each other...
j. H SP, L stem, 5σ bá-limísís-íye they have cultivated intensively...
k. L SP, H stem, 2σ li-ph-íye... you have given...
l. L SP, H stem, 3σ li-bôn-íye... you have seen...
m. L SP, H stem, 4σ li-bônís-íye... you have shown...
n. L SP, H stem, 5σ li-sébétís-íye... you have used...
o. H SP, H stem, 2σ bá-ph-íye... they have given...
p. H SP, H stem, 3σ bá-bôn-íye... they have seen...
q. H SP, H stem, 4σ bá-bônís-íye... they have shown...
r. H SP, H stem, 5σ bá-sébétís-íye... they have used...

Paradigm J: Perfective Indicative, short form

(57) Verb Paradigm Template II
Breathy / depressor stems

As before, this short H stem has only one syllable available to sponsor both grammatical and lexical H. Following my EndLow analysis in §6.3.1.4 (cf. Tableau 13 (124d-h)), the single H syllable in this short perfective stem parses and expresses the grammatical H tone. The lexical H fails to parse, as also in (56o), (57k,o), (58p,t).
d. L SP, L stem, C1, 4σ li-vuléléne... you have opened for each other...

e. L SP, L stem, C1, 5σ li-vulísísíye... you have opened intensively...

f. H SP, L stem, C1, 2σ —

g. H SP, L stem, C1, 3σ bá-vulíye... they have opened...

h. H SP, L stem, C1, 4σ bá-vulísísíye... they have helped open...

i. H SP, L stem, C1, 4σ bá-vuléléne... they have opened for each other...

j. H SP, L stem, C1, 5σ bá-vulísísíye... they have opened intensively...

k. L SP, H stem, C1, 2σ li-dl-iyé... you have eaten...

l. L SP, H stem, C1, 3σ li-vun-iyé... you have harvested...

m. L SP, H stem, C1, 4σ li-vunísíye... you have helped harvest...

n. L SP, H stem, C1, 5σ li-visísísíye... you have understood...

o. H SP, H stem, C1, 2σ bá-dl-iyé... they have eaten...

p. H SP, H stem, C1, 3σ bá-vun-iyé... they have harvested...

q. H SP, H stem, C1, 4σ bá-vunísíye... they have helped harvest...

r. H SP, H stem, C1, 5σ bá-visísísíye... they have understood...

s. L SP, L stem, C2, 3σ li-ladz-iyé... you have fetched...

t. L SP, L stem, C2, 4σ li-ladzel-iyé... you have followed...

u. L SP, L stem, C2, 5σ li-ladzelíye... you have pursued...

v. H SP, L stem, C2, 3σ bá-ladz-iyé... they have fetched...

w. H SP, L stem, C2, 4σ bá-ladzel-iyé... they have followed...

x. H SP, L stem, C2, 5σ bá-ladzelíye... they have pursued...
y. L SP, H stem, C2, 3σ  li-tsheg-iyé... you have bought...

z. L SP, H stem, C2, 4σ  li-tshegi s-fye... you have sold...

aa. L SP, H stem, C2, 4σ  li-tshegel-éne... you have bought for each other...

ab. L SP, H stem, C2, 5σ  li-tshegi sís-fye... you have bought intensively...

ac. H SP, H stem, C2, 3σ  bá-tsheg-iyé... they have bought...

ad. H SP, H stem, C2, 4σ  bá-tshegi s-fye... they have sold...

ae. H SP, H stem, C2, 4σ  bá-tshegel-éne... they have bought for each other...

af. H SP, H stem, C2, 5σ  bá-tshegi sís-fye... they have bought intensively...

ag. L SP, L stem, C3, 4σ  li-limag-iyé... you have cultivated indiscriminately...

ah. L SP, L stem, C3, 5σ  li-limagis-fye... you have helped cultivate indiscriminately...

ai. L SP, L stem, C3, 6σ  li-limagísís-fye... you have cultivated intensively indiscriminately...

aj. H SP, L stem, C3, 4σ  bá-limag-iyé... they have cultivated indiscriminately...

ak. H SP, L stem, C3, 5σ  bá-limagis-fye... they have helped cultivate indiscriminately...

al. H SP, L stem, C3, 6σ  bá-limagísís-fye... they have cultivated intensively indiscriminately...

am. L SP, H stem, C3, 4σ  li-bulg-iyé... you have saved...

an. L SP, H stem, C3, 5σ  li-bulgis-fye... you have helped save...

ao. L SP, H stem, C3, 6σ  li-bulgísís-fye... you have saved intensively...
<table>
<thead>
<tr>
<th>Language</th>
<th>Type</th>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap.</td>
<td>H SP</td>
<td>H stem, C3, 4σ</td>
<td>bá-bulug-iyé...</td>
</tr>
<tr>
<td>aq.</td>
<td>H SP</td>
<td>H stem, C3, 5σ</td>
<td>bá-bulugi sis-iyé...</td>
</tr>
<tr>
<td>au.</td>
<td>H SP</td>
<td>H stem, C3, 6σ</td>
<td>bá-bulugi sis-iyé...</td>
</tr>
<tr>
<td>as.</td>
<td>L SP</td>
<td>L stem, C4, 5σ</td>
<td>li-patalag-iyé...</td>
</tr>
<tr>
<td>at.</td>
<td>L SP</td>
<td>L stem, C4, 6σ</td>
<td>li-patalag is-iyé...</td>
</tr>
<tr>
<td>au.</td>
<td>L SP</td>
<td>L stem, C4, 7σ</td>
<td>li-patalag is-síye...</td>
</tr>
<tr>
<td>av.</td>
<td>H SP</td>
<td>L stem, C4, 5σ</td>
<td>bá-patalag-iyé...</td>
</tr>
<tr>
<td>ba.</td>
<td>H SP</td>
<td>H stem, C4, 7σ</td>
<td>bá-patalag is-síye...</td>
</tr>
<tr>
<td>ay.</td>
<td>L SP</td>
<td>H stem, C4, 5σ</td>
<td>li-bulág-iyé...</td>
</tr>
<tr>
<td>az.</td>
<td>L SP</td>
<td>H stem, C4, 6σ</td>
<td>li-bulagi s-iyé...</td>
</tr>
<tr>
<td>ba.</td>
<td>L SP</td>
<td>H stem, C4, 7σ</td>
<td>li-bulag is-síye...</td>
</tr>
<tr>
<td>bb.</td>
<td>H SP</td>
<td>H stem, C4, 5σ</td>
<td>bá-bulág-iyé...</td>
</tr>
<tr>
<td>bc.</td>
<td>H SP</td>
<td>H stem, C4, 6σ</td>
<td>bá-bulagi s-iyé...</td>
</tr>
<tr>
<td>bd.</td>
<td>H SP</td>
<td>H stem, C4, 7σ</td>
<td>bá-bulag is-síye...</td>
</tr>
</tbody>
</table>
be. L SP, L stem, C12, 3σ li-gudz-į-yė... you have sheared...
bf. L SP, L stem, C12, 4σ li-gudzi s-į-ye... you have helped shear...
bg. L SP, L stem, C12, 4σ li-gudzel-ėne... you have sheared for each other...
bh. L SP, L stem, C12, 5σ li-gudzi sīs-įye... you have sheared intensively...
bi. H SP, L stem, C12, 3σ bā-gudz-į-yė... they have sheared...
bj. H SP, L stem, C12, 4σ bā-gudzi s-įye... they have helped shear...
bk. H SP, L stem, C12, 4σ bā-gudzel-ėne... they have sheared for each other...
bl. H SP, L stem, C12, 5σ bā-gudzi sīs-įye... they have sheared intensively...

bm. L SP, H stem, C12, 3σ li-gadz-įyė... you have flattened...
bn. L SP, H stem, C12, 4σ li-gadzi s-įye... you have helped flatten...
bo. L SP, H stem, C12, 4σ li-gadzi s-ėne... you have helped e.o. flatten...
bp. L SP, H stem, C12, 5σ li-gadzi sī-siyė... you have flattened completely...
bq. H SP, H stem, C12, 3σ bā-gadz-įyė... they have flattened...
br. H SP, H stem, C12, 4σ bā-gadzi s-įye... they have helped flatten...
bs. H SP, H stem, C12, 4σ bā-gadzi s-ėne... they have helped e.o. flatten...
bt. H SP, H stem, C12, 5σ bā-gadzi sīs-įye... they have flattened completely...

bu. L SP, H stem, C123, 6σ li-gadzagi sėl-ėne... you have helped flatten indiscriminately for e.o...
bv. H SP, H stem, C123, 6σ bā-gadzagi sēl-ėne... they have helped flatten indiscriminately for e.o...
Paradigm J: Perfective Indicative, short form

(58)  Verb Paradigm Template III  
Modal stems, with OP

a.  L SP, L stem, OP, 2σ  li-tí-ny-íye...  you have excreted them...
b.  L SP, L stem, OP, 3σ  li-tí-lim-íye...  you have cultivated them...
c.  L SP, L stem, OP, 4σ  li-tí-limís-íye...  you have helped them cultivate...
d.  L SP, L stem, OP, 4σ  li-tí-limél-éne...  you have cultivated them for e.o...
e.  L SP, L stem, OP, 5σ  li-tí-limísís-íye...  you have cultivated them intensively...
f.  H SP, L stem, OP, 2σ  bá-tí-ny-íye...  they have excreted them...
g.  H SP, L stem, OP, 3σ  bá-tí-lim-íye...  they have cultivated them...
h.  H SP, L stem, OP, 4σ  bá-tí-limís-íye...  they have helped them cultivate...
i.  H SP, L stem, OP, 4σ  bá-tí-limél-éne...  they have cultivated them for e.o...
j.  H SP, L stem, OP, 5σ  bá-tí-limísís-íye...  they have cultivated them intensively...
k.  L 1psSP, L stem, OP, 2σ  gi-tí-ny-íye...  76  I have excreted them...
l.  L 1psSP, L stem, OP, 3σ  gi-tí-lim-íye...  I have cultivated them...
m.  L 1psSP, L stem, OP, 4σ  gi-tí-limís-íye...  I have helped them cultivate...

76 In paradigm J, from this data set (III) onwards, I now also provide forms with a 1ps gi-SP. The underlying tone (qua tone) specification is no different from the toneless 2pp li-SP, but added factor of the tone depression will be seen to have an anti-expression effect on OPs preceding H stems: the first forms are in (58x-aa) below; and cf. parallel configurations in the subjunctive paradigm I (52n-p). Up to this point in the paradigm, 1ps SP forms (not given) would behave tonally in an identical way to 2pp li-SP forms (56a-e,k-n; 57b-e,k-n,s-u,y-ab,ag-ai,am-ao, as-au,ay-ba,be-bh,bm-bp,bu).
The behaviour of OPs in this paradigm is complex (but also cf. footnote 26 for similar distribution of OP and H stems in the present indicative short form (this appendix, paradigm C)): the OP preceding toneless/low stems (58a-j) has been consistently parsed and surface-expressed as H. The OP is indeed consistently surface-expressed H in a number of other grammatical paradigms (e.g. present subjunctive: this appendix, paradigm I) and phrase-medial paradigms (e.g. present indicative short form; paradigm C); preceding H stems (58p-w), the OP continues to express surface-H. Passing over (58x-aa) for a moment, the OP is confirmed as UR H in (59b-e, g-j) immediately below: the effect of the H shifted off the depressed OP is seen on σ1 (now H) of the toneless/low stems. But in (59k-o), the OP preceding H stems is also depressed, and is thus now expressed low (i.e., not H), ambiguously because there is no visible shift effect, which invisibility is because σ1 of the H stems is already lexically H. Finally, in the preceding (58x-aa) and subsequent (60t-v,ao-ar,bi-bk,ca-cc,cw-cz,df), an OP following a depressed SP and preceding a H stem will be fully low (by a LD-MIN effect), that is, fails to express as H, forcing analysis where the OP fuses to a H stem. (The alternative to this analysis is that the OP H fails to parse at all, and thus that no HD is present in the phonological output representation; I have tried to avoid this analysis at several points, because it would be without precedent in the Phuthi grammar, and gives great power to the tone grammar that seems, broadly, unmotivated; cf footnote 83 for further possible evidence). Finally, cf. footnotes 80, 81, for final comments on expressing OP as H (or not) preceding a H stem.
z. L 1psSP, H stem, OP, 4σ  gi-ti-bónís-íye... I have shown them...

aa. L 1psSP, H stem, OP, 5σ  gi-ti-sēbētis-íye... I have used them...

Paradigm J: Perfective Indicative, short form

(59) Verb Paradigm Template IV
Modal stems, with 1ps OP

a. L SP, L stem, 1psOP, 2σ  li-gi-ny-íye... 78 you have excreted me...

b. L SP, L stem, 1psOP, 3σ  li-gi-lí’m-íye... you have cultivated me...

c. L SP, L stem, 1psOP, 4σ  li-gi-lí’mís-íye... you have helped me cultivate them...

d. L SP, L stem, 1psOP, 4σ  li-gi-lí’mél-éne... you have cultivated me for each other...

e. L SP, L stem, 1psOP, 5σ  li-gi-lí’mísís-íye... you have cultivated me intensively...

f. H SP, L stem, 1psOP, 2σ  bá-gi-ny-íye... they have excreted me

g. H SP, L stem, 1psOP, 3σ  bá-gi-lí’m-íye... they have cultivated me...

h. H SP, L stem, 1psOP, 4σ  bá-gi-lí’mís-íye... they have helped... me cultivate

i. H SP, L stem, 1psOP, 4σ  bá-gi-lí’mél-éne... they have cultivated me for each other...

j. H SP, L stem, 1psOP, 5σ  bá-gi-lí’mísís-íye... they have cultivated me intensively...

k. L SP, H stem, 1psOP, 2σ  li-gi-ph-íye...79 you have given me...

78 Although the single H syllable in the 1-σ short stem (59a)—and identically in (59f)—could reflect either the shifted H of the OP or the grammatical H of the short perfective, but not both (given articulated assumptions of domain construction), based on domain parse and express principles proposed thus far, the H syllable here must indeed reflect the shifted OP (thus, a rightwards-extended HD), where the grammatically assigned (subjunctive) H on the stem has fused with the preceding, now shifted, OP, as allowed for by the fusion possibilities that fall out of domain structure and associated constraints, cf. Chapter 7 §7.8.1.9 (292c). For all longer stems (59b-e,g-j), the standard depressor shift pattern is displayed.

79 Similar to the previous footnote, the single H syllable in the stem of (59k,o) could reflect any of the three competing H sponsors. It has been argued in Chapter 6 §6.3.1.4 that the single H
Paradigm J: Perfective Indicative, short form

(60)  Verb Paradigm Template V
  Breathy / depressor stems, with OP

- L SP, L stem, C1, OP, 2σ —
  b. L SP, L stem, C1, OP, 3σ li-tí-vul-íye... you have opened them...
  c. L SP, L stem, C1, OP, 4σ li-tí-vulísh-íye... you have helped them open...
  d. L SP, L stem, C1, OP, 4σ li-tí-vulél-éne... you have opened them for each other...
  e. L SP, L stem, C1, OP, 5σ li-tí-vulísís-íye... you have opened them intensively...
  f. L 1psSP, L stem, C1, OP, 2σ —
  g. L 1psSP, L stem, C1, OP, 3σ gi-tí-vul-íye... I have opened them...
  h. L 1psSP, L stem, C1, OP, 4σ gi-tí-vulísh-íye... I have helped them open...
  i. L 1psSP, L stem, C1, OP, 4σ gi-tí-vulél-éne... I have opened them for each other...
  j. L 1psSP, L stem, C1, OP, 5σ gi-tí-vulísís-íye... I have opened them intensively...

syllable in a 1-σ short perfective stem reflects successful parsing of the grammatical (paradigm-triggered) H. Given the behaviour of the OP preceding H stems (cf. footnotes 75, 77), it would seem the case that in the present data (59k,o) it is still the grammatical H that parses (and not the OP).
As in (58x-aa), so in this data set (60), each time a depressed 1ps SP—in (60j-m, 60ae-ah, 60ay-ba, 60bq-bs, 60cm-cp,cv)—precedes an OP in turn preceding a H stem, the OP is expressed low (toneless), with no trace of the OP sponsor H (e.g. no unincorporation blocking effect). A straightforward account of these forms would entail an instantiation of L-domain minimality (LD-MIN), as motivated in Chapter 7 §7.5.1 and §7.8.1.9 for parallel data in the present negative; cf. also in this appendix: paradigms H (present relative), I (present subjunctive), and U (present negative). But additionally, now there is also the case of a non-depressed non-H SP (2pp SP li-) preceding an OP + depressor-bearing stem in (60p-s, ak-an,bf-bh,bx-bz,cs-cv,de), where the H OP fails to express as H (contrasting with the non-depressor-bearing H stem data seen in (58p-s) above. Thus, the {OP + stem} string is being scanned by the tone grammar for phonological depression, whose presence is sufficient to prevent the H-sponsoring OP from expressing H. I do not pursue the analysis further here. Cf. footnote 77 for on complete underparsing of OP H, presently considered an unacceptable alternative analysis.

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80 As in (58x-aa), so in this data set (60), each time a depressed 1ps SP—in (60j-m, 60ae-ah, 60ay-ba, 60bq-bs, 60cm-cp,cv)—precedes an OP in turn preceding a H stem, the OP is expressed low (toneless), with no trace of the OP sponsor H (e.g. no unincorporation blocking effect). A straightforward account of these forms would entail an instantiation of L-domain minimality (LD-MIN), as motivated in Chapter 7 §7.5.1 and §7.8.1.9 for parallel data in the present negative; cf. also in this appendix: paradigms H (present relative), I (present subjunctive), and U (present negative). But additionally, now there is also the case of a non-depressed non-H SP (2pp SP li-) preceding an OP + depressor-bearing stem in (60p-s, ak-an,bf-bh,bx-bz,cs-cv,de), where the H OP fails to express as H (contrasting with the non-depressor-bearing H stem data seen in (58p-s) above. Thus, the {OP + stem} string is being scanned by the tone grammar for phonological depression, whose presence is sufficient to prevent the H-sponsoring OP from expressing H. I do not pursue the analysis further here. Cf. footnote 77 for on complete underparsing of OP H, presently considered an unacceptable alternative analysis.
x. H SP, H stem, C1, OP, 2σ  bá-ti-dl- iyé... they have eaten them...
y. H SP, H stem, C1, OP, 3σ  bá-ti-vun- ëye... they have harvested them...
z. H SP, H stem, C1, OP, 4σ  bá-ti-vunís- ëye... they have helped them harvest...
aa. H SP, H stem, C1, OP, 5σ  bá-ti-visísís- ëye... they have understood them...
ab. L SP, L stem, C2, OP, 3σ  li-tí-ladz- iyé... you have fetched them...
ac. L SP, L stem, C2, OP, 4σ  li-tí-ladzel- ëye... you have followed them...
ad. L SP, L stem, C2, OP, 5σ  li-tí-ladzel-ll- ëye... you have pursued them...
ae. L 1psSP, L stem, C2, OP, 3σ  gi-tí-ladz- iyé... I have fetched them...
af. L 1psSP, L stem, C2, OP, 4σ  gi-tí-ladzel- ëye... I have followed them...
ag. L 1psSP, L stem, C2, OP, 5σ  gi-tí-ladzelíl- ëye... I have pursued them...
ah. H SP, L stem, C2, OP, 3σ  bá-tí-ladz- iyé... they have fetched them...
ai. H SP, L stem, C2, OP, 4σ  bá-tí-ladzel- ëye... they have followed them...
aj. H SP, L stem, C2, OP, 5σ  bá-tí-ladzelíl- ëye... they have pursued them...
ak. L SP, H stem, C2, OP, 3σ  li-tí-tsheg- iyé... you have bought them...
al. L SP, H stem, C2, OP, 4σ  li-tí-tshegi s- ëye... you have sold them...
am. L SP, H stem, C2, OP, 4σ  li-tí-tshegel- ëne... you have bought them for each other...
an. L SP, H stem, C2, OP, 5σ  li-tí-tshegi sis- ëye... you have bought them intensively...
ao. L 1psSP, H stem, C2, OP, 3σ  gi-tí-tshegi- ëye... I have bought them...
<table>
<thead>
<tr>
<th>Language</th>
<th>Verb Form</th>
<th>Preposition</th>
<th>Infinitive</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap. L</td>
<td>1psSP, H</td>
<td>stem, C2, OP, 4σ</td>
<td>gi-ti-ts_TAG-s-iye</td>
<td>I have sold them...</td>
</tr>
<tr>
<td>aq. L</td>
<td>1psSP, H</td>
<td>stem, C2, OP, 4σ</td>
<td>gi-ti-tsheg-el-éne</td>
<td>I have bought them for each other...</td>
</tr>
<tr>
<td>ar. L</td>
<td>1psSP, H</td>
<td>stem, C2, OP, 5σ</td>
<td>gi-ti-tsheg-sí-fye</td>
<td>I have bought them intensively...</td>
</tr>
<tr>
<td>as. H</td>
<td>SP, H stem, C2, OP, 3σ</td>
<td>bá-ti-ts_TAG-iyé</td>
<td>they have bought them...</td>
<td></td>
</tr>
<tr>
<td>at. H</td>
<td>SP, H stem, C2, OP, 4σ</td>
<td>bá-ti-tsheg-sí-fye</td>
<td>they have sold them...</td>
<td></td>
</tr>
<tr>
<td>au. H</td>
<td>SP, H stem, C2, OP, 4σ</td>
<td>bá-ti-tsheg-el-éne</td>
<td>they have bought them for each other...</td>
<td></td>
</tr>
<tr>
<td>av. H</td>
<td>SP, H stem, C2, OP, 5σ</td>
<td>bá-ti-tsheg-sí-fye</td>
<td>they have bought them intensively...</td>
<td></td>
</tr>
<tr>
<td>aw.L</td>
<td>SP, L stem, C3, OP, 4σ</td>
<td>li-ti-limag-iyé</td>
<td>you have cultivated them indiscriminately...</td>
<td></td>
</tr>
<tr>
<td>ax. L</td>
<td>SP, L stem, C3, OP, 5σ</td>
<td>li-ti-limagine-sí-fye</td>
<td>you have helped them cultivate indiscriminately...</td>
<td></td>
</tr>
<tr>
<td>ay. L</td>
<td>SP, L stem, C3, OP, 6σ</td>
<td>li-ti-limagine-sí-fye</td>
<td>you have cultivated them intensively indiscriminately...</td>
<td></td>
</tr>
<tr>
<td>az. L</td>
<td>1psSP, L</td>
<td>stem, C3, OP, 4σ</td>
<td>gi-ti-limag-iyé</td>
<td>I have cultivated them indiscriminately...</td>
</tr>
<tr>
<td>ba. L</td>
<td>1psSP, L</td>
<td>stem, C3, OP, 5σ</td>
<td>gi-ti-limagine-sí-fye</td>
<td>I have helped them cultivate indiscriminately...</td>
</tr>
<tr>
<td>bb. L</td>
<td>1psSP, L</td>
<td>stem, C3, OP, 6σ</td>
<td>gi-ti-limagine-sí-fye</td>
<td>I have cultivated them intensively indiscriminately...</td>
</tr>
<tr>
<td>bc. H</td>
<td>SP, L stem, C3, OP, 4σ</td>
<td>ba-ti-limag-iyé</td>
<td>they have cultivated them indiscriminately...</td>
<td></td>
</tr>
<tr>
<td>bd. H</td>
<td>SP, L stem, C3, OP, 5σ</td>
<td>ba-ti-limagine-sí-fye</td>
<td>they have helped them cultivate indiscriminately...</td>
<td></td>
</tr>
</tbody>
</table>
they have cultivated them intensively indiscriminately...
you have saved them...
you have helped save them...
you have saved them intensively...
I have saved/kept them...
I have helped save them...
I have saved them intensively...
they have saved/kept them...
they have helped save them...
they have saved them intensively...
you have paid them indiscriminately...
you have helped pay them indiscriminately...
you have paid them intensively indiscriminately...
I have paid them indiscriminately...
I have helped pay them indiscriminately...
<table>
<thead>
<tr>
<th>Prefix</th>
<th>Stem</th>
<th>Verb Form</th>
<th>Transliteration</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>bt.</td>
<td>L SP</td>
<td>1ps, C4, 7σ</td>
<td>gi-ti-patalagisí-s-fye...</td>
<td>I have paid them intensively indiscriminately...</td>
</tr>
<tr>
<td>bu.</td>
<td>H SP</td>
<td>L, C4, 5σ</td>
<td>bá-tí-patalag-iyé...</td>
<td>they have paid them indiscriminately...</td>
</tr>
<tr>
<td>bv.</td>
<td>H SP</td>
<td>L, C4, 6σ</td>
<td>bá-tí-patalagís-fye...</td>
<td>they have helped pay them indiscriminately...</td>
</tr>
<tr>
<td>bw.</td>
<td>H SP</td>
<td>L, C4, 7σ</td>
<td>bá-tí-patalagísí-s-fye...</td>
<td>they have paid them intensively indiscriminately...</td>
</tr>
<tr>
<td>bx.</td>
<td>L SP</td>
<td>H, C4, 5σ</td>
<td>li-tí-bulalag-iyé...</td>
<td>you have killed them indiscriminately...</td>
</tr>
<tr>
<td>by.</td>
<td>L SP</td>
<td>H, C4, 6σ</td>
<td>li-tí-bulalagís-fye...</td>
<td>you have caused them to kill indiscriminately...</td>
</tr>
<tr>
<td>bz.</td>
<td>L SP</td>
<td>H, C4, 7σ</td>
<td>li-tí-bulalagísí-s-fye...</td>
<td>you have killed them intensively indiscriminately...</td>
</tr>
<tr>
<td>ca.</td>
<td>L 1psSP</td>
<td>H, C4, 5σ</td>
<td>gi-tí-bulalag-iyé...</td>
<td>I have killed them indiscriminately...</td>
</tr>
<tr>
<td>cb.</td>
<td>L 1psSP</td>
<td>H, C4, 6σ</td>
<td>gi-tí-bulalagís-fye...</td>
<td>I have caused them to kill indiscriminately...</td>
</tr>
<tr>
<td>cc.</td>
<td>L 1psSP</td>
<td>H, C4, 7σ</td>
<td>gi-tí-bulalagísí-s-fye...</td>
<td>I have killed them intensively indiscriminately...</td>
</tr>
<tr>
<td>cd.</td>
<td>H SP</td>
<td>H, C4, 5σ</td>
<td>bá-tí-bulalag-iyé...</td>
<td>they have killed them indiscriminately...</td>
</tr>
<tr>
<td>ce.</td>
<td>H SP</td>
<td>H, C4, 6σ</td>
<td>bá-tí-bulalagís-fye...</td>
<td>they have caused them to kill indiscriminately...</td>
</tr>
<tr>
<td>cf.</td>
<td>H SP</td>
<td>H, C4, 7σ</td>
<td>bá-tí-bulalagísí-s-fye...</td>
<td>they have killed them intensively indiscriminately...</td>
</tr>
</tbody>
</table>
them for each other...

them intensively...

them...

them...

them for each other...

them intensively...

them completely...

flatten them...

flatten them...

flatten them...

flatten them...

flatten them...

flatten them...

flatten them...

they have sheared them...

they have helped shear them...

they have sheared them...

they have sheared them for each other...

they have sheared them intensively...

you have sheared them...

you have helped shear them...

you have sheared them...

you have sheared them for each other...

you have sheared them intensively...

you have flattened them...

you have helped flatten them...

you have helped e.o. flatten them...

you have flattened them completely...

I have flattened them...

I have helped...
I have helped them flatten e.o...

I have flattened them completely...

they have flattened them...

they have helped flatten them...

they have helped them flatten e.o...

they have flattened them completely...

you have helped them flatten indiscriminately for e.o...

you have helped them flatten indiscriminately for e.o...

With respect to the behaviour of the OP preceding modal (i.e. non-depressor-bearing) toneless/low stems in (58a-n) above, we might expect the depressed 1ps OP in the current data set (61b-e,g-j) to faithfully display the H on the OP as a depressor-blocking effect with respect to C₁ at the stem left-edge. But true to what has been seen in (60) immediately above, namely, that a depressor inside a stem can be sufficient to condition lowering (or non-expressing-as-H) of an OP, the 1ps OP preceding low stems does not manifest an expressed H tone. The OP H tone can, however, be produced in careful (if sometimes strained) citation form, but it is not the default form. The reluctance to faithfully execute the depressor-blocked OP H in this data comes as no surprise in the light of the observations in Chapter 7 §7.2.3 that high pitch and breathiness are inherently antagonistic articulatory instructions. Thus, ceteris paribus it should indeed be difficult to achieve this configuration simultaneously, and speakers should seek ways to avoid it.

Paradigm J: Perfective Indicative, short form

(61) Verb Paradigm Template VI

Breathy / depressor stems, with 1ps OP

a. L SP, L stem, C1, 1psOP, 2σ

b. L SP, L stem, C1, 1psOP, 3σ  li-ği-vul-ïye...81  you have opened me...

---

81 With respect to the behaviour of the OP preceding modal (i.e. non-depressor-bearing) toneless/low stems in (58a-n) above, we might expect the depressed 1ps OP in the current data set (61b-e,g-j) to faithfully display the H on the OP as a depressor-blocking effect with respect to C₁ at the stem left-edge. But true to what has been seen in (60) immediately above, namely, that a depressor inside a stem can be sufficient to condition lowering (or non-expressing-as-H) of an OP, the 1ps OP preceding low stems does not manifest an expressed H tone. The OP H tone can, however, be produced in careful (if sometimes strained) citation form, but it is not the default form. The reluctance to faithfully execute the depressor-blocked OP H in this data comes as no surprise in the light of the observations in Chapter 7 §7.2.3 that high pitch and breathiness are inherently antagonistic articulatory instructions. Thus, ceteris paribus it should indeed be difficult to achieve this configuration simultaneously, and speakers should seek ways to avoid it.
As in (59b-e, g-j), the depressed 1ps OP here (61s-x) clearly manifests its H status in the

|  |  |  |  |

Given the existing possibilities of fusing adjacent LDs, the resolution revealed in this data becomes plausible. But cf. (61s-u,v-x, ag-al, as-ax) for the regular depressor-shift effect preceding depressor-bearing (but not C1, only C2+) low stems (i.e. C2,C3,C4).
As referred to in footnotes 77 and 80, this failure of the depressed OP to ‘shift’ in these data (that is, to unincorporate) offers the strong temptation to analyse the phenomenon as complete underparsing of the OP H preceding H stems. I continue to assume, rather, fusion of the depressed OP to the depressor-bearing C2-stem, allowing for a unique expressed H on the post-depressor syllable inside the stem.
they have cultivated me indiscriminately
they have helped me cultivate indiscriminately...
they have cultivated me intensively indiscriminately...
you have saved me...
you have helped save me...
you have saved me intensively...
you have paid me indiscriminately...
you have helped pay me indiscriminately...
you have paid me intensively indiscriminately...
you have paid me indiscriminately...
you have helped pay me indiscriminately...
you have paid me intensively indiscriminately...
you have killed me indiscriminately...
az. L SP, H stem, C4, 1psOP, 6σ  
li-ği-bulalagis-íye...  
you have caused me to kill indiscriminately...

ba. L SP, H stem, C4, 1psOP, 7σ  
li-ği-bulalagisís-íye...  
you have killed me intensively indiscriminately...

bb. H SP, H stem, C4, 1psOP, 5σ  
bá-ği-bulalag-íyé...  
they have killed me indiscriminately...

bc. H SP, H stem, C4, 1psOP, 6σ  
bá-ği-bulalagis-íye...  
they have caused me to kill indiscriminately...

bd. H SP, H stem, C4, 1psOP, 7σ  
bá-ği-bulalagisís-íye...  
they have killed me intensively indiscriminately...

be. L SP, L stem, C12, 1psOP, 3σ  
li-ği-gudz-íyé...  
you have sheared me...

bf. L SP, L stem, C12, 1psOP, 4σ  
li-ği-gudzís-íye...  
you have helped shear me...

bg. L SP, L stem, C12, 1psOP, 4σ  
li-ği-gudzel-éne...  
you have sheared me for each other...

bh. L SP, L stem, C12, 1psOP, 5σ  
li-ği-gudzişís-íye...  
you have sheared me intensively...

bi. H SP, L stem, C12, 1psOP, 3σ  
bá-ği-gudz-íyé...  
they have sheared me...

bj. H SP, L stem, C12, 1psOP, 4σ  
bá-ği-gudzís-íye...  
they have helped shear them...

bk. H SP, L stem, C12, 1psOP, 4σ  
bá-ği-gudzel-éne...  
they have sheared me for each other...

bl. H SP, L stem, C12, 1psOP, 5σ  
bá-ği-gudzişís-íye...  
they have sheared me intensively...

bm.L SP, H stem, C12, 1psOP, 3σ  
li-ği-gadz-íyé...  
you have flattened me...

bn. L SP, H stem, C12, 1psOP, 4σ  
li-ği-gadzís-íye...  
you have helped flatten me...

bo. L SP, H stem, C12, 1psOP, 4σ  
li-ği-gadziş-éne...  
you have helped e.o. flatten me...
bp. L SP, H stem, C12, 1psOP, 5σ  li-gi-gadzísí-síye... you have flattened me completely...

bq. H SP, H stem, C12, 1psOP, 3σ  bá-gi-gadz-iyé... they have flattened me...

br. H SP, H stem, C12, 1psOP, 4σ  bá-gi-gadzi-síye... they have helped flatten me...

bs. H SP, H stem, C12, 1psOP, 4σ  bá-gi-gadzi-sí-síye... they have helped flatten me...

bt. H SP, H stem, C12, 1psOP, 5σ  bá-gi-gadzi-sí-síye... they have flattened me completely...

bu. L SP, H stem, C123, 1psOP, 6σ  li-gi-gadzagi-sél-éne... you have helped me flatten indiscriminately for e.o...

bv. H SP, H stem, C123, 1psOP, 6σ  bá-gi-gadzagi-sél-éne... they have helped me flatten indiscriminately for e.o...

[turn to the next page for Appendix A, Paradigm K: Imperative]
Paradigm K, Imperative (long form)

- \{\text{ROOT} (+suffixes) + -a\}_{\text{stem}}
- Phuthi, like most Bantu languages, reveals a significantly reduced morphological structure for the imperative: no pre-stem morphemes are grammatically licit (i.e. no SPs, tense/aspect markers nor OPs). The pragmatic import of a command (here: imperative mood)—when it needs a pronoun object (direct or indirect), implemented by the OP—is executed by the subjunctive-with-OP (paradigm I, data sets III-VI: (52-55)).
- The paradigmatic tone pattern is $\sigma$-2-to-ultima for toneless/low stems (62a-e, etc), where $\sigma_1$ is reserved for the lexical H tone introduced by H stems (62f-i, etc). This is handled in Chapter 6 §6.3.3.1.
- There is no separate treatment here of the imperative short form, but there appears to be no distinct information about parse and express patterns, other than reduction of the lengthened penultimate syllable to a single mora.
- Data fragments from the imperative have been introduced in Chapter 7 §7.4.1.3, § 7.4.2.3.

(62) Verb Paradigm Template I

<table>
<thead>
<tr>
<th>Modal stems</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. L stem, 1(\sigma)</td>
<td>tá</td>
<td>come!!</td>
</tr>
<tr>
<td>b. L stem, 1(\sigma) (&gt;2(\sigma))</td>
<td>ūjitá</td>
<td>come!</td>
</tr>
<tr>
<td>c. L stem, 2(\sigma)</td>
<td>liimá</td>
<td>cultivate!</td>
</tr>
<tr>
<td>d. L stem, 3(\sigma)</td>
<td>libáála</td>
<td>forget!</td>
</tr>
<tr>
<td>e. L stem, 4(\sigma)</td>
<td>libááfisá</td>
<td>delay!</td>
</tr>
<tr>
<td>f. H stem, 1(\sigma)</td>
<td>phá</td>
<td>give!</td>
</tr>
<tr>
<td>g. H stem, 1(\sigma) (&gt;2(\sigma))</td>
<td>ūfphá</td>
<td>give!</td>
</tr>
<tr>
<td>h. H stem, 2(\sigma)</td>
<td>bóoná</td>
<td>see!</td>
</tr>
<tr>
<td>i. H stem, 3(\sigma)</td>
<td>bóonúísá</td>
<td>show!</td>
</tr>
<tr>
<td>j. H stem, 4(\sigma)</td>
<td>sábétísá</td>
<td>use!</td>
</tr>
</tbody>
</table>

\(^{84}\) The monosyllabic stems (62a,f) fulfil the minimal word (and phrase) template in Phuthi only by acquiring a preceding filler (‘dummy’) syllable (cf. Chapter 2 §2.2.2.1 fn. 175, §2.2.4.9, Chapter 6 §6.3.3.1) —i-, or in this case j- —in which case they become 2-\(\sigma\) stems (62b,g). Nevertheless, under certain discourse conditions (with a complement adverbial, for example, and under speaker-emphasis) the 1-\(\sigma\) stem can occur on its own (violating morphological minimality),
Paradigm K: Imperative

(63) Verb Paradigm Template II
Breathy / depressor stems

a. L stem, C1, 1σ

b. L stem, C1, 2σ

c. L stem, C1, 3σ

d. L stem, C1, 4σ

e. H stem, C1, 1σ

f. H stem, C1, 1σ (>2σ)

g. H stem, C1, 2σ

h. H stem, C1, 3σ

i. H stem, C1, 4σ

j. H stem, C1, 2σ

k. H stem, C1, 3σ

l. L stem, C2, 2σ

m. L stem, C2, 2σ

n. L stem, C2, 2σ

---
e.g. tá lhaá-kha!! ‘Come here!!’

85 This 1-σ H breathy (C1) stem is given in its isolation form (63e), in its augmented minimal word form in isolation (63f), and then also in its augmented form with successive toneless adverb (63g)—demonstrating H shift off the sponsor C1 syllable—and in its augmented form with successive depressor-initial adverb (63h)—demonstrating H block between the sponsor stem syllable and σ1 of the following word. Adverb complement isolation forms are: hlaang ‘nearby’, and bhiili ‘first’.

86 As with the short stem in the preceding C1 data set (63e-h), so I provide here the shortest of the C2 stems—low/toneless in (63l-n), H in (63q-s)—displaying again the shift and block effects off the final syllable of the imperative verb. The noun complement isolation form in (63m) is makootí ‘bride’.
<table>
<thead>
<tr>
<th>Stem</th>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L stem, C2, 3σ</strong></td>
<td>ladzeelá</td>
<td>follow!</td>
</tr>
<tr>
<td><strong>L stem, C2, 4σ</strong></td>
<td>ladzel:lá</td>
<td>pursue!</td>
</tr>
<tr>
<td><strong>H stem, C2, 2σ</strong></td>
<td>tshaadzá</td>
<td>love!</td>
</tr>
<tr>
<td><strong>tshadza (mákoottí)</strong></td>
<td>love (the bride)!</td>
<td></td>
</tr>
<tr>
<td><strong>tsadzá (bhi i li)</strong></td>
<td>love (first)!</td>
<td></td>
</tr>
<tr>
<td><strong>tshegi i sá</strong></td>
<td>buy!</td>
<td></td>
</tr>
<tr>
<td><strong>tshegi sísá</strong></td>
<td>buy intensively!</td>
<td></td>
</tr>
<tr>
<td><strong>L stem, C3, 3σ</strong></td>
<td>limaagá</td>
<td>work indiscriminately!</td>
</tr>
<tr>
<td><strong>lima (ká’kgúulú)</strong></td>
<td>cultivate indiscriminately a lot!</td>
<td></td>
</tr>
<tr>
<td><strong>limagá (bhi i li)</strong></td>
<td>cultivate indiscriminately first!</td>
<td></td>
</tr>
<tr>
<td><strong>limagi i sá</strong></td>
<td>help cultivate indiscriminately!</td>
<td></td>
</tr>
<tr>
<td><strong>limagi sísá</strong></td>
<td>cultivate intensively indiscriminately!</td>
<td></td>
</tr>
<tr>
<td><strong>H stem, C3, 3σ</strong></td>
<td>bulugá</td>
<td>save! (or ‘keep!’)</td>
</tr>
<tr>
<td><strong>buluga (ká’kgúulú)</strong></td>
<td>save (a lot)!</td>
<td></td>
</tr>
<tr>
<td><strong>bulugá (bhi i li)</strong></td>
<td>save (first)!</td>
<td></td>
</tr>
<tr>
<td><strong>bulugi i sá</strong></td>
<td>help save!</td>
<td></td>
</tr>
<tr>
<td><strong>bulugi sísá</strong></td>
<td>save intensively!</td>
<td></td>
</tr>
<tr>
<td><strong>L stem, C4, 4σ</strong></td>
<td>patalaagá</td>
<td>pay indiscriminately!</td>
</tr>
<tr>
<td><strong>patalaagíi sá</strong></td>
<td>help pay indiscriminately!</td>
<td></td>
</tr>
<tr>
<td><strong>ah. L stem, C4, 6σ</strong></td>
<td>patalaagísísá</td>
<td>pay intensively indiscriminately!</td>
</tr>
</tbody>
</table>

---

87 As in the preceding data set (cf. footnote 85), I exemplify the shift and block phenomena off the stem-ultima depressor-bearing H-sponsor (63v-x). The isolation form of the adverb complement is *kakgúulú* ‘very, a lot’.

991
Paradigm K: Imperative, III - VI

- There can be no OPs with the imperative, while maintaining the (morphological) imperative mood. As soon as an OP is added to the configuration, the imperative becomes a subjunctive-with-OP, cf. Paradigm I, templates III-VI (52-55). Thus, templates III to VI in this paradigm fall away.

[turn to the next page for Appendix A, Paradigm L: Remote Past]
Paradigm L: Remote Past

- \{SP + -a\} \text{RemotePastSP} + \text{a}/\text{æ}/\text{æ} + (OP) + \{\text{ROOT (+ suffixes) + -a}\} \text{stem}

- This paradigm has been drawn on in the argumentation surrounding masked depression—one of the types of distinct depression (cf. Chapter 7 §7.6.2; footnote 88 below).

- The recent past tense/aspect, formed with fixed prefix vowel (-e-)—which I do not provide in this appendix, but cf. Chapter 2 §2.2.4.7 (116f)—has essentially the same tone properties as the remote past paradigm: H SP (which is depressed in non-3p forms), stem \(\sigma 1\) reserved for lexical tone, stem grammatical H tone extending to the ultima.

- There seems in this paradigm to be a phonologically long (bimoraic) vowel found—very exceptionally—not in the penultimate position: there is an -a- in the SP and also a tense/aspect marker -á-. We may speculate that historically the remote past paradigm consisted of two independent phonological words, especially as no depressor shift is in general possible from a depressed SP into the remote past stem. This may, however, be attributable to some combination of the following three factors: (i) the long (longer) vowel at the boundary between SP-OP prefixes; (ii) the apparent depression on the penult vowel of toneless/low stems, which in 2-\(\sigma\) stems (64a-l) is coextensive with the stem-initial vowel; (iii) some independent grammatical property of the paradigm itself that may inhere to this kind of quasi-word boundary

(64) Verb Paradigm Template I

Modal stems
- I illustrate first a full set of person prefixes and noun class-triggered SPs with both toneless/low stems (64a-f,g-n) and H stems (64t,u-ab). I then illustrate all SP-OP-stem configurations in all six templates, using depressed H 3pp SP, then 1ps SP: (64ac-ar), etc.

a. H 1psSP (spC1), L stem, 2\(\sigma\) \(\text{gaá-liimá}^{88}\) I cultivated
b. H 2psSP (spC1), L stem, 2\(\sigma\) \(\text{waá-liimá}\) you (sg) cultivated
c. H 3psSP, L stem, 2\(\sigma\) \(\text{waá-liimá}^{89}\) s/he cultivated

---

88 For depressed non-3p SPs—1ps, 2ps, 1pp, 2pp—the details of how depression is to be surface-expressed are not entirely resolved: the grammatically depressed SPs here (2ps, 1pp, 2pp) are clearly breathy voiced, and this appears to extend fully to their preceding onset sonorant consonants \(w, l\)-, but not clearly to the non-sonorant s- (and the 1ps \(g\)- is always depressed). None of this is surprising, given that [s] does not seem to be a meaningful representation, outside a Ní Chiosáin & Padgett-esque (1997, 2001) model of strictly local
Three sets of minimal pairs can be observed comparing personal prefixes and third person SPs, based on the criterion of depression: 2ps (64b) vs. 3ps (64c)/ Cl 1/ Cl 3 (64g); 2pp (64e) vs. Cl 5 (64i); 1pp (64d) vs. Cl 7 (64k).

(64a,b,d,e) display what seems like depression block, that is, the depressed H on the SP does not shift into stem σ1: analytically, therefore, the modal toneless/low stem -limá would acquire depression on its penult (this being the only ‘device’ seen in the tone/voice grammar that prevents depression shift into an otherwise modal stem). At first, there appears to be phonological evidence for stem σ1 in toneless/low stems itself being depressed. In the same configuration evaluated for toneless/low stems in the present negative (Chapter 7 §7.8.1.2 and paradigm U to follow), the depressed stem σ1 analysis is rejected because in that case longer stems fail to block depressor shift. Even though in the remote past all stem lengths block depressor shift in the default alternants here (64)—but cf. footnote 93 for variation—in addition, all lexical H stems also block depressor shift into stem σ1 (in direct empirical contrast to the present negative data); cf. footnote 91 for H stems. Thus, the remote past SPs do not display depression conditioned by sonorancy and prominence (penult syllable), as in Chapter 7 §7.8.2.1.

Comparatively, we may observe that Swati has the same distribution of prefixes and tones in this paradigm as does Phuthi: 1ps, 1pp, 2ps, 2pp are all depressed (called ‘masked depression’ in Chapter 7 §7.6.2); 3ps, 3pp are not depressed; e.g. from the remote past: sá-liimá [1pp], ‘we ploughed’; vs. sá-liimá ‘s/he [cl 7] ploughed’; wá-bóona ‘you saw’, wá-bóona ‘s/he saw’ (Rycroft 1980b:7,14). Given that Swati is the language most closely related to Phuthi (cf. Chapter I §1.1.7) it is not surprising that even such seemingly low-level prosodic properties are shared with Phuthi.

90 Three sets of minimal pairs can be observed comparing personal prefixes and third person SPs, based on the criterion of depression: 2ps (64b) vs. 3ps (64c)/ Cl 1/ Cl 3 (64g); 2pp (64e) vs. Cl 5 (64i); 1pp (64d) vs. Cl 7 (64k).
f. H 3ppSP, L stem, 2σ báá-liimá they cultivated
g. Class 1/3 wáá-liimá s/he cultivated
h. Class 2/14 báá-liimá they/it cultivated
i. Class 5 láá-liimá s/he cultivated
j. Class 6 áá-liimá they cultivated
k. Class 7 sáá-liimá s/he cultivated
l. Class 8/10 táá-liimá they cultivated
m. Class 4/9 yáá-liimá they/ s/he cultivated
n. Class 15/17 kwáá-liimá it/there cultivated

o. H 1psSP (spC1), H stem, 2σ gaá-(u)bóoná
g. H 2psSP (spC1), H stem, 2σ waá-(u)bóoná
q. H 3psSP (spC1), H stem, 2σ waá-(u)bóoná
r. H 1ppSP (spC1), H stem, 2σ saá-(u)bóoná

91 The further failure of the depressed 1ps SP to trigger depressor shift preceding H stems
(64o-p, 64r-s) indicates that either (a) stem σ1 is also depressed in these H stems, which would
be without precedent, as grammatically-inserted depression domains (LDs) so far attach only to
toneless/L stems, or (b) there is another reason for the shift failure (that is, for the depression
block). Phonologically long SP seems to be a key factor (cf. next footnote). But cf. footnote 95 for
a series of alternant forms in toneless/low C2, C3, C4 stems that reflect clear depressor shift.
92 Proceeding from the preceding footnote, the phenomenon of depressor shift failure in
(64o-p), et.seq., indicates that there is a reason for the depressor block effect at the SP-stem
boundary which much be other than lexical depression (these are modal stems), and perhaps
other than grammatical depression too (these are H stems). The salient feature of the remote past
is its apparent vowel length preceding the SP#stem boundary: effectively, then, this SP#stem
boundary is in the general case opaque to depressor shift. But that provides no representational
account for why depressor-shift fails to operate off a depressed SP into the stem. (Moreover, in
the other past tense referred to in the introduction to this appendix, the -e- in the configuration
{SP-e-stem} is a short vowel, but when the SP is non-3p (as in the remote past), it is depressed,
and yet there is no depressor-shift into the verb stem in that paradigm either).
93 (64) in general is the first paradigm encountered in the data corpus where a long vowel is
seen to occur non-penultimately. (64q) is the first of several items in this paradigm where a long
H vowel (of the remote past SP) occurs immediately preceding a long H penult (of the H stem).
Now, following the analysis in Chapter 5 §5.3, we already expect the second long vowel in this
sequence (that is, the penult) to be expressed as a falling tone (i.e. a HL, or rather HØ; sequence).
However, it is, in addition, the first long vowel (boldface) in this (HH)(HH)(H)# sequence that
itself has such a high-falling intonation pattern; in fact, this occurs in all (HH)σσ# sequences in
this paradigm. This is more likely due to the downstep that emerges as marking the remote past
<table>
<thead>
<tr>
<th>Stem</th>
<th>Class</th>
<th>Root</th>
<th>Morphology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>s.</td>
<td>H 3ppSP (spC1), H stem, 2σ</td>
<td>łaá-^[bóoná]</td>
<td>you (pl) saw</td>
<td></td>
</tr>
<tr>
<td>t.</td>
<td>H 3ppSP (spC1), H stem, 2σ</td>
<td>bàá-^[bóoná]</td>
<td>they saw</td>
<td></td>
</tr>
<tr>
<td>u.</td>
<td>Class 1/3</td>
<td>wáá-^[bóoná]</td>
<td>s/he saw</td>
<td></td>
</tr>
<tr>
<td>v.</td>
<td>Class 2/14</td>
<td>bàá-^[bóoná]</td>
<td>they/it saw</td>
<td></td>
</tr>
<tr>
<td>w.</td>
<td>Class 5</td>
<td>láá-^[bóoná]</td>
<td>s/he saw</td>
<td></td>
</tr>
<tr>
<td>x.</td>
<td>Class 6</td>
<td>áá-^[bóoná]</td>
<td>they saw</td>
<td></td>
</tr>
<tr>
<td>y.</td>
<td>Class 7</td>
<td>sáá-^[bóoná]</td>
<td>s/he saw</td>
<td></td>
</tr>
<tr>
<td>z.</td>
<td>Class 8/10</td>
<td>táá-^[bóoná]</td>
<td>they saw</td>
<td></td>
</tr>
<tr>
<td>aa.</td>
<td>Class 4/9</td>
<td>yáá-^[bóoná]</td>
<td>they/ s/he saw</td>
<td></td>
</tr>
<tr>
<td>ab.</td>
<td>Class 15/17</td>
<td>kwáá-^[bóoná]</td>
<td>it/there saw</td>
<td></td>
</tr>
<tr>
<td>ac.</td>
<td>H 3ppSP, L stem, 1σ</td>
<td>bàa-tá</td>
<td>they came</td>
<td></td>
</tr>
<tr>
<td>ad.</td>
<td>H 3ppSP, L stem, 2σ</td>
<td>bàá-liimá</td>
<td>they cultivated</td>
<td></td>
</tr>
<tr>
<td>ae.</td>
<td>H 3ppSP, L stem, 3σ</td>
<td>bàá-libáalá</td>
<td>they forgot</td>
<td></td>
</tr>
<tr>
<td>af.</td>
<td>H 3ppSP, L stem, 4σ</td>
<td>bàá-libátísá</td>
<td>they delayed</td>
<td></td>
</tr>
<tr>
<td>ag.</td>
<td>H 1psSP, L stem, 1σ</td>
<td>gáa-tá</td>
<td>I came</td>
<td></td>
</tr>
<tr>
<td>ah.</td>
<td>H 1psSP, L stem, 2σ</td>
<td>gáá-liimá</td>
<td>I cultivated</td>
<td></td>
</tr>
<tr>
<td>ai.</td>
<td>H 1psSP, L stem, 3σ</td>
<td>gáá-libáalá</td>
<td>I forgot</td>
<td></td>
</tr>
<tr>
<td>aj.</td>
<td>H 1psSP, L stem, 4σ</td>
<td>gáá-libátísá</td>
<td>I delayed</td>
<td></td>
</tr>
<tr>
<td>ak.</td>
<td>H 3ppSP, H stem, 1σ</td>
<td>bàá-^[phá]</td>
<td>they gave</td>
<td></td>
</tr>
<tr>
<td>al.</td>
<td>H 3ppSP, H stem, 2σ</td>
<td>bàá-^[bóoná]</td>
<td>they saw</td>
<td></td>
</tr>
<tr>
<td>am.</td>
<td>H 3ppSP, H stem, 3σ</td>
<td>bàá-^[bónísá]</td>
<td>they showed</td>
<td></td>
</tr>
<tr>
<td>an.</td>
<td>H 3ppSP, H stem, 4σ</td>
<td>bàá-^[sébétísá]</td>
<td>they used</td>
<td></td>
</tr>
</tbody>
</table>

stem left-edge (cf. immediately successive footnotes), rather than to some further kind of misaligned EndLow declination effect (from §5.3 earlier). Cf. footnote 94 for speculation as to the source of the downstep itself.
ao. H 1psSP, H stem, 1σ  
  
gąá-(\(^{1}\)) phá  
I gave

ap. H 1psSP, H stem, 2σ  
  
gąá-(\(^{1}\)) bóoná  
I saw

aq. H 1psSP, H stem, 3σ  
  
gąá-bónúsá  
I showed

ar. H 1psSP, H stem, 4σ  
  
gąá-sébétísá  
I used

**Paradigm L: Remote Past**

(65) **Verb Paradigm Template II**  
**Breathy / depressor stems**

<table>
<thead>
<tr>
<th></th>
<th>H SP, L stem, C1, 1σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>—</td>
</tr>
</tbody>
</table>
| b. | H 3ppSP, L stem, C1, 2σ  
  
báá-bheeká  
they looked at |
| c. | H 3ppSP, L stem, C1, 3σ  
  
báá-bhekúísá  
they helped look at |
| d. | H 3ppSP, L stem, C1, 4σ  
  
báá-bhekúísá  
they looked at intensely |
| e. | H 1psSP, L stem, C1, 1σ  
  
— |
| f. | H 1psSP, L stem, C1, 2σ  
  
gąá-bheeká  
I looked at |
| g. | H 1psSP, L stem, C1, 3σ  
  
gąá-bhekúísá  
I helped look at |
| h. | H 1psSP, L stem, C1, 4σ  
  
gąá-bhekúísá  
I looked at intensely |
| i. | H 3ppSP, H stem, C1, 1σ  
  
báá-dlá  
they ate |
| j. | H 3ppSP, H stem, C1, 2σ  
  
báá-vunúna  
they harvested |
| k. | H 3ppSP, H stem, C1, 3σ  
  
báá-vunúísá  
they helped harvest |
| l. | H 3ppSP, H stem, C1, 4σ  
  
báá-vunúísá  
they harvested intensively |

Continuing from comments in footnotes 88-93 in this paradigm, it seems that the robust failure of a depressed SP in the remote past to cause depressor shift, even in H stems (64ao-ar), points to σ1 of the stem being **grammatically** depressed (as proposed for the present negative, analysed in Chapter 7 §7.8.1.2; and cf. paradigm U to follow). As remarked in the preceding footnotes, however, insertion of a grammatical L in only toneless/L stems appears **not** to be a solution, given that the same shift-failure (that is, depression block) phenomenon has been clearly attested for both toneless/L and H stems. For the moment, we can only venture to observe that in Phuthi, although a grammatical L tone may have been grounded historically in toneless/L stems (or the category of non-highness), it has been extended in at least the remote past paradigm to **all** verbs—that is, of both tone classes (toneless/L and H). But also cf. OPs in the past subjunctive paradigm N. And cf. discussion of depression-as-prominence in Chapter 7 §7.8.3.
The same distribution of depressor-‘shifted’ alternants occurs in $H$ stems in this paradigm: C2 stems (64ad,af,ah), C3 stems (av,ax,az), C4 stems (bn,bp,br), in all of these cases reflecting not disjoint HDs but unincorporated H domains (cf. Chapter 7 §7.7.1, and multiple instantiation of unincorporation in preceding paradigms in this appendix). These phenomena continue to be exemplified in the OP data that follows in template VI (69).
Thus, we must now add to what was has just been claimed in footnote 94: these subsequent non-default alternants adduced in (65u,w,y,ad,af,ah, etc), where depressor-shift off the depressed remote past SP is tolerated, seem to reflect a subsequent possible grammatical reanalysis of all stems in the paradigm away from the grammatical L (that is, LD\textsubscript{circum}) property claimed in footnote 94, as σ1 of the depressor-bearing stem has become available for being shifted onto.
ax. (ditto)

ay. H 1psSP, H stem, C3, 5σ  
gaa-bùlugi sísá

az. (ditto)

ba. H 3ppSP, L stem, C4, 4σ  
báá-patalagá

bb. H 3ppSP, L stem, C4, 5σ  
báá-patalagi sísá

bc. H 3ppSP, L stem, C4, 6σ  
báá-patalagi sísá

bd. H 1psSP, L stem, C4, 4σ  
gaa-patalagá

be. (ditto)

bf. H 1psSP, L stem, C4, 5σ  
gaa-patalagi sísá

bg. (ditto)

bh. H 1psSP, L stem, C4, 6σ  
gaa-patalagi sísá

bi. (ditto)

bj. H 3ppSP, H stem, C4, 4σ  
báá-bulalaagá

bk. H 3ppSP, H stem, C4, 5σ  
báá-bulalagi sísá

bl. H 3ppSP, H stem, C4, 6σ  
báá-bulalagi sísá

bm. H 1psSP, H stem, C4, 4σ  
gaa-bulalaagá

bn. (ditto)

bo. H 1psSP, H stem, C4, 5σ  
gaa-bulalagi sísá

bp. (ditto)

bq. H 1psSP, H stem, C4, 6σ  
gaa-bulalagi sísá

br. (ditto)

I saved intensively

they paid indiscriminately

they helped pay indiscriminately

they paid intensively indiscriminately

I paid indiscriminately

I helped pay indiscriminately

I helped pay indiscriminately

they killed indiscriminately

they caused to kill indiscriminately

they killed intensively indiscriminately

I killed indiscriminately

I caused to kill indiscriminately

I killed intensively indiscriminately

(ditto)

(ditto)

(ditto)

(ditto)

(ditto)

(ditto)

(ditto)
They excreted them
I excreted them
They cultivated them
I cultivated them

Paradigm L: Remote Past

(66) Verb Paradigm Template III
Modal stems, with OP

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| a. H 3ppSP, L stem, OP, 1σ | báá-\-ti\-nyá | they excreted them
| b. H 3ppSP, L stem, OP, 2σ | báá-\-ti\-liimá | they cultivated them
| c. H 3ppSP, L stem, OP, 3σ | báá-\-ti\-libáalá | they forgot them
| d. H 3ppSP, L stem, OP, 4σ | báá-\-ti\-libáťísá | they delayed them

They carried on their backs
I carried on my back
They carried on their backs tightly
I carried on my back tightly
They flattened
I flattened
They helped flatten
I helped flatten
They flattened completely
I flattened completely
They flattened indiscriminately intensively
I flattened indiscriminately intensively
g. H 1psSP, L stem, OP, 3σ  
   ḡaá-'tí-libáálá  
   I forgot them

h. H 1psSP, L stem, OP, 4σ  
   ḡaá-'tí-libátíísá  
   I delayed them

i. H 3ppSP, H stem, OP, 1σ  
   báá-'tí-phá  
   they gave them

j. H 3ppSP, H stem, OP, 2σ  
   báá-'tí-bóóñá  
   they saw them

k. H 3ppSP, H stem, OP, 3σ  
   báá-'tí-bónűísá  
   they showed them

l. H 3ppSP, H stem, OP, 4σ  
   báá-'tí-sébéťísá  
   they used them

m. H 1psSP, H stem, OP, 1σ  
   ḡaá-'tí-phá  
   I gave them

n. H 1psSP, H stem, OP, 2σ  
   ḡaá-'tí-bóóñá  
   I saw them

o. H 1psSP, H stem, OP, 3σ  
   ḡaá-'tí-bónűísá  
   I showed them

p. H 1psSP, H stem, OP, 4σ  
   ḡaá-'tí-sébéťísá  
   I used them

Paradigm L: Remote Past

(67) Verb Paradigm Template IV

Modal stems, with 1ps OP

- Obviously these stems cannot be illustrated with a depressed 1ps as SP (since the OP is 1ps), so a substitute depressed SP is used: 2pp laá-.

a. H 3ppSP, L stem, 1psOP, 1σ  
   báá-gái-nýá  
   they excreted me

b. H 3ppSP, L stem, 1psOP, 2σ  
   báá-gái-lífímá  
   they cultivated me

c. H 3ppSP, L stem, 1psOP, 3σ  
   báá-gái-lífáálá  
   they forgot me

d. H 3ppSP, L stem, 1psOP, 4σ  
   báá-gái-lífáťísá  
   they delayed me

97 Depressed 1ps SP in the remote past, such as (66e-h), does not seem able to display a shift effect onto the (modal) OP, that is, LD-MIN is not successful (not defined across syllable units, anyway). Certain optional forms are recorded with a delayed rising H on the 1ps SP, and a sharper falling H on the OP, which may be the precursor to a depressor-shift effect emerging across the SP#OP boundary.

98 A depressed H (i.e. 1ps) OP in the remote past obligatorily shifts its H onto σ1 of a modal stem, including all toneless/low stems (67a-h). This confirms that whatever the status of σ1 in remote past stems of templates I and II above, it is not lexically depressed, otherwise no such depressor shift would be possible in these OP stems. A possible analysis assumes two things: (i) {OP+stem} is a single, fused morphological domain; (ii) given that the OP itself is depressed, no σ1 in any stem can further acquire depression by a kind of NoADJACENT EDGES (i.e. OCP) effect. For the present negative in Chapter 7 §7.8.1.6 (275), this was achieved by the constraint:
Paradigm L: Remote Past

(68) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. H 3ppSP, L stem, C1, OP, 1σ  
   báá-gí-phá  
   they gave me

b. H 3ppSP, L stem, C1, OP, 2σ  
   báá-gí-bóoná  
   they saw me

c. H 3ppSP, L stem, C1, OP, 3σ  
   báá-gí-bónísá  
   they showed me

d. H 3ppSP, L stem, C1, OP, 4σ  
   báá-gí-sébétísá  
   they used me

Paradigm L: Remote Past

(68) Verb Paradigm Template V
Breathy / depressor stems, with OP

a. H 3ppSP, L stem, C1, OP, 1σ  
   báá-gí-phá  
   they gave me

b. H 3ppSP, L stem, C1, OP, 2σ  
   báá-gí-bóoná  
   they saw me

c. H 3ppSP, L stem, C1, OP, 3σ  
   báá-gí-bónísá  
   they showed me

d. H 3ppSP, L stem, C1, OP, 4σ  
   báá-gí-sébétísá  
   they used me

*AE (LLEX, LGRAM) (π).
In these C2 stems with non-depressed OP—that is, with non-1ps OP—there are no general shift alternants as there were in (65u, etc) above. However, in individual forms, and under certain discourse conditions, the speaker allows a H-Ø- (i.e. SP-OP-) sequence to express as L-H-(where the H is sharply falling), thus permitting local shift from SP onto OP. Cf. template VI below for general alternants (shift/non-shift) in all forms with 1ps OP.

<table>
<thead>
<tr>
<th>Stem Type</th>
<th>Verb Form</th>
<th>Discourse Condition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1psSP, L</td>
<td>gá-ti-bhekísísá</td>
<td>OP, 4σ</td>
<td>I looked at them intensely</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-dláá</td>
<td>OP, 1σ</td>
<td>they ate them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-vuuná</td>
<td>OP, 2σ</td>
<td>they harvested them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-vunísá</td>
<td>OP, 3σ</td>
<td>they helped harvest them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-vunísá</td>
<td>OP, 4σ</td>
<td>they harvested intensely</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-dláá</td>
<td>OP, 1σ</td>
<td>I ate them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-vuuná</td>
<td>OP, 2σ</td>
<td>I harvested them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-vunísá</td>
<td>OP, 3σ</td>
<td>I helped harvest them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-vunísá</td>
<td>OP, 4σ</td>
<td>I harvested them intensely</td>
</tr>
<tr>
<td>3ppSP, L</td>
<td>báá-ti-laadzá</td>
<td>OP, 2σ</td>
<td>they fetched them</td>
</tr>
<tr>
<td>3ppSP, L</td>
<td>báá-ti-ladzeelá</td>
<td>OP, 3σ</td>
<td>they followed them</td>
</tr>
<tr>
<td>3ppSP, L</td>
<td>báá-ti-ladzel:lá</td>
<td>OP, 4σ</td>
<td>they pursued them</td>
</tr>
<tr>
<td>1psSP, L</td>
<td>gá-ti-laadzá</td>
<td>OP, 2σ</td>
<td>I fetched them</td>
</tr>
<tr>
<td>1psSP, L</td>
<td>gá-ti-ladzeelá</td>
<td>OP, 3σ</td>
<td>I followed them</td>
</tr>
<tr>
<td>1psSP, L</td>
<td>gá-ti-ladzel:lá</td>
<td>OP, 4σ</td>
<td>I pursued them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-tsheegá</td>
<td>OP, 2σ</td>
<td>they bought them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-tsheegá:í sá</td>
<td>OP, 3σ</td>
<td>they sold them</td>
</tr>
<tr>
<td>3ppSP, H</td>
<td>báá-ti-tsheegá síísá</td>
<td>OP, 4σ</td>
<td>they helped sell them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-tsheegá</td>
<td>OP, 2σ</td>
<td>I bought them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-tsheegá:í sá</td>
<td>OP, 3σ</td>
<td>I sold them</td>
</tr>
<tr>
<td>1psSP, H</td>
<td>gá-ti-tsheegá síísá</td>
<td>OP, 4σ</td>
<td>I helped sell them</td>
</tr>
</tbody>
</table>

99 In these C2 stems with non-depressed OP—that is, with non-1ps OP—there are no general shift alternants as there were in (65u, etc) above. However, in individual forms, and under certain discourse conditions, the speaker allows a H-Ø- (i.e. SP-OP-) sequence to express as L-H-(where the H is sharply falling), thus permitting local shift from SP onto OP. Cf. template VI below for general alternants (shift/non-shift) in all forms with 1ps OP.
they cultivated them indiscriminately

they helped cultivate them indiscriminately

they cultivated them intensively indiscriminately

I cultivated them indiscriminately

I helped cultivate them indiscriminately

I cultivated them intensively indiscriminately

they saved them

they helped save them

they saved them intensively

I saved/kept them

I helped save them

I saved them intensively

they paid them indiscriminately

they helped pay them indiscriminately

they paid them intensively indiscriminately

I paid them indiscriminately

I helped pay them indiscriminately

I paid them intensively indiscriminately
au. H 3ppSP, H stem, C4, OP, 4σ  báá-tí-bulalaagá
they killed them indiscriminately
av. H 3ppSP, H stem, C4, OP, 5σ  báá-tí-bulalagiisá
they caused them to kill indiscriminately
aw. H 3ppSP, H stem, C4, OP, 6σ  báá-tí-bulalagisísá
they killed them intensively indiscriminately
ax. H 1psSP, H stem, C4, OP, 4σ  gáá-tí-bulalaagá
I killed them indiscriminately
ay. H 1psSP, H stem, C4, OP, 5σ  gáá-tí-bulalagiisá
I caused them to kill indiscriminately
az. H 1psSP, H stem, C4, OP, 6σ  gáá-tí-bulalagisísá
I killed them intensively indiscriminately
ba. H 3ppSP, L stem, C12, OP, 2σ  báá-tí-bheebhá
they carried them their backs
bb. H 3ppSP, L stem, C12, OP, 3σ  báá-tí-bhebhiísá
they helped carry them on their backs
bc. H 3ppSP, L stem, C12, OP, 4σ  báá-tí-bhebhiísísá
they carried them on their backs tightly
bd. H 1psSP, L stem, C12, OP, 2σ  gáá-tí-bheebhá
I carried them on my back
be. H 1psSP, L stem, C12, OP, 3σ  gáá-tí-bhebhiísá
I helped carry them on my back
bf. H 1psSP, L stem, C12, OP, 4σ  gáá-tí-bhebhiísísá
I carried them on my back tightly
bg. H 3ppSP, H stem, C12, OP, 2σ  báá-tí-gaadzą
they flattened them
bh. H 3ppSP, H stem, C12, OP, 3σ  báá-tí-gadziisá
they helped them flatten
bi. H 3ppSP, H stem, C12, OP, 4σ  báá-tí-gadziísísá
they flattened them completely
bj. H 1psSP, H stem, C12, OP, 2σ  gáá-tí-gaadzą
I flattened them
bk. H 1psSP, H stem, C12, OP, 3σ  gáá-tí-gadziisá
I helped flatten them
bl. H 1psSP, H stem, C12, OP, 4σ  gáá-tí-gadziísísá
I flattened them completely
bm. H 3ppSP, H stem, C123, OP, 5σ  báá-ti-gadzagi síisá  they flattened them indiscriminately intensively

bn. H 1psSP, H stem, C123, OP, 5σ  gáá-ti-gadzagi síisá  I flattened them indiscriminately intensively

**Paradigm L: Remote Past**

(69)  **Verb Paradigm Template VI**

**Breathy / depressor stems, with 1ps OP**

<table>
<thead>
<tr>
<th>Case</th>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H 3ppSP, L stem, C1, 1psOP, 1σ</td>
<td>—</td>
</tr>
<tr>
<td>b.</td>
<td>H 3ppSP, L stem, C1, 1psOP, 2σ</td>
<td>báá-gí-bheeká 100  they looked at me</td>
</tr>
<tr>
<td>c.</td>
<td>(ditto)</td>
<td>báá-gí-bheeká 101  (ditto)</td>
</tr>
<tr>
<td>d.</td>
<td>H 3ppSP, L stem, C1, 1psOP, 3σ</td>
<td>báá-gí-bhekísísá  they helped look at me</td>
</tr>
<tr>
<td>e.</td>
<td>(ditto)</td>
<td>báá-gí-bhekísísá  (ditto)</td>
</tr>
<tr>
<td>f.</td>
<td>H 3ppSP, L stem, C1, 1psOP, 4σ</td>
<td>báá-gí-bhekísísá  they looked at me intensely</td>
</tr>
<tr>
<td>g.</td>
<td>(ditto)</td>
<td>báá-gí-bhekísísá  (ditto)</td>
</tr>
<tr>
<td>h.</td>
<td>H 3ppSP, H stem, C1, 1psOP, 1σ</td>
<td>báá-gíi-dláá  they ate me</td>
</tr>
<tr>
<td>i.</td>
<td>(ditto)</td>
<td>báá-gíi-dláá  (ditto)</td>
</tr>
<tr>
<td>j.</td>
<td>H 3ppSP, H stem, C1, 1psOP, 2σ</td>
<td>báá-gíi-vuuná  they harvested me</td>
</tr>
<tr>
<td>k.</td>
<td>(ditto)</td>
<td>báá-gíi-vuuná  (ditto)</td>
</tr>
<tr>
<td>l.</td>
<td>H 3ppSP, H stem, C1, 1psOP, 3σ</td>
<td>báá-gíi-vunúsásá  they helped me harvest</td>
</tr>
<tr>
<td>m.</td>
<td>H 3ppSP, H stem, C1, 1psOP, 4σ</td>
<td>báá-gíi-vunúsísísá  they harvested me intensively</td>
</tr>
<tr>
<td>n.</td>
<td>(ditto)</td>
<td>báá-gíi-vunísísísá  (ditto)</td>
</tr>
</tbody>
</table>

100 In this template VI, no forms with depressed SP are provided (e.g. with depressed 2ps, 1pp, 2pp SPs), because there are no implications for tone expression. Thus, the OP and stem in such forms would be tonally phonologically identical to the examples provided here in (69b-bl).

101 In the case of these alternants, the first of the two forms is essentially the default variant. Thus (69b) is the default, but (69c) occurs too; and so on.
o. H 3ppSP, L stem, C2, 1psOP, 2σ báá-gí-laadzá they fetched me
p. (ditto) báá-gí-láadzá (ditto)
q. H 3ppSP, L stem, C2, 1psOP, 3σ báá-gí-ládzeelá they followed me
r. (ditto) báá-gí-ládzeelá (ditto)
s. H 3ppSP, L stem, C2, 1psOP, 4σ báá-gí-ládzel:lá they pursued me
t. (ditto) báá-gí-ládzel:lá (ditto)

u. H 3ppSP, H stem, C2, 1psOP, 2σ báá-gí-tsheegá they bought me
v. (ditto) báá-gí-tsheegá (ditto)
w. H 3ppSP, H stem, C2, 1psOP, 3σ báá-gí-tshégi:sá they sold me
x. (ditto) báá-gí-tshégí:sá (ditto)
y. H 3ppSP, H stem, C2, 1psOP, 4σ báá-gí-tshégí:sisá they helped sell me
z. (ditto) báá-gí-tshégí:sisá (ditto)

aa. H 3ppSP, L stem, C3, 1psOP, 3σ báá-gí-límaagá they cultivated me indiscriminately
ab. (ditto) báá-gí-límaagá (ditto)
ac. H 3ppSP, L stem, C3, 1psOP, 4σ báá-gí-límagí:sá they helped cultivate me indiscriminately
ad. (ditto) báá-gí-límagí:sá (ditto)
ae. H 3ppSP, L stem, C3, 1psOP, 5σ báá-gí-límagí:sisá they cultivated me intensively indiscriminately
af. (ditto) báá-gí-límagí:sisá (ditto)
ag. H 3ppSP, H stem, C3, 1psOP, 3σ báá-gí-búluugá they saved me
ah. (ditto) báá-gí-búluugá (ditto)
ai. H 3ppSP, H stem, C3, 1psOP, 4σ báá-gí-búlugí:sá they helped save me
aj. (ditto) báá-gí-búlugí:sá (ditto)
ak. H 3ppSP, H stem, C3, 1psOP, 5σ báá-gí-búlugí:sisá they saved me intensively
al. (ditto) báá-gí-búlugí:sisá (ditto)
am. H 3ppSP, L stem, C4, 1psOP, 4σ  
baá- gi-pátalaagá  
they paid me indiscriminately

an. (ditto)  
baá- gi-pátalaagá  
(ditto)

ao. H 3ppSP, L stem, C4, 1psOP, 5σ  
baá- gi-pátalagiisá  
they helped pay me indiscriminately

ap. (ditto)  
baá- gi-pátalagiisá  
(ditto)

aq. H 3ppSP, L stem, C4, 1psOP, 6σ  
baá- gi-pátalagisísá  
they paid me intensively indiscriminately

ar. (ditto)  
baá- gi-pátalagisísá  
(ditto)

as. H 3ppSP, H stem, C4, 1psOP, 4σ  
baá- gi-búlalaagá  
they killed me indiscriminately

at. (ditto)  
baá- gi-búlalaagá  
(ditto)

au. H 3ppSP, H stem, C4, 1psOP, 5σ  
baá- gi-búlalagiisá  
they caused me to kill indiscriminately

av. (ditto)  
baá- gi-búlalagisísá  
(ditto)

aw. H 3ppSP, H stem, C4, 1psOP, 6σ  
baá- gi-búlalagisísá  
they killed me intensively indiscriminately

ax. (ditto)  
baá- gi-búlalagisísá  
(ditto)

ay. H 3ppSP, L stem, C12, 1psOP, 2σ  
baá- gi-bhebhá  
they carried me on their backs

az. (ditto)  
baá- gi-bhebhá  
(ditto)

ba. H 3ppSP, L stem, C12, 1psOP, 3σ  
baá- gi-bhebhiisá  
they helped me carry on their backs

bb. (ditto)  
baá- gi-bhebhiisá  
(ditto)

bc. H 3ppSP, L stem, C12, 1psOP, 4σ  
baá- gi-bhebhisísá  
they carried me on their backs tightly

bd. (ditto)  
baá- gi-bhebhisísá  
(ditto)

be. H 3ppSP, H stem, C12, 1psOP, 2σ  
baá- gi- gaadzá  
they flattened me

bf. (ditto)  
baá- gi- gaadzá  
(ditto)

bg. H 3ppSP, H stem, C12, 1psOP, 3σ  
baá- gi-gadziisá  
they helped me flatten

bh. (ditto)  
baá- gi-gadziisá  
(ditto)
bi. H 3ppSP, H stem, C12, 1psOP, 4σ  \[\text{báá-gí-gadži síísá}\]  they flattened me completely

bj. (ditto)  \[\text{báá-gí-gadži síísá}\]  (ditto)

bk. H 3ppSP, H stem, C123, 1psOP, 5σ  \[\text{báá-gí-gadži síísá}\]  they flattened me indiscriminately intensively

bl. (ditto)  \[\text{báá-gí-gadži síísá}\]  (ditto)

[turn to the next page for Appendix A, Paradigm M: Perfective Indicative Negative]
Paradigm M: Perfective Indicative Negative

- \{SP\}_{NegSP} + -ta\_ta- + (OP) + \{ROOT (+suffixes) + -i\}_{stem}
- The perfective indicative negative is a \(\sigma_2\)-to-ultima paradigm, that is, it displays a grammatical H that extends from stem \(\sigma_2\) to the ultima. It has been examined as such for general (non-depressor) tone properties in Chapter 6 §6.3.3.2.
- The perfective negative is similar to the imperative (paradigm K above) in that it also involves a grammatical H pattern, aligning leftwards to \(\sigma_2\), and rightwards to the ultima syllable. The perfective negative differs from the imperative morphologically in that it contains: (a) a two-syllable negative SP—the generic negative prefix shape, cf. Chapter 2 §2.2.4.10, and cf. the present negative in paradigm U)—and (b) a toneless negative marker -ta-, whose left edge is opaque for H extension (‘spread’).
- This -ta- negative appears unattested elsewhere in Nguni (although may be cognate to the Xhosa remote past -za-nga negative auxiliary); cf. the remote past negative paradigm P.
- The stem has the morphological shape of all the negative stems, marked by final vowel -i.
- Thus, unlike the long perfective (paradigm E) or short perfective (paradigm J), imbrication plays no role in the perfective negative (as there is no -e suffix that operates on the stem).
- Some data fragments from the perfective negative have been adduced in Chapters 6 and 7.
- All negative SPs have the tonal shape ØH (or LH). In templates I-VI, the non-1ps SP used is the negative alí-, corresponding to 2pp li-.

(70) **Verb Paradigm Template I**
**Modal stems**
- a. H NegSP, L stem, 1\(\sigma\) alí-taa-tí you have not come
- b. H NegSP, L stem, 2\(\sigma\) alí-ta-liimí you have not cultivated
- c. H NegSP, L stem, 3\(\sigma\) alí-ta-limísí you have not helped cultivate
- d. H NegSP, L stem, 4\(\sigma\) alí-ta-limísísí you have not cultivated intensively
<table>
<thead>
<tr>
<th></th>
<th>H 1psNegSP, L stem, 1σ</th>
<th>agi-táa-tí</th>
<th>I have not come</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>H 1psNegSP, L stem, 2σ</td>
<td>agi-tá-liimí</td>
<td>I have not cultivated</td>
</tr>
<tr>
<td>g</td>
<td>H 1psNegSP, L stem, 3σ</td>
<td>agi-tá-liimísí</td>
<td>I have not helped cultivate</td>
</tr>
<tr>
<td>h</td>
<td>H 1psNegSP, L stem, 4σ</td>
<td>agi-tá-liimísisí</td>
<td>I have not cultivated intensively</td>
</tr>
<tr>
<td>i</td>
<td>H NegSP, H stem, 1σ</td>
<td>alí-taa-phí</td>
<td>you have not given</td>
</tr>
<tr>
<td>j</td>
<td>H NegSP, H stem, 2σ</td>
<td>alí-ta-bóoní</td>
<td>you have not seen</td>
</tr>
<tr>
<td>k</td>
<td>H NegSP, H stem, 3σ</td>
<td>alí-ta-bónísí</td>
<td>you have not shown</td>
</tr>
<tr>
<td>l</td>
<td>H NegSP, H stem, 4σ</td>
<td>alí-ta-sébítísí</td>
<td>you have not used</td>
</tr>
<tr>
<td>m</td>
<td>H 1psNegSP, H stem, 1σ</td>
<td>agi-táa-phí</td>
<td>I have not given</td>
</tr>
<tr>
<td>n</td>
<td>H 1psNegSP, H stem, 2σ</td>
<td>agi-tá-bóoní</td>
<td>I have not seen</td>
</tr>
<tr>
<td>o</td>
<td>H 1psNegSP, H stem, 3σ</td>
<td>agi-tá-bónísí</td>
<td>I have not shown</td>
</tr>
<tr>
<td>p</td>
<td>H 1psNegSP, H stem, 4σ</td>
<td>agi-tá-sébítísí</td>
<td>I have not used</td>
</tr>
</tbody>
</table>

**Paradigm M: Perfective Indicative Negative**

(71) **Verb Paradigm Template II**

**Breathy / depressor stems**

<table>
<thead>
<tr>
<th></th>
<th>H NegSP, L stem, C1, 1σ</th>
<th>—</th>
<th>—</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>H NegSP, L stem, C1, 2σ</td>
<td>alí-ta-bheekí</td>
<td>you have not looked at</td>
</tr>
<tr>
<td>c</td>
<td>H NegSP, L stem, C1, 3σ</td>
<td>alí-ta-bheekísí</td>
<td>you have not helped look at</td>
</tr>
<tr>
<td>d</td>
<td>H NegSP, L stem, C1, 4σ</td>
<td>alí-ta-bheekísísí</td>
<td>you have not looked at intensively</td>
</tr>
<tr>
<td>e</td>
<td>H 1psNegSP, L stem, C1, 2σ</td>
<td>agi-tá-bheekí</td>
<td>I have not looked at</td>
</tr>
<tr>
<td>f</td>
<td>H 1psNegSP, L stem, C1, 3σ</td>
<td>agi-tá-bheekísí</td>
<td>I have not helped look at</td>
</tr>
<tr>
<td>g</td>
<td>H 1psNegSP, L stem, C1, 4σ</td>
<td>agi-tá-bheekísísí</td>
<td>I have not looked at intensively</td>
</tr>
</tbody>
</table>
h. H NegSP, H stem, C1, 1σ alí-taa-dlí you have not eaten
i. H NegSP, H stem, C1, 2σ alí-ta-vuuní you have not harvested
j. H NegSP, H stem, C1, 3σ alí-ta-vunísí you have not helped harvest
k. H NegSP, H stem, C1, 4σ alí-ta-vunísísí you have not harvested intensively
l. H 1psNegSP, H stem, C1, 1σ agí-táa-dlí I have not eaten
m. H 1psNegSP, H stem, C1, 2σ agí-tá-vuuní I have not harvested
n. H 1psNegSP, H stem, C1, 3σ agí-tá-vunísí I have not helped harvest
o. H 1psNegSP, H stem, C1, 4σ agí-tá-vunísísí I have not harvested intensively
p. H NegSP, L stem, C2, 2σ alí-ta-laadźí you have not fetched
q. H NegSP, L stem, C2, 3σ alí-ta-ladzeelí you have not followed
r. H NegSP, L stem, C2, 4σ alí-ta-ladzelí you have not pursued
s. H 1psNegSP, L stem, C2, 2σ agí-tá-laadźí I have not fetched
t. H 1psNegSP, L stem, C2, 3σ agí-tá-ladzeelí I have not followed
u. H 1psNegSP, L stem, C2, 4σ agí-tá-ladzelí I have not pursued
v. H NegSP, H stem, C2, 2σ alí-ta-tsheeggí you have not bought
w. H NegSP, H stem, C2, 3σ alí-ta-tshegíísí you have not sold
x. H NegSP, H stem, C2, 4σ alí-ta-tshegísísí you have not helped sell
y. H 1psNegSP, H stem, C2, 2σ agí-tá-tsheeggí I have not bought
z. H 1psNegSP, H stem, C2, 3σ agí-tá-tshegíísí I have not sold
aa. H 1psNegSP, H stem, C2, 4σ agí-tá-tshegísísí I have not helped sell
you have not cultivated indiscriminately
you have not helped cultivate indiscriminately
you have not cultivated intensively indiscriminately
I have not cultivated indiscriminately
I have not helped cultivate indiscriminately
I have not cultivated intensively indiscriminately
you have not saved
you have not helped saved
you saved intensively
I have not saved
I have not helped saved
I have not saved intensively
you have paid indiscriminately
you have not helped pay indiscriminately
you have not paid intensively indiscriminately
I have not paid indiscriminately
<table>
<thead>
<tr>
<th>Prefix</th>
<th>Case</th>
<th>Stem</th>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ar.</td>
<td>1psNegSP</td>
<td>L</td>
<td>stem</td>
<td>C4, 5σ</td>
</tr>
<tr>
<td>as.</td>
<td>1psNegSP</td>
<td>L</td>
<td>stem</td>
<td>C4, 6σ</td>
</tr>
<tr>
<td>at.</td>
<td>NegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 4σ</td>
</tr>
<tr>
<td>au.</td>
<td>NegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 5σ</td>
</tr>
<tr>
<td>av.</td>
<td>NegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 6σ</td>
</tr>
<tr>
<td>aw.</td>
<td>1psNegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 4σ</td>
</tr>
<tr>
<td>ax.</td>
<td>1psNegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 5σ</td>
</tr>
<tr>
<td>ay.</td>
<td>1psNegSP</td>
<td>H</td>
<td>stem</td>
<td>C4, 6σ</td>
</tr>
<tr>
<td>az.</td>
<td>NegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 2σ</td>
</tr>
<tr>
<td>ba.</td>
<td>NegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 3σ</td>
</tr>
<tr>
<td>bb.</td>
<td>NegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 4σ</td>
</tr>
<tr>
<td>bc.</td>
<td>1psNegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 2σ</td>
</tr>
<tr>
<td>bd.</td>
<td>1psNegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 3σ</td>
</tr>
<tr>
<td>be.</td>
<td>1psNegSP</td>
<td>L</td>
<td>stem</td>
<td>C12, 4σ</td>
</tr>
<tr>
<td>bf.</td>
<td>NegSP</td>
<td>H</td>
<td>stem</td>
<td>C12, 2σ</td>
</tr>
<tr>
<td>bg.</td>
<td>NegSP</td>
<td>H</td>
<td>stem</td>
<td>C12, 3σ</td>
</tr>
</tbody>
</table>
bh. H NegSP, H stem, C12, 4σ  \( \sigma_{\text{tal-ta-gdži}sísí} \)  you have not flattened completely

bi. H 1psNegSP, H stem, C12, 2σ  \( \sigma_{\text{a-gáďži}} \)  I have not flattened

bj. H 1psNegSP, H stem, C12, 3σ  \( \sigma_{\text{ag-tá-(i)gáďži i sísí}} \)  I have not helped flatten

bk. H 1psNegSP, H stem, C12, 4σ  \( \sigma_{\text{ag-tá-gdži}sísí} \)  I have not flattened completely

bl. H NegSP, H stem, C123, 5σ  \( \sigma_{\text{al-ta-gadzagi}sísí} \)  I have not flattened indiscriminately intensively

bm. H 1psNegSP, H stem, C123, 5σ  \( \sigma_{\text{ag-tá-gadz ani}sísí} \)  I have not flattened indiscriminately intensively

Paradigm M: Perfective Indicative Negative

(72) Verb Paradigm Template III

Modal stems, with OP

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H NegSP, L stem, OP, 1σ</td>
<td>( \sigma_{\text{alí-ta-tí-nýí}} )  you have not excreted them</td>
</tr>
<tr>
<td>b.</td>
<td>H NegSP, L stem, OP, 2σ</td>
<td>( \sigma_{\text{al-ta-tí-liimí}} )  you have not cultivated them</td>
</tr>
<tr>
<td>c.</td>
<td>H NegSP, L stem, OP, 3σ</td>
<td>( \sigma_{\text{al-ta-tí-limísísí}} )  you have not helped cultivate them</td>
</tr>
<tr>
<td>d.</td>
<td>H NegSP, L stem, OP, 4σ</td>
<td>( \sigma_{\text{al-ta-tí-limísísí}} )  you have not cultivated them intensively</td>
</tr>
<tr>
<td>e.</td>
<td>H 1psNegSP, L stem, OP, 1σ</td>
<td>—</td>
</tr>
<tr>
<td>f.</td>
<td>H 1psNegSP, L stem, OP, 2σ</td>
<td>( \sigma_{\text{ag tí-tí-liimí}} )  I have not cultivated them</td>
</tr>
<tr>
<td>g.</td>
<td>H 1psNegSP, L stem, OP, 3σ</td>
<td>( \sigma_{\text{ag tí-tí-limísísí}} )  I have not helped them cultivate</td>
</tr>
<tr>
<td>h.</td>
<td>H 1psNegSP, L stem, OP, 4σ</td>
<td>( \sigma_{\text{ag tí-tí-limísísí}} )  I have not cultivated them intensively</td>
</tr>
<tr>
<td>i.</td>
<td>H NegSP, H stem, OP, 1σ</td>
<td>( \sigma_{\text{alí-ta-tí-phí}} )  you have not given them</td>
</tr>
</tbody>
</table>

Based on (72b-d), the OP appears to resist the OP anti-expression constraint (Chapter 5 §5.4), and remains H. But the immediately following H stems (72j-l) revert to the earlier anti-expression pattern; cf. the following footnote.
Beyond the overshort 1-σ H stem in (72i), these H stems reveal unexpresssed OPs (72j-l). Thus, these OP domains are presumably fused to the H stem domain, as happens in the present indicative (cf. §5.4, and paradigm A).

This non-block—that is, depressor shift—of depressed H 1ps OP before the penult (being also σ1) of a toneless/low stem contrasts strikingly with both the present negative (Chapter 7 §7.8.1.2 (236); paradigm U) and with the remote past (paradigm L above).

This non-block—that is, depressor shift—of depressed H 1ps OP before the penult (being also σ1) of a H stem contrasts strikingly with the remote past (paradigm L above).
Paradigm M: Perfective Indicative Negative

(74) Verb Paradigm Template V

**Breathy / depressor stems, with OP**

<table>
<thead>
<tr>
<th>Case</th>
<th>Stem Pattern</th>
<th>Verb Form</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H NegSP, L stem, C1, OP, 1σ</td>
<td>alī-ta-tí-bheekí</td>
<td>you have not looked at them</td>
</tr>
<tr>
<td>b.</td>
<td>H NegSP, L stem, C1, OP, 2σ</td>
<td>alī-ta-tí-bhekūsí</td>
<td>you have not helped them look at</td>
</tr>
<tr>
<td>c.</td>
<td>H NegSP, L stem, C1, OP, 3σ</td>
<td>alī-ta-tí-bhekūsí</td>
<td>you have not looked at them intensively</td>
</tr>
<tr>
<td>d.</td>
<td>H NegSP, L stem, C1, OP, 4σ</td>
<td>alī-ta-tí-bhekūsí</td>
<td>you have not looked at them</td>
</tr>
<tr>
<td>e.</td>
<td>H NegSP, L stem, C1, OP, 2σ</td>
<td>agi-tá-tí-bheekí</td>
<td>I have not looked at them</td>
</tr>
<tr>
<td>f.</td>
<td>H NegSP, L stem, C1, OP, 3σ</td>
<td>agi-tá-tí-bhekūsí</td>
<td>I have not helped look at them</td>
</tr>
<tr>
<td>g.</td>
<td>H NegSP, L stem, C1, OP, 4σ</td>
<td>agi-tá-tí-bhekūsí</td>
<td>I have not looked at them intensively</td>
</tr>
<tr>
<td>h.</td>
<td>H NegSP, H stem, C1, OP, 1σ</td>
<td>alī-ta-tí-dlí</td>
<td>you have not eaten them</td>
</tr>
<tr>
<td>i.</td>
<td>H NegSP, H stem, C1, OP, 2σ</td>
<td>alī-ta-tí-vuní</td>
<td>you have not harvested them</td>
</tr>
<tr>
<td>j.</td>
<td>H NegSP, H stem, C1, OP, 3σ</td>
<td>alī-ta-tí-vuní</td>
<td>you have not helped harvest them</td>
</tr>
<tr>
<td>k.</td>
<td>(ditto)</td>
<td>alī-ta-tí-vuní</td>
<td>(ditto)</td>
</tr>
<tr>
<td>l.</td>
<td>H NegSP, H stem, C1, OP, 4σ</td>
<td>alī-ta-tí-vuní</td>
<td>you have not harvested them intensively</td>
</tr>
<tr>
<td>m.</td>
<td>H 1psNegSP, H stem, C1, OP, 1σ</td>
<td>agi-tá-tí-dlí</td>
<td>I have not eaten them</td>
</tr>
<tr>
<td>n.</td>
<td>H 1psNegSP, H stem, C1, OP, 2σ</td>
<td>agi-tá-tí-vuní</td>
<td>I have not harvested them</td>
</tr>
<tr>
<td>o.</td>
<td>H 1psNegSP, H stem, C1, OP, 3σ</td>
<td>agi-tá-tí-vuní</td>
<td>I have not helped harvest them</td>
</tr>
<tr>
<td>p.</td>
<td>H 1psNegSP, H stem, C1, OP, 4σ</td>
<td>agi-tá-tí-vuní</td>
<td>I have not harvested them intensively</td>
</tr>
</tbody>
</table>

---

106 The OP preceding a H stem reverts to H, but in the default case only when preceding the depressor-bearing 2-σ stems (74i,n,w,z). For longer depressor-bearing H stems (74j,l), the OP is —as expected, all things being equa—unexpressed, as it was in (72n-p) above. An alternant OP expressed as H is tolerated, but only certain under discourse conditions; a single example is provided in (74k).
you have not fetched them
you have not followed them
you have not pursued them
I have not fetched them
I have not followed them
I have not pursued them
you have not bought them
you have not sold them
you have not helped sell them
I have not bought them
I have not sold them
I have not helped them sell
you have not cultivated them indiscriminately
you have not helped cultivate them indiscriminately
you have not cultivated them intensively indiscriminately
I have not cultivated them indiscriminately
ag. H 1psNegSP, L stem, C3, OP, 4σ 
\[ \text{agi-tá-‘tí-limagi isí} \] 
I have not helped cultivate them indiscriminately

ah. H 1psNegSP, L stem, C3, OP, 5σ 
\[ \text{agi-tá-‘tí-limagi sisí} \] 
I have not cultivated them intensively indiscriminately

ai. H NegSP, H stem, C3, OP, 3σ 
\[ \text{alí-ta-tí-buluugí} \] 
you have not saved them

aj. H NegSP, H stem, C3, OP, 4σ 
\[ \text{alí-ta-tí-buluugí i sí} \] 
you have not helped saved them

ak. H NegSP, H stem, C3, OP, 5σ 
\[ \text{alí-ta-tí-buluugí sisí} \] 
you have not saved them intensively

al. H 1psNegSP, H stem, C3, OP, 3σ 
\[ \text{agi-tá-tí-buluugí} \] 
I have not saved them

am.H 1psNegSP, H stem, C3, OP, 4σ 
\[ \text{agi-tá-tí-buluugí i sí} \] 
I have not helped saved them

an. H 1psNegSP, H stem, C3, OP, 5σ 
\[ \text{agi-tá-tí-buluugí sisí} \] 
I have not saved them intensively

ao. H NegSP, L stem, C4, OP, 4σ 
\[ \text{alí-ta-tí-patalaagí} \] 
you have not paid them indiscriminately

ap. H NegSP, L stem, C4, OP, 5σ 
\[ \text{alí-ta-tí-patalagi isí} \] 
you have not helped pay them indiscriminately

aq. H NegSP, L stem, C4, OP, 6σ 
\[ \text{alí-ta-tí-patalagi sisí} \] 
you have not paid them intensively indiscriminately

ar. H 1psNegSP, L stem, C4, OP, 4σ 
\[ \text{agi-tá-‘tí-patalaagí} \] 
I have not paid them indiscriminately

as. H 1psNegSP, L stem, C4, OP, 5σ 
\[ \text{agi-tá-‘tí-patalagi isí} \] 
I have not helped pay them indiscriminately

at. H 1psNegSP, L stem, C4, OP, 6σ 
\[ \text{agi-tá-‘tí-patalagi sisí} \] 
I have not paid them intensively indiscriminately

au. H NegSP, H stem, C4, OP, 4σ 
\[ \text{alí-ta-tí-bulalaagí} \] 
you have not killed them indiscriminately

av. H NegSP, H stem, C4, OP, 5σ 
\[ \text{alí-ta-tí-bulalaagí sisí} \] 
you have not helped kill them indiscriminately
aw. H NegSP, H stem, C4, OP, 6σ alí-ta-tí-bulalagi síisí you have not killed them intensively indiscriminately

ax. H 1psNegSP, H stem, C4, OP, 4σ agi-tá-tí-bulalaagí I have not killed them indiscriminately

ay. H 1psNegSP, H stem, C4, OP, 5σ agi-tá-tí-bulalagi sísí I have not helped kill them indiscriminately

az. H 1psNegSP, H stem, C4, OP, 6σ agi-tá-tí-bulalagi síisí I have not killed them intensively indiscriminately

ba. H NegSP, L stem, C12, OP, 2σ alí-ta-tí-bhebbí you have not carried them on your backs

bb. H NegSP, L stem, C12, OP, 3σ alí-ta-tí-bhebbí sísí you have not helped carry them on your backs tightly

bc. H NegSP, L stem, C12, OP, 4σ alí-ta-tí-bhebbí síisí you have not carried them on your backs tightly

bd. H 1psNegSP, L stem, C12, OP, 2σ agi-tá-’tí-bhebbí I have not carried them on my back

be. H 1psNegSP, L stem, C12, OP, 3σ agi-tá-’tí-bhebbí sísí I have not helped carry them on my back tightly

bf. H 1psNegSP, L stem, C12, OP, 4σ agi-tá-’tí-bhebbí síisí I have not carried them on my back tightly

bg. H NegSP, H stem, C12, OP, 2σ alí-ta-tí-gadzi you have not flattened them

bh. H NegSP, H stem, C12, OP, 3σ alí-ta-tí-gadzi sísí you have not helped flatten them

bi. H NegSP, H stem, C12, OP, 4σ alí-ta-tí-gadzi síisí you have not flattened them completely

bj. H 1psNegSP, H stem, C12, OP, 2σ agi-tá-’tí-gadzi I have not flattened them

bk. H 1psNegSP, H stem, C12, OP, 3σ agi-tá-tí-gadzi sísí I have not helped flatten them

bl. H 1psNegSP, H stem, C12, OP, 4σ agi-tá-tí-gadzi síisí I have not flattened them completely
<table>
<thead>
<tr>
<th>Paradigm M: Perfective Indicative Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>(75) Verb Paradigm Template VI</td>
</tr>
<tr>
<td><strong>Breathy / depressor stems, with 1ps OP</strong></td>
</tr>
<tr>
<td>a. H NegSP, L stem, C1, 1psOP, 1σ —</td>
</tr>
<tr>
<td>b. H NegSP, L stem, C1, 1psOP, 2σ alǐ-ta-gí-bhekkí</td>
</tr>
<tr>
<td>c. H NegSP, L stem, C1, 1psOP, 3σ alǐ-ta-gí-bhekkísí</td>
</tr>
<tr>
<td>d. H NegSP, L stem, C1, 1psOP, 4σ alǐ-ta-gí-bhekkísíísí</td>
</tr>
<tr>
<td>e. H NegSP, H stem, C1, 1psOP, 1σ alǐ-ta-gí-i-dlí</td>
</tr>
<tr>
<td>f. H NegSP, H stem, C1, 1psOP, 2σ alǐ-ta-gí-vuuní</td>
</tr>
<tr>
<td>g. H NegSP, H stem, C1, 1psOP, 3σ alǐ-ta-gí-vünísí</td>
</tr>
<tr>
<td>h. (ditto) alǐ-ta-gí-vünísí</td>
</tr>
<tr>
<td>i. H NegSP, H stem, C1, 1psOP, 4σ alǐ-ta-gí-vünísísí</td>
</tr>
<tr>
<td>j. H NegSP, L stem, C2, 1psOP, 2σ alǐ-ta-gí-láadží</td>
</tr>
<tr>
<td>k. H NegSP, L stem, C2, 1psOP, 3σ alǐ-ta-gí-ládzelí</td>
</tr>
<tr>
<td>l. H NegSP, L stem, C2, 1psOP, 4σ alǐ-ta-gí-ládzélí</td>
</tr>
</tbody>
</table>

The OP preceding these depressor stems seems by default always to be H (75f,g,i). In some cases of longer depressor-bearing stems (3σ or more), there is under certain discourse conditions an alternant where the OP is underexpressed, as it is by default in indicative paradigms—and cf. (74j,l,o), etc, above. A single example is provided in (75h).
m. H NegSP, H stem, C2, 1psOP, 2σ  \( \text{al}-\text{ta-gi} \text{-tshēgī} \) you have not bought me
n. H NegSP, H stem, C2, 1psOP, 3σ  \( \text{al}-\text{ta-gi} \text{-tshēgi i sí} \) you have not sold me
o. H NegSP, H stem, C2, 1psOP, 4σ  \( \text{al}-\text{ta-gi} \text{-tshēgi sísí} \) you have not helped sell me
p. H NegSP, L stem, C3, 1psOP, 3σ  \( \text{al}-\text{ta-gi} \text{-límaagí} \) you have not cultivated me indiscriminately
q. H NegSP, L stem, C3, 1psOP, 4σ  \( \text{al}-\text{ta-gi} \text{-límagí i sí} \) you have not helped cultivate me indiscriminately
r. H NegSP, L stem, C3, 1psOP, 5σ  \( \text{al}-\text{ta-gi} \text{-límagí sísí} \) you have not cultured me indiscriminately
s. H NegSP, H stem, C3, 1psOP, 3σ  \( \text{al}-\text{ta-gi} \text{-būluugí} \) you have not saved me
t. H NegSP, H stem, C3, 1psOP, 4σ  \( \text{al}-\text{ta-gi} \text{-būlugí i sí} \) you have not helped saved me
u. H NegSP, H stem, C3, 1psOP, 5σ  \( \text{al}-\text{ta-gi} \text{-būlugí sísí} \) you have not saved me intensively
v. H NegSP, L stem, C4, 1psOP, 4σ  \( \text{al}-\text{ta-gi} \text{-pátaagí} \) you have not paid me indiscriminately
w. H NegSP, L stem, C4, 1psOP, 5σ  \( \text{al}-\text{ta-gi} \text{-pátalagi i sí} \) you have not helped pay me indiscriminately
x. H NegSP, L stem, C4, 1psOP, 6σ  \( \text{al}-\text{ta-gi} \text{-pátalagi sísí} \) you have not paid me intensively indiscriminately
y. H NegSP, H stem, C4, 1psOP, 4σ  \( \text{al}-\text{ta-gi} \text{-būlalaagí} \) you have not killed me indiscriminately
z. H NegSP, H stem, C4, 1psOP, 5σ  \( \text{al}-\text{ta-gi} \text{-būlalagi i sí} \) you have not helped kill me indiscriminately
aa. H NegSP, H stem, C4, 1psOP, 6σ  \( \text{al}-\text{ta-gi} \text{-būlalagi sísí} \) you have not killed me intensively indiscriminately
ab. H NegSP, L stem, C12, 1psOP, 2σ αlī-ta-gī-تببحی you have not carried me on your backs
ac. H NegSP, L stem, C12, 1psOP, 3σ αlī-ta-gī-تببحی sí you have not helped carry me on your backs
ad. H NegSP, L stem, C12, 1psOP, 4σ αlī-ta-gī-تببحی síísí you have not carried me on your backs tightly
ae. H NegSP, H stem, C12, 1psOP, 2σ αlī-ta-gī-غادقی you have not flattened me
af. H NegSP, H stem, C12, 1psOP, 3σ αlī-ta-gī-غادقی sí you have not helped flatten me
ag. H NegSP, H stem, C12, 1psOP, 4σ αlī-ta-gī-غادقی síísí you have not flattened me completely
ah. H NegSP, H stem, C123, 1psOP, 5σ αlī-ta-gī-غادقی síísí you have not flattened me indiscriminately intensively

[turn to the next page for Appendix A, Paradigm N: Past Subjunctive]
Paradigm N: Past Subjunctive

- \{SP + -\text{-}a\} \text{RemPast (Σ / M)} + (OP) + \{\text{ROOT (+suffixes)} + -a\} \text{stem}
- The paradigm name ‘past subjunctive’ is traditional among Southern Bantu researchers, but is somewhat unintuitive: this morphological paradigm is typically a consecutive verb form, used in syntactic sequence with specific auxiliary verbs, e.g. -(e)se: \text{SP}_γ-(e)se \text{SP}_γ-X ‘Has Y ever X-ed?’, or in series with other main verbs: ...\text{SP}_γ-X ‘...and Y X-ed’.
- In what follows I gloss the data as consecutive ‘...&’.
- The past subjunctive has been catalogued in Chapter 2 §2.2.4.9, and partially drawn on in Chapter 7 §7.6.3.2, in argumentation concerning depression types.
- Past subjunctive shares significant similarity morphologically with (i) the remote past (paradigm L), for its subject prefixes, and with (ii) the present participial (paradigm G) for its stem tone.
- Thus, the past subjunctive prefixes have the same shape as the remote past \{SP + -\text{-}a\}, but without the bimoraic phonological length that the remote past seems to have; in addition, the past subjunctive SPs above are subscripted for one of two possibilities: Σ or Μ, reflecting distinctions that are associated with two dialect areas: Sigxodo (Σ) or Mpapa (Μ). The distribution below concerns optional or obligatory depression.

(i) Σ (Sigxodo):

- (a) all elsewhere\textsuperscript{108} toneless/Low SPs must here at least have a depressed alternant (i.e. 1ps \text{gi}-, 2ps \text{wa}-, 1pp \text{sa}- ~ \text{sa}-, 2pp \text{la}- ~ \text{la}-);
- (b) the lexically depressed SP (1ps) and all approximant\textsuperscript{109}-initial prefixes—however they may occur elsewhere (L or H)—are here \textit{obligatorily} depressed: 2ps \text{wa}- (elsewhere toneless/low); 3ps \text{wa}- (elsewhere H); the weak classes (elsewhere H): 1 \text{wa}-, 3 \text{wa}-, 4 \text{ya}-, 9 \text{ya}-. Note: this set does not include elsewhere

\textsuperscript{108} The standard elsewhere condition for the prefix morphology is as found in the present indicative (paradigm A)—which is, in some sense, the neutral paradigm.

\textsuperscript{109} Very surprisingly, the set defined here in (i)(b) is not coextensive with the set of sonorant-initial prefixes (although it was necessary to invoke sonorancy as the criterion for depression on the associative prefix (classes 1,3,4,6,9) in Chapter 7 §7.8.2.3). Here, rather, condition Σ condition (i)(b) excludes class 6 (which elsewhere is typically a ‘weak’ class, and often occurs with sonorant-initial verbal prefixes), and it also excludes the elsewhere toneless/ Low prefixes 1ps \text{sa}- and 2pp \text{la}-, neither of which are approximant-initial. Cf. §7.8.2.3 for discussion of weak/nasal noun classes, §7.8.2.1 for depression insertion conditioned by consonantal sonorance.
non-approximant L prefixes 1pp sa-, 2pp la-, class 6 a-.
(c) all past subjunctive SPs that do not fall into (b) above are optionally depressed, e.g. 3pp/Class 2 ba- ~ ba-.

(ii) M (Mpapa):
(a) all elsewhere toneless/Low SPs are here obligatorily depressed, that is, 1ps gi-, 2ps wa- 1pp sa- (*sa-), 2pp la- (*la-);
(b) all elsewhere H SPs are obligatorily non-depressed, e.g. 3ps/Class 1 wa- (*wa-); 3pp/Class 2 ba- (*ba-).

• Data is tagged in this paradigm according to dialect: Σ (Sigxodo) or M (Mpapa).
• The past subjunctive is readily elicited as a serial verb form with the adverbial auxiliary -(e)se ‘ever?’:

(Σ) SP-sé SP_{RemPast-stem_{RemPast(Σ)}}:
u-sé waá-ta? ‘Have you ever come?’ (2ps)
ú-sé waá-ta? ~ ú-sé waá-ta? ‘Has s/he ever come?’ (3ps)

(M) SP_{df}e_{df}se_{df} SP_{RemPast(M)}:
w-ësë waá-ta? ‘Have you ever come?’ (2ps) \[110\]
w-ësë wáá-ta? ‘Has s/he ever come?’ (3ps)

• The past subjunctive stems maintain the toneless/H lexical distinction, as in the indicative paradigms (paradigms A, B), and the participial (paradigm G): toneless/low stems receive a H from the (always) H prefix; H stems contain their own lexical H. The past subjunctive is an antepenult tone paradigm.

(76) Verb Paradigm Template I

Modal stems
a. 1psH SP, L stem, 2σ ...ga-líima (Σ, M) ...& I cultivated
b. 2psH SP, L stem, 2σ ...wa-líima (Σ, M) ...& you (sg) cultivated

\[110\] The Σ (Sigxodo) auxiliary in these instances is -se (with regular lax RTR mid vowel), but M (Mpapa) -ësë (with harmony-violating tense ATR mid vowels, cf. Chapter 2 §2.2.6.5 on ATR vs. RTR vowels, and their harmonic patterns). When the past subjunctive SP preceding -ësë is 3p (singular or plural), and therefore H, the second of the two H syllables of the auxiliary is downstepped, e.g. 3ps w-ësë. One has to conclude that this is a kind of (unprecedented) H copy effect, not a regular pattern of H extension. The Sigxodo data just above indicates that the -se stem is itself lexically H. Thus, it is the un-H-ness (the surface tonelessness) of the Mpapa 2ps w-ësë (*w-ësë) that is surprising.
c. 3psH SP, L stem, 2σ ...wá-liima (M) & s/he cultivated
d. (ditto) ...wa-liíma (Σ) (ditto)
e. 1ppH SP, L stem, 2σ ...sá-liima (Σ) & we cultivated
f. (ditto) ...sa-liíma (Σ, M) (ditto)
g. 2ppH SP, L stem, 2σ ...lá-liima (Σ) & you (pl) cultivated
h. (ditto) ...la-liíma (Σ, M) (ditto)
i. 3ppH SP, L stem, 2σ ...bá-liima (Σ, M) & they cultivated
j. (ditto) ...bá-liíma (Σ) (ditto)
k. 1psH SP, H stem, 2σ ...ga-bóóna (Σ, M) & I saw
l. 2psH SP, H stem, 2σ ...wa-bóóna (Σ, M) & you (sg) saw
m. 3psH SP, H stem, 2σ ...wá-bóóna (M) & s/he saw
n. (ditto) ...wa-bóóna (Σ) (ditto)
o. 1ppH SP, H stem, 2σ ...sá-bóóna (Σ) & we saw
p. (ditto) ...sa-bóóna (Σ, M) (ditto)
q. 2ppH SP, H stem, 2σ ...lá-bóóna (Σ) & you (pl) saw
r. (ditto) ...la-bóóna (Σ, M) (ditto)
s. 3ppH SP, H stem, 2σ ...bá-bóóna (Σ, M) & they saw
t. (ditto) ...ba-bóóna (Σ) (ditto)
u. 2ppH SP, L stem, 1σ ...láá-ta (Σ) & you came
v. (ditto) ...laá-ta (Σ, M) (ditto)
w. 2ppH SP, L stem, 2σ ...lá-liíima (Σ) & you cultivated
x. (ditto) ...la-liíma (Σ, M) (ditto)
y. 2ppH SP, L stem, 3σ ...lá-límiisa (Σ) & you helped cultivate
z. (ditto) ...la-límiisa (Σ, M) (ditto)
aa. 2ppH SP, L stem, 4σ ...lá-límélaana (Σ) & you cultivated for each other
ab. (ditto) ...la-límélaana (Σ, M) (ditto)
ac. 3ppH SP, L stem, 1σ ...báá-ta (Σ, M) ...& they came
ad. (ditto) ...báá-ta (Σ) (ditto)
af. 3ppH SP, L stem, 2σ ...bá-liiima (Σ, M) ...& they cultivated
ag. (ditto) ...bá-liíima (Σ) (ditto)
ae. 3ppH SP, L stem, 3σ ...bá-límiisa (Σ, M) ...& they helped cultivate
ah. (ditto) ...bá-límiisa (Σ) (ditto)
ai. 3ppH SP, L stem, 4σ ...bá-límélaana (Σ, M) ...& they cultivated for each other
aj. (ditto) ...bá-límélaana (Σ) (ditto)
ak. 2ppH SP, H stem, 1σ ...láa-phá (Σ) ...& you gave
al. (ditto) ...láa-phá (Σ, M) (ditto)
am. 2ppH SP, H stem, 2σ ...lá-bóóna (Σ) ...& you saw
an. (ditto) ...lá-bóóna (Σ, M) (ditto)
ao. 2ppH SP, H stem, 3σ ...lá-bóníísa (Σ) ...& you showed
ap. (ditto) ...lá-bóníísa (Σ, M) (ditto)
aq. 2ppH SP, H stem, 4σ ...lá-sébětiisa (Σ) ...& you used
ar. (ditto) ...lá-sébětiisa (Σ, M) (ditto)
as. 3ppH SP, H stem, 1σ ...báa-phá (Σ, M) ...& they gave
at. (ditto) ...báa-phá (Σ) (ditto)
au. 3ppH SP, H stem, 2σ ...bá-bóóna (Σ, M) ...& they saw
av. (ditto) ...bá-bóóna (Σ) (ditto)
aw. 3ppH SP, H stem, 3σ ...bá-bóníísa (Σ, M) ...& they showed
ax. (ditto) ...bá-bóníísa (Σ) (ditto)
ay. 3ppH SP, H stem, 4σ ...bá-sébětiisa (Σ, M) ...& they used
az. (ditto) ...bá-sébětiisa (Σ) (ditto)

Paradigm N: Past Subjunctive

(77) Verb Paradigm Template II
Breathy / depressor stems
a. 2ppH SP, L stem, C1, 1σ —
b. 2ppH SP, L stem, C1, 2σ ...lá-bheeka (Σ) ...& you looked at
The depressed H SP in (77c)—corresponding to elsewhere toneless/low 2pp SP la— is unambiguously surface-H, even though depressed, that is, this is an instantiation of depressor-block. But the same depressed H SP in (77e,g), and similar examples, has a surface-low SP alternant (not exemplified here), that is, preceding C1 L stems. Such a non-H SP alternant would seem to instantiate fusion of the SP and stem σ1 depression domains.
y. 3ppH SP, H stem, C1, 2σ  
...bá-vuúna (Σ, M)  
...& they harvested

z. (ditto)  
...bá-vuúna (Σ)  
(ditto)

aa. 3ppH SP, H stem, C1, 3σ  
...bá-vuníša (Σ, M)  
...& they helped harvest

ab. (ditto)  
...bá-vuníša (Σ)  
(ditto)

ac. 3ppH SP, H stem, C1, 4σ  
...bá-vunísísa (Σ, M)  
...& they harvested intensively

ad. (ditto)  
...bá-vunísísa (Σ)  
(ditto)

ae. 2ppH SP, L stem, C2, 2σ  
...lá-laadza (Σ)  
...& you fetched

af. (ditto)  
...la-láadza (Σ, M)  
(ditto)

ag. 2ppH SP, L stem, C2, 3σ  
...lá-ládzeela (Σ)  
...& you followed

ah. (ditto)  
...la-ládzeela (Σ, M)  
(ditto)

ai. 2ppH SP, L stem, C2, 4σ  
...lá-ladzel:la (Σ)  
...& you pursued

aj. (ditto)  
...la-ládzel:la (Σ, M)  
(ditto)

ak. 3ppH SP, L stem, C2, 2σ  
...bá-laadza (Σ, M)  
...& they fetched

al. (ditto)  
...ba-láadza (Σ)  
(ditto)

am. 3ppH SP, L stem, C2, 3σ  
...bá-ládzeela (Σ, M)  
...& they followed

an. (ditto)  
...ba-ládzeela (Σ)  
(ditto)

ao. 3ppH SP, L stem, C2, 4σ  
...bá-ladzel:la (Σ, M)  
...& they pursued

ap. (ditto)  
...ba-ládzel:la (Σ)  
(ditto)

aq. 2ppH SP, H stem, C2, 2σ  
...lá-tshéega (Σ)  
...& you bought

ar. (ditto)  
...la-tshéega (Σ, M)  
(ditto)

as. 2ppH SP, H stem, C2, 3σ  
...lá-tségi isa (Σ)  
...& you sold

at. (ditto)  
...la-tségi isa (Σ, M)  
(ditto)

au. 2ppH SP, H stem, C2, 4σ  
...lá-tségéláana (Σ)  
...& you bought for each other

av. (ditto)  
...la-tségéláana (Σ, M)  
(ditto)

aw. 3ppH SP, H stem, C2, 2σ  
...bá-tshéega (Σ, M)  
...& you bought

ax. (ditto)  
...ba-tshéega (Σ)  
(ditto)

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ay. 3ppH SP, H stem, C2, 3\(\sigma\) ...bá-tshegí ísa (Σ, M) ...& you sold
az. (ditto) ...ba-tshégi ísa (Σ) (ditto)
ba. 3ppH SP, H stem, C2, 4\(\sigma\) ...bá-tshegeláana (Σ, M) ...& you bought for each other
bb. (ditto) ...ba-tshegeláana (Σ) (ditto)
bc. 2ppH SP, L stem, C3, 3\(\sigma\) ...lá-límaaga (Σ) ...& you cultivated indiscriminately
bd. (ditto) ...la-límaaga (Σ, M) (ditto)
be. 2ppH SP, L stem, C3, 4\(\sigma\) ...lá-límági ísa (Σ) ...& you helped cultivate indiscriminately
bf. (ditto) ...la-límági ísa (Σ, M) (ditto)
bg. 2ppH SP, L stem, C3, 5\(\sigma\) ...lá-limagísíísa (Σ) ...& you cultivated intensively indiscriminately
bh. (ditto) ...la-limagísíísa (Σ, M) (ditto)
bi. 3ppH SP, L stem, C3, 3\(\sigma\) ...bá-límaaga (Σ, M) ...& they cultivated indiscriminately
bj. (ditto) ...ba-límaaga (Σ) (ditto)
bk. 3ppH SP, L stem, C3, 4\(\sigma\) ...bá-límági ísa (Σ, M) ...& they helped cultivate indiscriminately
bl. (ditto) ...ba-límági ísa (Σ) (ditto)
bm.3ppH SP, L stem, C3, 5\(\sigma\) ...bá-limagísíísa (Σ, M) ...& they cultivated intensively indiscriminately
bn. (ditto) ...ba-limagísíísa (Σ) (ditto)
bo. 2ppH SP, H stem, C3, 3\(\sigma\) ...lá-búluúga (Σ) ...& you saved / kept
bp. (ditto) ...la-búluúga (Σ, M) (ditto)
bq. 2ppH SP, H stem, C3, 4\(\sigma\) ...lá-búluúgi ísa (Σ) ...& you helped save
br. (ditto) ...la-búluúgi ísa (Σ, M) (ditto)
bs. 2ppH SP, H stem, C3, 5\(\sigma\) ...lá-búlugi síísa (Σ) ...& you saved intensively
bt. (ditto) ...la-búlugi síísa (Σ, M) (ditto)
bu. 3ppH SP, H stem, C3, 3σ...
bâ-bûlûga (Σ, M) & they saved / kept (ditto)

bv. (ditto)...

bw. 3ppH SP, H stem, C3, 4σ...
bâ-bûlûgi isa (Σ, M) & they helped save (ditto)

bx. (ditto)...

by. 3ppH SP, H stem, C3, 5σ...
bâ-bûlugi sîisa (Σ, M) & they saved intensively (ditto)

bz. (ditto)...

ca. 2ppH SP, L stem, C4, 4σ...
lá-pátalaaga (Σ) & you payed indiscriminately (ditto)

cb. 2ppH SP, L stem, C4, 5σ...
lá-pátálâgi isa (Σ) & you helped pay indiscriminately (ditto)

cc. (ditto)...

cd. 2ppH SP, L stem, C4, 6σ...
lá-patalagisîisa (Σ) & you payed intensively indiscriminately (ditto)

ce. (ditto)...

cf. 3ppH SP, L stem, C4, 4σ...
bâ-pátalaaga (Σ, M) & they payed indiscriminately (ditto)

cg. (ditto)...

ch. 3ppH SP, L stem, C4, 5σ...
bâ-pátalâgi isa (Σ, M) & they helped pay indiscriminately (ditto)

ci. (ditto)...

cj. 3ppH SP, L stem, C4, 6σ...
bâ-patalagisîisa (Σ, M) & they payed intensively indiscriminately (ditto)

ck. (ditto)...

cl. 2ppH SP, H stem, C4, 4σ...
lá-bûlûlaaga (Σ) & you killed indiscriminately (ditto)

cm. (ditto)...

cn. 2ppH SP, H stem, C4, 5σ...
lá-bûlâlâgi isa (Σ) & you caused to kill indiscriminately (ditto)
co. (ditto) ...\textit{la-búlálá}gí i sa (\Sigma, M) (ditto)
cp. 2ppH SP, H stem, C4, 6\sigma ...\textit{lá-búlalagi}sísa (\Sigma) ...\& you killed intensively indiscriminately
cq. (ditto) ...\textit{la-búlalagi}sísa (\Sigma, M) (ditto)

cr. 3ppH SP, H stem, C4, 4\sigma ...\textit{bá-búlála}ga (\Sigma, M) ...\& they killed indiscriminately
cs. (ditto) ...\textit{ba-búlála}ga (\Sigma) (ditto)

cr. 3ppH SP, H stem, C4, 5\sigma ...\textit{bá-búlálá}gí i sa (\Sigma, M) ...\& they caused to kill indiscriminately
cu. (ditto) ...\textit{ba-búlálá}gí i sa (\Sigma) (ditto)

cv. 3ppH SP, H stem, C4, 6\sigma ...\textit{bá-búlalagisísa} (\Sigma, M) ...\& they killed intensively indiscriminately
cw. (ditto) ...\textit{ba-búlalagisísa} (\Sigma) (ditto)


cx. 2ppH SP, L stem, C12, 2\sigma ...\textit{lá-gudzá} (\Sigma) ...\& you sheared
cy. (ditto) ...\textit{lá-gudzá} (\Sigma, M) (ditto)

cz. 2ppH SP, L stem, C12, 3\sigma ...\textit{lá-gúdži} i sa (\Sigma) ...\& you help sheared
da. (ditto) ...\textit{lá-gúdži} i sa (\Sigma, M) (ditto)

db. 2ppH SP, L stem, C12, 4\sigma ...\textit{lá-gudevzlá}ána (\Sigma) ...\& you sheared for each other
dc. (ditto) ...\textit{lá-gudevzlá}ána (\Sigma, M) (ditto)

dd. 3ppH SP, L stem, C12, 2\sigma ...\textit{bá-guđuda} (\Sigma, M) ...\& they sheared
de. (ditto) ...\textit{bá-guđuda} (\Sigma) (ditto)

df. 3ppH SP, L stem, C12, 3\sigma ...\textit{bá-gúdži} j sa (\Sigma, M) ...\& they help sheared
dg. (ditto) ...\textit{bá-gúdži} j sa (\Sigma) (ditto)

dh. 3ppH SP, L stem, C12, 4\sigma ...\textit{bá-gudevzlá}ána (\Sigma, M) ...\& they sheared for each other
di. (ditto) ...\textit{bá-gudevzlá}ána (\Sigma) (ditto)

dj. 2ppH SP, H stem, C12, 2\sigma ...\textit{lá-gádža} (\Sigma) ...\& you stamped
dk. (ditto) ...\textit{lá-gádža} (\Sigma, M) (ditto)
dl. 2ppH SP, H stem, C12, 3σ ...lá-gadziísa (Σ) ...& you helped stamp
dm. (ditto) ...lá-gadziísa (Σ, M) (ditto)
dn. 2ppH SP, H stem, C12, 4σ ...lá-gadziísáana (Σ) ...& you helped e.o. stamp
do. (ditto) ...lá-gadziísáana (Σ, M) (ditto)
dp. 3ppH SP, H stfem, C12, 2σ ...bá-gááda (Σ, M) ...& they stamped
dq. (ditto) ...bá-gááda (Σ) (ditto)
dr. 3ppH SP, H stem, C12, 3σ ...bá-gadziísa (Σ, M) ...& they helped stamp
ds. (ditto) ...bá-gadziísa (Σ) (ditto)
dt. 3ppH SP, H stem, C12, 4σ ...bá-gadziísáana (Σ, M) ...& they helped e.o. stamp
du. (ditto) ...bá-gadziísáana (Σ) (ditto)
dv. 2ppL SP, H stem, C123, 6σ ...lá-gadzagí séláana (Σ) ...& you helped stamp indiscriminately for each other
dw. (ditto) ...lá-gadzagí séláana (Σ, M) (ditto)
dx. 3ppH SP, H stem, C123, 6σ ...bá-gadzagí séláana (Σ, M) ...& they helped stamp indiscriminately for each other
dy. (ditto) ...bá-gadzagí séláana (Σ) (ditto)

Paradigm N: Past subjunctive
(78) Verb Paradigm Template III
Modal stems, with OP

a. 1psH SP, L stem, 2σ ...gá-ífi-liíma 112 (Σ, M) ...& I cultivated them
b. (ditto) ...ga-ífi-liíma (Σ, M) (ditto)
c. 2psH SP, L stem, 2σ ...wá-ífi-liíma (Σ, M) ...& you (sg) cultivated them

112 In this section, with OPs, insufficient data is available to make all the relevant tonal morphological distinctions in both Mpapa and Sigxodo Phuthi. Also, the two varieties seem nearly to converge in their OP patterns. Essentially, (i) all OPs are underlyingly H, as expected; (ii) SPs that are approximant-initial, and that are elsewhere L (at the least toneless), must here be depressed (e.g. 78b). As in the remote past, the OP here displays depressor block effects to its left edge, thus, in (78a), the first two syllables are H. While the non-1ps OP is audibly depressed, it does not appear to be breathy (thus failing itself to trigger depressor shift); the phenomenon has been termed quasi-depression, part of which data has been seen in Chapter 7 §7.6.3.2 (170). The patterns supplied here are those of Sigxodo.
d. (ditto) ...wa-tí-liima (Σ, M) (ditto)
e. 3psH SP, L stem, 2σ ...wá-tí-liima (Σ, M) ...& s/he cultivated them
f. (ditto) ...wa-tí-liima (Σ, M) (ditto)
g. (ditto) ...wa-tí-liima (Σ, M) (ditto)
h. 1ppH SP, L stem, 2σ ...sá-tí-liima (Σ) ...& we cultivated them
i. (ditto) ...sá-tí-liima (Σ) (ditto)
j. (ditto) ...sa-tí-liima (Σ, M) (ditto)
k. 2ppH SP, L stem, 2σ ...lá-tí-liima (Σ) ...& you (pl) cultivated them
l. (ditto) ...lá-tí-liima (Σ, M) (ditto)
m. (ditto) ...là-tí-liima (Σ, M) (ditto)
n. 3ppH SP, L stem, 2σ ...bá-tí-liima (Σ, M) ...& they cultivated them
o. (ditto) ...bá-tí-liima (Σ, M) (ditto)
p. (ditto) ...ba-tí-liima (Σ, M) (ditto)
q. 1psH SP, H stem, 2σ ...gá-tí-bóóna (Σ, M) ...& I saw them
r. (ditto) ...ga-tí-bóóna (Σ, M) (ditto)
s. 2psH SP, H stem, 2σ ...wá-tí-bóóna (Σ) ...& you (sg) saw them
t. (ditto) ...wa-tí-bóóna (Σ, M) (ditto)
u. 3psH SP, H stem, 2σ ...wá-tí-bóóna (M) ...& s/he saw them
v. (ditto) ...wá-tí-bóóna (Σ)
w. (ditto) ...wa-tí-bóóna (Σ) (ditto)
x. 1ppH SP, H stem, 2σ ...sá-tí-bóóna (Σ) ...& we saw them
y. (ditto) ...sá-tí-bóóna (Σ, M) (ditto)
z. (ditto) ...sa-tí-bóóna (Σ, M) (ditto)

All depressed SPs have an alternative form in both dialects (apparently not the default in Sigxodo, apparently the default in Mpapa) that allows depressor shift, thus changing the status of the OPs from quasi-depressors to regular modal syllables. Where multiple forms are given for a single surface form, this is the last of the exemplars. As noted in the Chapter 7 discussion, this type of OP instability appears to be a locus of potential language change in progress.

In H stems, the OP only express its own parsed H in 1-σ stems, cf. short stems to follow.
Paradigm N: Past Subjunctive

(79)  Verb Paradigm Templates IV-VI
Breathy / depressor stems, with OP
Modal stems, with 1ps OP
Breath / depressor stems, with 1ps OP

• For the remainder of the paradigms, IV to VI, the past subjunctive SP-OP sequence behaves exactly as expected based on the remote past paradigm (L), and what has already been seen from the past subjunctive above. The only distinction is that for the 1ps OP -g₁-, since it is inherently depressed (breathy voiced), it always induces depression shift in modal consonant-initial stems longer than one syllable. Likewise, it induces depression block in stems of the same type just named, except that they commence with a depressor consonant. In other words, unlike the SP-OP boundary, the OP-stem boundary is not susceptible to quasi-depression, that is, it is always permeable for receiving a shifted H tone (under the standard conditions just named).

Paradigm O: Subjunctive Negative

• {SP}NegSP + -ga- + (OP) + {ROOT (+suffixes) + -i}stem

• This paradigm takes a H SP (as in the participial), negative marker -ga-, and negative stem (as in paradigm U).

• Cf. examples in Chapter 2 §2.2.4.9 (128a).

Paradigm P: Remote Past Negative

• {SP}NegSP + -ta₉a-sé ++ {SP}RemPast + (OP) + {ROOT (+suffixes) + -a}stem (I)

• {SP}NegSP + -ta₉a-sé ++ {SP}Participial + (OP) + {ROOT (+suffixes) + -e}stem (II)

• This paradigm is unique in this appendix, in that it consists of a fixed auxiliary verb preceded optionally by a negative SP, that is, (a-SP-)ta-sé, followed by either—
(i) participial (‘remote past I’);
(ii) subjunctive (‘remote past negative II’).
The distinction between these two versions of the remote past negative reflects possible (but as yet unclear) distinctions of semantic reference.

- Cf. examples in Chapter 2 §2.2.4.9 (127d-e).

**Paradigm Q: Present Potential**

- \{SP\} + -ga-{\text{lA}} + (OP) + \{ROOT (+suffixes) + -a\}_{stem}
- Cf. examples in Chapter 2 §2.2.4.9 (122).
- Further data will be published as it becomes confirmed in research currently underway.

**Paradigm R: Present Relative Negative**

- Cf. examples in Chapter 2 §2.2.4.9 (128e).
- Further data will be published as it becomes confirmed in research currently underway.

**Paradigm S: Perfective Relative**

- Cf. examples in Chapter 2 §2.2.4.9 (126c,d).
- Further data will be published as it becomes confirmed in research currently underway.

**Paradigm T: Perfective Relative Negative**

- Cf. examples in Chapter 2 §2.2.4.9 (128f).
- Further data will be published as it becomes confirmed in research currently underway.

**Paradigm U: Present Negative**

- \{SP\}_{NegSP} + (OP) + \{ROOT (+suffixes) + -i\}_{stem}
- This paradigm has been extensively examined in Chapter 7, and is the point of reference for all other paradigms with negative polarity.
- Cf. examples in Chapter 2 §2.2.4.9 (127a), and Chapter 7 §7.8.1.

**Paradigm V: Present Inclusive**

- This paradigm represents the sole example of an affix -ni (the ‘inclusive’) which can be attached to any verb, in any paradigm, supplying with it not only a H, but the capacity to induce at least one, sometimes two downsteps, in the stem representation. Not all aspects of this paradigm are well understood. Further data will be published as it becomes confirmed in research currently underway.
Appendix B

Phuthi Speech Communities

Quthing [ˈʊtʰiŋ] (Phuthi Qûthînî [ˈʊtʰiŋi]), in the Quthing district, is the largest town in southwest Lesotho. There are considerable numbers of Phuthi speakers living at Makoloane [makolwani]; smaller numbers live at Mosuoe [mosûwe], and in nearby Alwyn’s Kop (literally, ‘Alwyn’s head’) — usually just called A’s Kop [ɛskɔp], on the road leading from the Telle Bridge border to Quthing. I cannot accurately estimate the number of speakers here, but there are possibly a few thousand.

Sinxondo [siɲdɔ] (Phuthi Sigxodo [sigdɔ], standard Xhosa Zingxondo [zinɗo]), is a village in the far southwest of Lesotho, on the Telle River border with South Africa (that is, formerly a border with the Transkei, now with the Eastern Cape province). The majority of residents are first-language Phuthi speakers, though there are also some households that are primarily Xhosa or Sotho-speaking. Most residents speak Xhosa, Sotho and Phuthi. Very few people cannot speak Phuthi. Many younger children speak Phuthi exclusively. Speakers live in Rooiwal [rɔiːvɔl] (note diphthong and syllabic [l]), Marantha [márantha], Mmusweni [mũswɛnĩ], Ngxotshaneni [ŋɔtʃanɛnĩ], Qoi [ˈoːjɪ], Mutsapi [mûtsəpĩ], Shoapane [ʃɔapãːnĩ]. Singxondo has been a significant source of language data for this dissertation.

Mpapa is an area southwest of the town of Mount Moorosi, on the road leading east from Koali [kwadi], ultimately to Ralebona [ralibɔna]. The predominantly Phuthi-speaking villages along this route are: Mafura [mafuɾa], ‘Moso [mmoːsɔ], Mongoli [muŋdĩ], Mpapa [mpapa], Daliwe [dalĩwe] (SS: Taleoe [taliwe]) and Ralebona [ralibɔna]; also up the Daliwe River valley at Hlaela [ɬaɛla] and Mathe [maʈʰɛ]. Further west there are speakers at Mosifa [muʂã]. Daliwe is widely considered to be the ‘spiritual’ homeland of the Phuthis. People from as far as Sterkspruit and Quthing emphasise that the ‘real’ speakers of Phuthi are those from Daliwe (and environs)¹. I estimate (in only the roughest way possible) that there may be as many as 10 000

¹ To illustrate this, it was said to me informed when I arrived in Hlaela, one of the remotest Phuthi villages, totally inaccessible by any sort of vehicle, that I had arrived  ekghubwĩnî yheSiphûthî [ɛkʰɯbwĩnĩ jeʃǐpʰuθĩ], ‘in the navel of Phuthi language/culture’, that is, at the
Phuthi speakers living in the valleys around Mpapa and Daliwe. Mpapa has been the main source of Phuthi language data for this dissertation.

There are also a few Phuthi-speaking homesteads at the junction with the tar road at Koali [kwadi] (also called Turnblock [tʰemblək]).

**Makoae** ([makwaji], Ph. [magwaji]) is northeast of the Daliwe villages, across the nearly 3000m Thaba Putsoa peak. Phuthi speakers live at Lethena [lit'ena]. I am not able to estimate the size of the Phuthi speech community.

**Qacha’s Nek** (or simply: Qacha) is the largest town in the southeast of Lesotho. Among the villages in the hills and mountains surrounding Qacha (mostly to the north), a ‘majority’² of the inhabitants speak Phuthi at: Mosamaqa [musama!a], Matebeng [matebeŋ], Mosenekeng [musenekeŋ], Rothifa [rotʰifa], Lebakeng [libaken]; there are ‘some speakers’— it is reported—living in: Rooijane [ruʒani], Mosuwe [musuwe], Melikane [midiŋane]; and a ‘good number’ of speakers at: Qenenelong [leneneloŋ] and Ramokakatlela [ramukakatlela], including some at Lesala [lisala] and Tšolo [tsʰolo].

**Matatiele** (South Africa) is the largest town in the area of the northern Eastern Cape / southern KwaZulu/Natal. Phuthi speakers live north of the town, in Tšepisong [tshepiŋoŋ], Tsitsong [tsiŋoŋ] and Likhetlane [diŋetlane]. Informants report that there are still considerable numbers of speakers in this area, which should not be surprising, since these areas correspond fairly closely to the ones cited in Mzamane (1949), and in Bourquin (1927).

Bourquin declares the Phuthi to be ‘a small tribe, who has its dwelling place in the Drakensberg and right on the border of Basutoland and East-Griqualand in the vicinity of the source of the T[h]inana River’ (1927:279; my translation). This would put the speakers a few kilometres south of the Lesotho-South Africa border post at Ongeluksnek. Mzamane (1949:125) reports the language as spoken chiefly ‘in some part of the districts of Qacha’s Nek and Quthing on either side of the Orange River in Basutoland and in the Cape Province at Ngonyameni, Thinana, Dzakwa’s and Likhetlane locations in the Mt. Fletcher district and in some parts of the very heart of the Phuthi realm.

² These three categories of information are gleaned from what I judge to be reliable oral sources in Qacha: a high school teacher, and an older, educated man from the community. This information has not yet been verified in person.
Matatiele district’. His consultants were mostly from Tšepisong and Malubelube in Matatiele, but also from Mpalla, Mt. Fletcher.

These areas continue to be Phuthi-speaking territory: a Cape Town actuary (Phuthi) is from Mabua, near the source of the Kinira [kinixa] River, just west of Qacha. Phuthi-speaking villages to the south, in the Likhetlane vicinity, include Paballong and Qhobosheaneng; and just north of the Tinana River: Mahanyaneng and Mangoloaneng.

I also collected data from native speakers in the Transkei: there are small numbers of speakers (perhaps a few hundred, all over 50 years in age) at Gcina [glina] and Palmietfontein, that is, north of Sterkspruit, towards the Telle Bridge border between South Africa and Lesotho; and also at Mfinci, to the northeast of Sterkspruit. Younger speakers in these areas are all ‘rememberers’ (cf. Sasse (1992), quoted in my Chapter 1 §1.1.1). It is from these areas that the Phuthi data in Msimang (1989) is drawn.

In addition to the areas which I visited, I collected reports—which I was unable to verify in person—of Phuthi speakers living in other areas. The degree to which these other communities maintain Phuthi as a native language remains to be investigated. The reported locales are:

- **Moqalo** [mu!alɔ], at the foot of the ill-fated Mt. Moorosi [mooirosi]—just outside the eponymous town—where the Phuthis were decimated in 1879 (cf. Chapter 1 §1.1.3); and across the Senqu [siŋku] River (the Lesotho portion of South Africa’s Orange River), in Phamong;

- in the **Mpharane** [mp'arani] area, northeast of Mohale’s Hoek [muhaliz huk] ‘Mohale’s corner’. Walton (1956:141) reports that pole-and-daga construction occurs ‘among the Phuthi in the Mpharane district’. I must assume he is not referring to the two other, smaller Mpharane settlements, one south of Mohale’s Hoek, and one outside Sehlabathebe in the east. This was been confirmed by Lesotho internet correspondents (p.c., September 1996);

- in **Mutamong** (perhaps ‘Molumong?’) in the Mokhotlong [muxotloŋ] area (in the Sani foothills). Speakers here provided the data for the 100- and 200-word lists used by Ownby (1985) to examine the historical linguistic relationships among the Nguni languages (1985:279). However, the interviewer for these data, Katherine Demuth (p.c.),
reports only scattered speakers in the area, and not a robust Phuthi speech community.

Other Lesotho residents I met indicated there may still be Phuthi speakers in this vicinity.

Lesotho-based internet correspondents (p.c., September 1996) confirmed the information on Phuthi people in the Qacha area, and added that there are some speakers in Mphaki, Matsaile and Sehonghong.

This list of Phuthi-speaking locales is certainly incomplete, and awaits further detailed research, particularly in the areas around Qacha and Matatiele.
Appendix C

100-word Comparative List

Based on Mpapa Phuthi, I provide below the Phuthi glosses to 100 English words which correspond relatively closely\textsuperscript{1} to the proposed basic word list of Swadesh (1971). This may serve comparative purposes. This list has been drawn on to generate the claimed lexical cognacy rates referred to in Chapter 1 §1.1.7.1.

- Abbreviations used in the table are as follows:
  - Ng = Phuthi item is cognate with Xhosa (X) item (also Zulu (Z), or Swati (Sw)).
  - SS = Phuthi item is cognate with Southern Sotho item.
  - NgSS = Phuthi item is cognate indeterminately from either Nguni or Sotho.
  - Ph = Phuthi item is less obviously cognate with neighbouring SS or Nguni languages: the source item is essentially unique to Phuthi (or has been very significantly adapted).
  - Tsw / NZ / Afr = item is from a variety of Tswana / Northern Zulu / Afrikaans.
  - Inf = infinitive.

- The rightmost column indicates to which Bantu subgrouping in Zone S—Nguni or Sotho—the Phuthi item appears most immediately cognate. This decision is based purely on stem morphology, and not affixes, as these two morphological categories can be in conflict, e.g. Phuthi \(\mathit{z\bar{w}al\tilde{a}}\) ‘beer’—(2) below—is closest to the obvious Sotho source item, but the prefix H tone is Nguni).

- Where there are two lines for a single English gloss, I deem there to be (near-)synonymic variation in one of the three languages (unless other grammatical information is given).

\textsuperscript{1} In a few cases, I have made certain substitutions of problematic items on the reduced 100-word Swadeses list: #5 ‘that’ is almost always parallel to ‘this’ in Bantu (a demonstrative pronoun), in Phuthi too, and provides no new information to ‘that’; #8 ‘not’ is not useful because negatives are almost always affixes in Bantu generally, in Phuthi too. There is some confusion in Phuthi over #25 ‘leaf’ and #27 ‘bark’. I have also taken out #63 ‘swim’ (the Phuthi, like the Sotho are land-locked), #74 ‘star’, #83 ‘ash’, #89 ‘yellow’ (there is no single item for the colour ‘yellow’), #98 ‘round’. I have substituted other high-frequency items: ‘bad’, ‘beer’, ‘body’, ‘bread’, ‘maize’, ‘sky’, ‘voice’, ‘wood’. I have also changed #45 ‘claw’ to ‘nail’ (of finger, toe).
The second-line Phuthi/Xhosa/Sotho items may not be perfectly synonymic among themselves.

- When the indication of Sotho (SS) or Nguni (Ng) heritage is indicated, square brackets indicate choices which are *not* counted in §1.1.7.1. for purposes of lexicostatistical comparison, as they instantiate a single English gloss with more than one Phuthi reflex. From the additional information, and footnotes commenting on particular words, it should be clear how hard (even dangerous) it is to assess cognacy based on lexical data.
- The spelling of data from all three languages—Phuthi, Nguni, Sotho—has been adjusted to be a single common system (close to an IPA transcription).
- A dash (‘-’) indicates for nouns the morpheme boundary between noun prefix and stem; in the case of verbs, it indicates where verb prefixes would be attached. Verbs are provided with the final tense/aspect morpheme -a of the present indicative.
- The tone given for verbs is that of the present indicative stem (with toneless affixes).
- Tone is mostly not marked in footnotes in this appendix, and on syllables where there is doubt. All syllables are otherwise tone-marked: phonologically toneless syllables and L syllables are marked with grave accent [à].
- None of the toneless-vs.-low implications in Chapter 7 (also assumed in Appendix A) are distinguished here.
- I transcribe the item in each language relatively narrowly, keeping in mind the comments above, and noting the following: only lexical breathy voicing is given (e.g. in item 1), and not predictable breathiness. I do, however, transcribe narrowly the (right-edge) harmonised mid vowels (the pattern which immediately sets Phuthi apart from both Sotho and the other Nguni languages, e.g. ‘see’ Ph -bóna vs. Xh, SS -bóna).

[turn to the next page for the comparative lists]
<table>
<thead>
<tr>
<th>English</th>
<th>Phuthi</th>
<th>Nguni (Xhosa)</th>
<th>Sotho</th>
<th>SS/Ng</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. all.</td>
<td>ज़िले.</td>
<td>-अंके.</td>
<td>-अले.</td>
<td>SS</td>
</tr>
<tr>
<td>2. and.</td>
<td>ला- ~ ले-</td>
<td>ना- ~ नः-</td>
<td>लि-.</td>
<td>Ng</td>
</tr>
<tr>
<td></td>
<td>(ना- ~ नः-) (^5)</td>
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<td></td>
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<td></td>
<td>न्मि.</td>
<td>—</td>
<td>न्मि.</td>
<td>[SS]</td>
</tr>
<tr>
<td></td>
<td>इने (Afrik. en)</td>
<td>—</td>
<td>(इने).</td>
<td>[SS/Afr]</td>
</tr>
<tr>
<td>3. bad.</td>
<td>-बि.</td>
<td>-बि.</td>
<td>-बि.</td>
<td>Ng, SS</td>
</tr>
<tr>
<td>4. beer.</td>
<td>ज-झवला.</td>
<td>उचव-अला.</td>
<td>डझव-अला</td>
<td>SS</td>
</tr>
<tr>
<td>5. belly.</td>
<td>सि-सु.</td>
<td>इस-सु.</td>
<td>नपा.</td>
<td>Ng</td>
</tr>
<tr>
<td>6. big.</td>
<td>-खुलू.</td>
<td>-खुलू.</td>
<td>(-तुना), -हुलू (^6)</td>
<td>Ng (SS)</td>
</tr>
<tr>
<td>7. bird.</td>
<td>इ-नोपना.</td>
<td>इन-तका (Sw इ-पनी).</td>
<td>जनपना.</td>
<td>SS</td>
</tr>
<tr>
<td>8. bite.</td>
<td>-लूमा</td>
<td>-लूमा (~ -लूमा) (^7)</td>
<td>-लूमा.</td>
<td>Ng, SS</td>
</tr>
</tbody>
</table>

\(^2\) The tonal data for these items, and for much of the Xhosa too, has been checked with a native speaker of both Sotho and Xhosa, from Soweto, Johannesburg. Potentially unanticipated variation present in that data, given the extremely multilingual environment of Soweto, has been cross-checked with Sotho data from Gowlett (p.c.), and Xhosa from *The Greater Dictionary of Xhosa* volumes (1989, 2003, 2006). For example, in some varieties of Nguni (here: Xhosa), many speakers attach a postlexical boundary H tone to the right edge of any word that ends in at least two toneless/low syllables. This has been factored out where possible. Also cf. footnote 19.

\(^3\) The first set of ‘and’ items are conjunctive prefixes (cf. Chapter 2 §2.2.5); the second and third sets are coordinating conjunctions. Phuthi breathy voicing disappears in a morphosyntactic negative context.

\(^4\) Breathy sonorants are not generally indicated as breathy in the Xhosa orthography, but are transcribed at the headword in Pahl et. al. (1989), Mini & Tshabe (2003), Tshabe & Shobe (2006), e.g. ‘[n\(^b\)]’. Xhosa *na-* is not given as breathy, but combinations with personal pronouns are (as in Phuthi): e.g. (Xhosa, here with IPA breathy diaritic) nam [n\(^b\)am], i.e. नाम ‘with me’.

\(^5\) The *n*-initial conjunctives are from the Sigxodo dialect (closer to Xhosa). The distribution of ना- ~ नः- is exactly as for Mpapa ला- ~ ले-, except that in the copulative negative (‘not...[BE] with’), ना- sheds its breathy voicing and its H tone. Cf. Chapter 2 §2.2.5; fn. 291.

\(^6\) The Sotho item -hulu <-holo> means ‘old’, with respect to people, not quantitatively ‘big’; the lexical phrase *muthu mu-hulu* <motho moholo> (literally ‘old person’) means ‘grandfather’.

\(^7\) Some dialects of Xhosa have a distinction between falling H (the first exemplar here) and level H verb stems: this distinction corresponds to long-vowel vs. short-vowel disyllabic stems in Proto-Bantu (there is no contrastive vowel length in Nguni). Such a distinction is maintained for...
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<tbody>
<tr>
<td>-nten</td>
<td>-émà-fì</td>
<td>mútíbhá</td>
<td>lí-tshàbhó</td>
<td>mú-khùphà</td>
<td>lí-bélè</td>
<td>-tjáhá</td>
<td>lí-fù</td>
<td>-n'ádzà</td>
<td>-tà</td>
<td>-fá</td>
<td>î-jhá</td>
<td>-sélà</td>
<td>-wómà</td>
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<td>-nýámà</td>
<td>-í-gàzi</td>
<td>úm-zîmbá</td>
<td>í-thâmbó</td>
<td>í-sónkà</td>
<td>émà-</td>
<td>-tjáhá</td>
<td>ìl-fù</td>
<td>-bándà</td>
<td>-(i)zà</td>
<td>-fá</td>
<td>ín-jà</td>
<td>-sélà</td>
<td>-ómà</td>
</tr>
<tr>
<td>9.</td>
<td>SS</td>
<td>SS</td>
<td>SS, Ng</td>
<td>SS, Ng</td>
<td>Ng</td>
<td>Ng</td>
<td>Ng</td>
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<td>Ng (Ph)</td>
<td>Ng</td>
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<td>Ng</td>
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</tbody>
</table>

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9. The Sotho variant with (syllabic) nasal occurs only with adjectives in Class 9/10.

10. Xhosa úm-khùphà is ‘steam bread’, thus, pot bread made from maize meal (or stiff porridge from maize meal and beans).

11. I also have this as (Soweto) Xhosa ín-já.

12. Both variants are given in Mini & Tshabe (2003).

13. In the Mpapa area, Sothos acknowledge this root, but in Soweto it appears unknown. Moreover, while Mpapa Phuthi recognises this root, Sigxodo Phuthi does not.
I also have in-trlanzí. Cf. comment in footnote 2 (this appendix).

This contrasts with úm-làbà ‘red aloe’.

Cf. comment on the Sotho cognate of the Phuthi stem in Chapter 1 §1.1.7.4, footnote 89.

This stem displays irregular root allomorphy between singular and plural.

The first variant of the singular (Class 11 (l)u-) is the standard form in Xhosa, but in all northern Transkei dialects (and in most townships on the Rand, that is, in the Johannesburg/Soweto metropolis where Zulu is also spoken), Class 11 (l)u- has given way to Class 5 (l)ì-.

This the first example of a small set of words that in Sotho that have two plurals, instantiated in this appendix in (28,44,60,99). The stems are originally Class 11, with predictable Class 10 plural (28, line 3), but also a Class 6 plural (28, line 2) probably under the association of the Class 11 with Class 5, and its attendant plural in Class 6. Sotho has distinguished the meanings of the two forms: Class 10 reflects a generic (mass) plural; Class 6 reflects multiple countable items. Phuthi and Xhosa generally have only a single plural form, sometimes selected complementarily between the two languages.

I also have in-trlanzí. Cf. comment in footnote 2 (this appendix).
From Soweto, I have ámâ-fùthà.

From Soweto, I have -lù-lázdá.

In Xhosa, this is one of the ‘latent initial i-’ verbs, where the effect of the i- is phonologically present only when preceded by the vowel a- (cf. discussion in Chapter 2 §2.2.4.5). Phuthi entirely lacks this class of irregular 1-σ stem verb. Both here (42), and in ‘stand’ -i(m)à, úkûmà (83), the Xhosa H stem tone usually expresses not on the stem ultima, but on the preceding syllable (following the Xhosa patterns of H tone assignment and expression). The infinitive is úkû-vá.

From Soweto, I have Xhosa ú-phñndá.

In #46, #94, #100, the subject prefix is given in the first line, the absolute pronoun (a complete word) in the second line. I use the subject prefix for the comparative calculus.

Mpapa Phuthi (embedded in Sotho-speaking territories) has this Sotho item, and others clearly borrowed from Sotho.
51. liver. .... sí-bidzí. .... ísí-bíndì. .... sì-bítì. .... Ng, SS
52. long, tall. ... -dzè. .... -dè. .... -téélé. .... Ng
53. louse. .... í-lhwálà (Mp). .... í-ntwálà. .... ñ-tá. .... Ph
      .... ~ í-thwálà (Sgx).
54. maize. .... í-bhöñí. .... ú-mbà (Z úmbîlà). .... pòónì (~ pòóní). .... SS
55. man. .... û-fç. .... (úm-fç). .... mù-nà. .... Ng
      .... ì-thwálà (Sgx).
56. many. .... -në-tù. .... -nínzì (Sw -néntì). .... -nàtì. .... Ng
57. moon. .... í-xwèdî. .... í-nàngâ. .... xwèdî. .... SS
58. mountain. í-tshàbà. .... ín-tàbà. .... thàbà. .... Ng, SS
59. mouth. .... mú-lömò. .... úm-lömò. .... mù-lömù. .... Ng
60. nail. .... ël-tîphò. .... (l)ú-zîphò ~ (l)í- .... li-nálà. .... Ng
      pl: .... ëmá-tîphò. .... ~. .... mà-nálà ‘nails’
      pl: .... íín-zîphò. .... dì-nálà ‘nail pairings’
61. name. .... íf-bîtô. .... í-gâmà. .... li-bítsò. .... SS
      .... (ím-bízo ‘meeting’)
62. neck. .... mú-làlà. .... ín-tàmç. .... mú-làlà. .... SS
63. new. .... -tfâ. .... -tfâ (Z -fá). .... ñfâ. .... Ng, SS
64. night. .... bù-sûkú. .... úbù-sûkù. .... bù-sìjù. .... Ng
65. nose. .... í-phûmùlç. .... ím-pûmlò. .... ñ-kô. .... Ng
      (Z ím-pûmlò)
66. one. .... -nè. .... -nè. .... -ô (Cl. 9 ìjwi). .... Ng
67. path. .... í-dlélà. .... ín-dlélà. .... tsilà. .... Ng
68. person. .... mú-tfù. .... ùní-ntù (Z. ùmú-ntù). .... mù-thù. .... Ng, SS

---

26 Mini & Tshabe (2003) confirm this unusual morphological parse; -m- is not syllabic.
27 From Soweto, I have í-gàmà.
28 The item ‘new’ also glosses ‘young’ in all three columns.
<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>Transcription</th>
<th>Gloss</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>69.</td>
<td>rain</td>
<td>í-vùlà</td>
<td>pùlà.</td>
<td>Ng</td>
</tr>
<tr>
<td>70.</td>
<td>red</td>
<td>-bòvú</td>
<td>-xúbédù.</td>
<td>Ng</td>
</tr>
<tr>
<td>71.</td>
<td>root</td>
<td>mú-thàpò</td>
<td>mú-tsù, mú-thàpò</td>
<td>SS</td>
</tr>
<tr>
<td>72.</td>
<td>sand</td>
<td>lí-lábàtshí</td>
<td>lí-lábàthí.</td>
<td>(Ng) SS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>í-sáŋtà</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73.</td>
<td>say</td>
<td>-tshì</td>
<td>-rí.</td>
<td>Ng</td>
</tr>
<tr>
<td>74.</td>
<td>see</td>
<td>-bónà</td>
<td>-bónà.</td>
<td>Ng, SS</td>
</tr>
<tr>
<td>75.</td>
<td>seed</td>
<td>í-péwù</td>
<td>ím-bèwù.</td>
<td>SS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>~ í-bhèwú</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>í-lánèlò</td>
<td>[Ph]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>í-tshàgà</td>
<td>[Ph]</td>
<td></td>
</tr>
<tr>
<td>76.</td>
<td>sit</td>
<td>-làlà.</td>
<td>-dùlà.</td>
<td>Ng</td>
</tr>
<tr>
<td>77.</td>
<td>skin</td>
<td>lí-dlàlò</td>
<td>lí-sí-khùmbà.</td>
<td>SS</td>
</tr>
<tr>
<td>78.</td>
<td>sky</td>
<td>lí-tùlù</td>
<td>lí-hùdímü.</td>
<td>Ph</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lí-tsùlù</td>
<td>‘lightning’</td>
<td></td>
</tr>
<tr>
<td>79.</td>
<td>sleep</td>
<td>-ròbàlà</td>
<td>-lálà.</td>
<td>SS</td>
</tr>
<tr>
<td></td>
<td>(fall) asleep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80.</td>
<td>small</td>
<td>-ŋí ~ -ŋíŋíí</td>
<td>-ŋíŋíí ~ -ŋíŋánè.</td>
<td>Ng</td>
</tr>
<tr>
<td>81.</td>
<td>smoke</td>
<td>mú-sí</td>
<td>mú-sí.</td>
<td>(Ng) SS</td>
</tr>
<tr>
<td>82.</td>
<td>speak</td>
<td>-khùlúmà</td>
<td>-thétìa.</td>
<td>Ng</td>
</tr>
</tbody>
</table>

29 Sotho mú-thàpò is glossed ‘vein, artery, root’.

30 This item is preferred in Sigxodo; lí-lábàtshí means more usually ‘world’, so too in Xhosa (not in Sotho).

31 Mpapa prefers í-péwù. Sigxodo prefers í-bhèwú, but the default Sigxodo item is í-lánèlò.

32 The trilingual (native) Phuthi speaker from Sigxodo confirms that this item occurs uniquely in Phuthi. Accepting this as the default translation of ‘seed’ would affect the cognacy count. I remain with the default item from Mpapa.

33 The mid vowel in σ1 of this item occurs most frequently in Phuthi disharmonically, that is, it retains its laxness (RTR) from Sotho, despite not being right-edge adjacent. According to Phuthi’s own harmony patterns (cf. Chapter 2 §2.1.6.3), this ‘should’ be -ròbàlà, with close [o].

34 Northern Xhosa (northern Transkei, including border areas with southwestern Lesotho,
83. stand (up). -phákámà 35. . . . . -phàkámà. . . . . . . . . . . . . -pháhámá. . . . . . . . . . Ng, SS
stand. . . . . -jmà. . . . . . . . . -(i)mà (inf. úkûmà). . . . . -mà. . . . . . . . . . . . . [Ng]
(still), stop
84. stone. . . . . lí-w. . . . . . . . . ìlí-c (Z. ili-t). . . . . . . . lì-dw. . . . . . . . . . . SS
85. sun. . . . . . l@ -làgà. . . . . . . . . . (l)í-làà. . . . . . . . . . . . . lì-tsàtsí . . . . . . . . . . . Ng
86. tail. . . . . . mú-dì tsí . . . . . . . úm-sîlà. . . . . . . . . . . . . . mù-sílà. . . . . . . . . . . SS
87. tongue. . . lí-lîmí. . . . . . . . . úlw-îmì 36 (Z (l)i-limi). . . lì-límì. . . . . . . . . . . . Ng
. . . . . . . . . .. . . . . . . . . . . . . .

(Sw lú-lwîmì)

88. tooth. . . . . lí-ti  . . . . . . . . . (l)í-zî . . . . . . . . . . . . . . lì-í n. . . . . . . . . . . . . Ng
89. tree. . . . . . sí-phàdz. . . . . . . úm-thí . . . . . . . . . . . . . . sì-fátè 37 (~ sì-fát). . SS
. . . . . . . . . .. . . . . . . . . . . . . . (ímpandè ‘root’)
90. two. . . . . . -bì ní  . . . . . . . . . . -bìní. . . . . . . . . . . . . . . . . -bèdí . . . . . . . . . . . . . Ng (SS)
91. voice. . . . lî-ví. . . . . . . . . . . ílì-zwí (Sw ílì-ví). . . . . . lì-ntswí. . . . . . . . . . . Ng
92. walk. . . . . -khábhà. . . . . . . . -ámbà. . . . . . . . . . . . . . -tsàmàjà. . . . . . . . . . . Ng
. . . . . . . . . .. . . . . . . . . . . . . . (Z -hámbà, NZ -khámbà)
93. water. . . . émà-tí. . . . . . . . . ámâ-nzì. . . . . . . . . . . . . . mè-tsí . . . . . . . . . . . . Ng
94. we. . . . . . sì-. . . . . . . . . . . . sì-. . . . . . . . . . . . . . . . . . rì-. . . . . . . . . . . . . . . Ng
. . . . . . . . . tshìné. . . . . . . . . . thîná. . . . . . . . . . . . . . . . rùná. . . . . . . . . . . . . . [Ng]
95. what. . . . . îní ~ -ní, thó-ní 38. (ntó)ní (Z ìní ~ -ní). . . . . -. . . . . . . . . . . . . . . . Ng
96. white. . . . -tshwèú. . . . . . . . -móph. . . . . . . . . . . . . . -swèú (Cl.9 -tshwèú). SS

e.g. Herschel) uses -khùlúmà for ‘speak’, as in Zulu, not -théthà.
35
Ph -phákámà means ‘stand up’ (also in the other two languages); -jmà means ‘stand
(still), stop, wait’, and also in the two cognate forms.
36
From Soweto, I have ú!lw-ímì.
37
We have seen several similar examples in this appendix, where Phuthi and Sotho share a
lexical item with final mid vowel(s), except that Sotho has raised it to an ATR (tense) mid
allophone (or phoneme). This adjustment of final mid vowels seems to be a pattern emerging in
Sotho, which Phuthi entirely lacks. This Sotho raising is often not reflected in standard lexicons.
38
Sigxodo also has interrogative thó-ní (with unlabialised coronal stop, as there is no
labialisation in this dialect), literally ‘thing-what?’, as in the standard Xhosa interrogative ntóní.
1050


97. who. . . . bâní. . . . . . . . bâní 39. . . . . . . . . . . . . máį. . . . . . . . . . . . . Ng
98. woman. . . ú-fâtî. . . . . . . . úm-fâzî. . . . . . . . . . . . . . . mû-sádî. . . . . . . . . . . . . . . Ng
99. wood. . . lî-kxhûnî. . . . . (l)û-khûnî 40. . . . . . . . . . . . . . li-xûį. . . . . . . . . . . . . . . SS
  pl:. . . . . . tî-kxhûnî. . . . . ūûn-kûnî. . . . . . . . . . . . . . dî-xûį
  pl: . . . . . . émà-kxhûnî 41 . . . —. . . . . . . . . . . . . . . . . mà-hûį
100. you. . . . . û-. . . . . . . . . . . . . . . . . . . û-. . . . . . . . . . . . . û-. . . . . . . . . . . . . . . . . . . . . . . . . Ng, SS
  . . . . . . . . . . . . . . . . . . . . . . . . . wèná. . . . . . . . . . . . . . . . . . . . . . . . . . wèná. . . . . . . . . . . . . [Ng, SS]

39 But úbânî ‘who [subject]’.
40 From Soweto, I have (l)û-khûnî.
41 The Phuthi and Sotho plural items in this line indicate ‘pieces of wood’, not merely wood as an undifferentiated quantity (mass noun) as in the line immediately above. This individuative/collective plural pattern in Phuthi is loaned from Sotho, and seems not to be productive (cf. footnote 18, and #28, #60 above).
Appendix D

Lexicons

- This appendix contains around 1550 Phuthi stems, given in both Phuthi-English and English-Phuthi formats, sorted on stem-initial letter (Phuthi stems), and word-initial letter (English). With such a small base, this lexicon can be but a starting point for a fuller dictionary of Phuthi.
- Entries are provided in Phuthi orthography (cf. near-orthography in Chapter 2 §2.1.1). Thus, <îû> indicate the superclose vowels [i u]; <ëö> indicate vowels that are disharmonic with reference to the tense/lax ATR/RTR harmony pattern described in §2.1.6.3, e.g. <apöstöla> has lax (RTR) mid vowels [œœ] despite not being in a locally edge-adjacent mid-vowel sequence; <li-swayë> has tense final vowel [e] despite being stem-edge non-adjacent. The dental, alveolar and lateral clicks are <c q x>. Identical digraph consonants indicate morphological depression, e.g. bba-hle H-H [báà-ľé] "they are beautiful"; or occasionally lexical depression: ttasi [täsi] HL "down, below".
- Columns 1 and 2 are prefix and suffix. For verb stems, there is certainly only the ‘singular’ prefix ku-. Where a prefix column is blank, no morphological prefix has been identified in that case (because the noun is uncountable, or because the item is not a noun at all, or because further research across a wider range of speakers and areas is awaited). Where ‘—’ is found, the expected prefix form is positively missing (a lexical gap). That is, a possible prefix in that category has been checked and rejected by the Phuthi speaker.
- No diacritic breathy voicing / depression is indicated (except orthographically in digraphs, e.g. modal -ya- vs. breathy -yhe-).
- Tone-marking above individual vowels is not given, but the prefixes given in columns 1 and 2 are all (surface-) H (if they are monosyllabic), and the tone pattern provided in column 4 applies to the stems found in column 3. Tones are given as ‘H’ (phonetically high) and ‘L’ (where L is intended neutrally as ‘non-H’, and does not represent a
theoretical claim about breathiness/depression or simply tonelessness). I have included a few items, where the tone value is uncertain. Further work can resolve these uncertainties.

- For a few instances of examples in column 7, ‘F’ is used in the tone column (4), indicating ‘falling tone’, that is, a H-L sequence. Interpretation of such usage must be in the light of the discussion of falling (H-L) tone sequences on a penult resulting from depressor shift (cf. Chapter 7 §7.4 and subsequent sections). In a few instances, falling tones are as in Chapter 5 §5.3. The use of ‘F’ in this lexicon is motivated by the absence of marking penult syllable length. Thus, neither lexical entries nor phrase examples are given in phrase-final form (with lengthened penult).

- In some items, other grammatical information is sometimes unclear too (including shades of semantic nuance), even tone data is in some places incomplete. I am providing this partial data too, believing it important to include such material, even prior to subsequent fuller completion of the entry. The unevenness reflects the conditions of the material gathered in the field.

- Standard stem categories are: n (noun), v (verb), adj (adjective), rel (relative), adv (adverb), conj (conjunction), q (interrogative), intrj (interjection), abspro (absolute pronoun). Where column 5 is empty, the stem category is not one of the standard ones, and is treated elsewhere in the dissertation (e.g. -kho: an existential copula base, cf. Chapter 2 §2.1.6.2). No attempt is made in any exhaustive way to supply all lexical and morphological types, nor all tokens in closed morphological categories.

- Comments on items are given in ‘(...)’ or ‘[...]’, without necessarily distinct implications. Glosses of Phuthi examples in column 7 are in quotes.

- For verb stems, a single tone is given H ~ L. The surface form of a polysyllabic verb word can be generated according to the rules given in chapters 4 through 7 (basic rules sufficient for non-depressor-bearing stems are found in Chapter 4 §4.1 - §4.3). Nouns are given with their stem surface tone, even if that stem pattern is a result of a tone alignment constraint, e.g. mú-fápáholo ‘crown’ is given as H-HHLL, even though the stem is clearly underlyingly toneless (-LLLL), cf. Sotho mo-fapahloho L-LLLL.
• Verbs are provided with varying degrees of verb extension suffix morphology: sometimes one or more extensions (even highly productive ones) is provided; in other cases, only the un-extended base stem is given.

• Abbreviations used in these lexicons include the following:
  
  • orthographic glottal stop (e.g. 'Agasti 'August')
  • illicit item (lexical gap, ill-formed item)
  • grammatical information is placed between square brackets
  • alternative form
  • comes from (e.g. ‘< Xh’ = ‘this item is reported to come from Xhosa’)
  • adjectival function: belonging to the closed class of nominal qualifiers, cf. Chapter 2 §2.2.3)
  • could
  • conjunction
  • copulative construction (cf. Chapter 2 §2.2.1.7, §2.2.3)
  • demonstrative
  • diminutive
  • falling tone
  • ideophone
  • interjection
  • locative
  • movement (indicated for certain locative prefixes)
  • (grammatical) object
  • prefix
  • interrogative word
  • relative (i.e. adjectival function, but belonging to the open class of nominal qualifiers, cf. Chapter 2 §2.2.3)
  • reflexive
  • should
  • species
  • Sigxodo form, possibly not found in Mpana (*Sgx: not in Sigxodo)
  • Sotho equivalent
  • tone marking uncertain
  • tense/aspect
  • verb
  • Xhosa form

• Noun classes are not listed separately, but are automatically identifiable from the prefixes supplied. Where the prefix columns are empty, and therefore there is no singular class prefix, it is to be understood as Class 1a (which lacks prefix morphology), e.g. Agasti ‘August’, which could also be understood as Ø-Agasti, with Class 1a prefix Ø-.
<table>
<thead>
<tr>
<th>Prefix singular</th>
<th>Prefix plural</th>
<th>Lexical Phuthi stem</th>
<th>Stem tone pattern</th>
<th>Stem category</th>
<th>English Gloss</th>
<th>Phrase Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>bo</td>
<td>abûtî</td>
<td>LHL</td>
<td>n</td>
<td>brother (respectful)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>em</td>
<td>adla</td>
<td>LL</td>
<td>n</td>
<td>power, strength</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **s t** adla, LL, n: hand (~ whole arm) (for: left hand, right hand: cf. erguson) s-adla lesi-dvuna HL HLHL "right hand" = s-adla se-liwuja HL HHLH "right hand"; li-axe H-HH "left hand" s-adla lesi-sikati HL HH-HHL "left hand"

- **ku** adleka, L, v: succeed

- **s t** Agastî, LHL, n: August ga- 'Agastî L-HHL "in August"; also: ga-'Ogastî L-HLL

- **mu eba** ahlulî, HHL, n: judge

- **s t** ambreli, HHL, n: umbrella

- **i tî** andaphene, HLHL, n: underpants

- **mu eba** apöstöla, HHHL, n: apostle

- **ku araba** H, v: answer

- **s t** ati, LH, n: water

- **bo aûsî** LHH, n: sister

- **i tî** awara, HLL, n: hour

- **i tî** ayiba, HHL, conj: if

- **m eba** bûsî, HH, n: ruler

- **ku** ba, L, v: to become, be gi-funa kuba yi-titjhere LHL HL LHLL "I want to be(come) a teacher"

- **ku** baba, L, v: be bitter (to taste)
| ku     | baballa   | H  | v  | save (also: opening formula in greeting), take care of |
| ka     | baga      | L  | v  | cause (sth); abduct                                  |
| li     | ema       | LL | n  | cause, reason                                       |
| si     | ti        | LL | n  | place, city                                         |
| ku     | bala      | L  | v  | read, learn                                         |
| mu     | mi        | LH | n  | colour                                               |
| ku     | baleka    | H  | v  | run away                                             |
| ku     | balekaga  | H  | v  | run away frantically                               |
| ku     | balekana  | H  | v  | watch out for e.o., flee e.o.                       |
| bo     | bani      | LH | q  | who                                                  |
| ku     | basa      | L  | v  | put wood together for fire; Dal. also = cook on fire (e.g. meat) |
| ku     | bega      | L  | v  | cut into strips (meat for cooking)                  |
| ku     | beka      | H  | v  | put down                                             |
| li     | ema       | HL | n  | breast                                              |
| li     | ema       | LH | n  | sorghum                                             |
| ku     | beleka    | L  | v  | give birth to                                       |
| li     | belo      | LL | n  | speed                                               |
| ku     | benya     | L  | v  | flash (e.g. of lightning)                           |
| ku     | betla     | L  | v  | carve                                               |
| ku     | betsas    | L  | v  | throw (eg. stone)                                   |
| ku     | betsela   | L  | v  | throw (all at once) into                            |
| ku     | bhacama   | L  | v  | lie on stomach                                      |
| ku     | bhacamisisa | L  | v  | lie down properly (on stomach)                      |
| i      | ti        | LH | n  | history, short story                               |
| ku     | bhatsha   | L  | v  | put on blanket (not other items of clothing)        |
| ku     | bhatshisa | L  | v  | help put on blanket                                |
| si     | ti        | LL | n  | overclothes: blanket, jacket, jersey                |
| ku     | bhatshulla | L  | v  | take off blanket                                    |
| i      | ti        | LL | n  | mouse                                               |
| ku     | bhebha    | L  | v  | carry on the back; give birth                       |
| ku     | bhebhelha | L  | v  | carry in addition to (sth already on the back)
<p>| ku | bhebhellana | L v | carry sth in addition for e.o. |
| ku | bhebhisa | L v | help carry on the back; help give birth |
| ku | bhebhisana | L v | help e.o. carry on the back |
| ku | bheka | L v | look at (*go towards) |
| ku | bhekana | L v | look at e.o. |
| i ti | bhêko | LL n | look, glance |
| i ti | bhila | LH n | rock rabbit (no tail) |
| bhili kwa- | LL H adv | near |
| e | bhili | LL adv | in front of |
| | | | bhilini LHL | &quot;before&quot; (in time); ge-bhili kwa- &quot;in front of&quot; |
| i ti | bhîna | LH n | song |
| ku | bhîna | H v | sing |
| ku | bhînaga | H v | sing indiscriminately, unpredictably |
| mu eba | bhînî | HL n | singer (casual, not as a profession) |
| si ti | bhînî | HL n | singer (professional) |
| mu mi | bhîno | LH n | music; pl: different pieces of music |
| i ti | bhûta | LH n | pot |
| i ti | bholo | HL n | soccer |
| i -- | bhoni | HL n | maize |
| ku | bhoshula | L v | take off clothes |
| ku | bhûbhûdla | H v | blow (of wind) |
| ku | bhûdla | L v | blow |
| bhulu kwa- | LL H adv | near |
| i ti | bhûtana | LHL n | kid (goat, dim.) |
| i ti | bhûtî | LH n | goat |
| i ti | bî | H n | sin (<em>i-bî) |
|  | bî | H adj | bad (</em>-bi) |
| ka- | bî | H adv | badly |
| si ti | bidzi | LH n | liver |
| ku | bilisa | L v | boil |
|  | bînî | LH adv | two |
| ka | bînî | LH adv | twice |</p>
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<thead>
<tr>
<th>li</th>
<th>bisi</th>
<th>HH n</th>
<th>milk</th>
<th>li-bisi leli-rithiye</th>
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<td>bîta</td>
<td>H v</td>
<td>call</td>
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<td>li</td>
<td>ema</td>
<td>bîta</td>
<td>LL n</td>
<td>grave</td>
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<td>bîto</td>
<td>HH n</td>
<td>name</td>
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<td>ku</td>
<td>bîtûlla</td>
<td>H v</td>
<td>be disrespectful (to one’s name)</td>
<td>u-wa-gi-bîtûlla HLLHHLLL &quot;he is disrespectful to me&quot;</td>
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<tr>
<td>ku</td>
<td>bobosela</td>
<td>L v</td>
<td>smile</td>
<td></td>
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<td>bobotsheka</td>
<td>H v</td>
<td>smile</td>
<td></td>
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<td>ku</td>
<td>boga</td>
<td>L v</td>
<td>praise</td>
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<tr>
<td>ku</td>
<td>bona</td>
<td>H v</td>
<td>see</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>bonakala</td>
<td>H v</td>
<td>be visible, be clearly seen</td>
<td></td>
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<tr>
<td>ku</td>
<td>bonakalisa</td>
<td>H v</td>
<td>make visible, make clearly seen</td>
<td></td>
</tr>
<tr>
<td>i ti</td>
<td>bonakalo</td>
<td>HHL n</td>
<td>be visible, be clearly seen</td>
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<td>H v</td>
<td>show</td>
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<td>H v</td>
<td>see e.o. clearly</td>
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<td>show</td>
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<td>L v</td>
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<td>red</td>
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<td>ku</td>
<td>bubha</td>
<td>H v</td>
<td>mould with clay, cement, etc</td>
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<td>li</td>
<td>ema</td>
<td>budza</td>
<td>LL n</td>
<td>wall</td>
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<td>ku</td>
<td>bugella</td>
<td>H v</td>
<td>collect</td>
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<tr>
<td>ka</td>
<td>buhlugu</td>
<td>LHL adv</td>
<td>painfully</td>
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<td>LHL adj</td>
<td>sharp</td>
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<tr>
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<td>bulaya</td>
<td>H v</td>
<td>kill</td>
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<td>si ti</td>
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<td>LL n</td>
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<td>------</td>
</tr>
<tr>
<td>ku</td>
<td>bûsa</td>
<td>H</td>
<td>v</td>
<td>rule, govern, be in charge of</td>
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<tr>
<td>ku</td>
<td>buta</td>
<td>H</td>
<td>v</td>
<td>ask</td>
</tr>
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<td>butaga</td>
<td>H</td>
<td>v</td>
<td>ask indiscriminately</td>
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<td>v</td>
<td>ask after (with ge-)</td>
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<tr>
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<td>HL</td>
<td>adv</td>
<td>slowly</td>
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<td>L</td>
<td>v</td>
<td>take skin off</td>
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<td>ku</td>
<td>buya</td>
<td>H</td>
<td>v</td>
<td>return, go back</td>
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<tr>
<td>ge</td>
<td>Cawe</td>
<td>HL</td>
<td>n, adv</td>
<td>Sunday, on Sunday</td>
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<td>i</td>
<td>ti</td>
<td>cawe</td>
<td>HL</td>
<td>n</td>
</tr>
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<td>bo</td>
<td>cece</td>
<td>LH</td>
<td>n</td>
<td>grandmother, old woman</td>
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<td>ku</td>
<td>cela</td>
<td>H</td>
<td>v</td>
<td>ask for, persistently do sth, stop smn; plead</td>
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<tr>
<td>ku</td>
<td>chaba</td>
<td>L</td>
<td>v</td>
<td>rise (of the sun)</td>
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<tr>
<td>ku</td>
<td>chadza</td>
<td>L</td>
<td>v</td>
<td>make laugh; satisfy (e.g. food)</td>
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<td>ku</td>
<td>chadzisa</td>
<td>L</td>
<td>v</td>
<td>cause to laugh</td>
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<td>chadzisana</td>
<td>L</td>
<td>v</td>
<td>make e.o. laugh</td>
</tr>
<tr>
<td>ku</td>
<td>chata</td>
<td>L</td>
<td>v</td>
<td>make a child's stomach work (&lt; Xh)</td>
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<td>chata</td>
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<td>v</td>
<td>pour in a bit, but not to fill (e.g. sugar) (ct. -tshela)</td>
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<td>chaza</td>
<td>L</td>
<td>v</td>
<td>explain</td>
</tr>
<tr>
<td>ku</td>
<td>chitsha</td>
<td>L</td>
<td>v</td>
<td>pour away (e.g. water); waste</td>
</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>chëlô</td>
<td>LL</td>
<td>n</td>
</tr>
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<td>ti</td>
<td>chwala</td>
<td>HL</td>
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<td>v</td>
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<td>?</td>
<td>v</td>
<td>?extinguish (?T)</td>
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<td>v</td>
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<td>Word</td>
<td>Part of Speech</td>
<td>Definition</td>
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<td>dabhîsa</td>
<td>sp. of plant; to warm on fire and press on joints which are sore</td>
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<tr>
<td>ku</td>
<td>dala</td>
<td>LH</td>
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<td>LH</td>
<td>n</td>
<td>lion</td>
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<td>ku</td>
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<td>intrj</td>
<td>damn!</td>
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<td>dîya</td>
<td>LL</td>
<td>n</td>
<td>dress</td>
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<td>LHLL</td>
<td>n</td>
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<td>bu</td>
<td>--</td>
<td>H</td>
<td>n</td>
<td>food</td>
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<td>H</td>
<td>v</td>
<td>eat</td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>LH</td>
<td>n</td>
<td>ground, flat area</td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>LH</td>
<td>n</td>
<td>vulture</td>
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<td>ku</td>
<td>dla</td>
<td>H</td>
<td>v</td>
<td>play</td>
</tr>
<tr>
<td>ku</td>
<td>dla</td>
<td>L</td>
<td>v</td>
<td>spread out, e.g. bed</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>HL</td>
<td>n</td>
<td>player</td>
</tr>
<tr>
<td>si</td>
<td>dâlî</td>
<td>HL</td>
<td>n</td>
<td>player (professional)</td>
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<td>dâlisâna</td>
<td>H</td>
<td>v</td>
<td>play with e.o.</td>
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<td>ku</td>
<td>dâluka</td>
<td>L</td>
<td>v</td>
<td>become folded up, e.g. bed</td>
</tr>
<tr>
<td>ku</td>
<td>dâlulla</td>
<td>L</td>
<td>v</td>
<td>fold up, gather, e.g. bed</td>
</tr>
<tr>
<td>ku</td>
<td>dâlayâla</td>
<td>L</td>
<td>v</td>
<td>be wrong [+ obj pref], miss sth</td>
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<td>gi-ya-dlayila</td>
<td>L-L-LLL</td>
<td>&quot;I don't care about you&quot;</td>
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<tr>
<td>i</td>
<td>dlebe</td>
<td>LH</td>
<td>n</td>
<td>ear</td>
</tr>
<tr>
<td>i</td>
<td>dlela</td>
<td>LL</td>
<td>n</td>
<td>road, way</td>
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<tr>
<td>ku</td>
<td>disâa</td>
<td>H</td>
<td>v</td>
<td>feed; poison</td>
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<tr>
<td>ku</td>
<td>disâana</td>
<td>H</td>
<td>v</td>
<td>poison e.o.</td>
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<tr>
<td>si</td>
<td>dlo</td>
<td>H</td>
<td>n</td>
<td>dish (a particular one) of food, e.g. milk, beans</td>
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<td>i</td>
<td>dlovu</td>
<td>LL</td>
<td>n</td>
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<td>i</td>
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<td>L</td>
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<td>small house; building (dim)</td>
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<td>i</td>
<td>dlwana</td>
<td>LL</td>
<td>n</td>
<td>box (e.g. of matches)</td>
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<tr>
<td>ku</td>
<td>dola</td>
<td>L</td>
<td>v</td>
<td>swim</td>
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1060
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<th>Shona</th>
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<th>Shona</th>
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<td>bury, e.g. roots, person</td>
<td>kudzita</td>
<td>ku</td>
<td>dzitella</td>
<td>ku</td>
<td>take off clothes</td>
<td>dzinu</td>
<td>ku</td>
<td>dzina</td>
<td>ku</td>
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<tr>
<td>put on clothes</td>
<td>dzina</td>
<td>ku</td>
<td>dzita</td>
<td>ku</td>
<td>fight over sth (e.g. bread)</td>
<td>dziga</td>
<td>ku</td>
<td>dziga</td>
<td>ku</td>
</tr>
<tr>
<td>fight over bread</td>
<td>dziga</td>
<td>ku</td>
<td>dzina</td>
<td>ku</td>
<td>long time ago, late, at length</td>
<td>dzevó</td>
<td>ku</td>
<td>dzevó</td>
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<td>dze</td>
<td>ku</td>
<td>dzika</td>
<td>ku</td>
<td>matter, affair: pl. news</td>
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<td>ku</td>
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<td>ku</td>
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<td>the main thing</td>
<td>dzaba</td>
<td>mu</td>
<td>dzakwa</td>
<td>si</td>
<td>well (from being beaten)</td>
<td>dzwa</td>
<td>si</td>
<td>dzwa</td>
<td>si</td>
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<td>dzakalisa</td>
<td>si</td>
<td>dzakalisa</td>
<td>si</td>
<td>sadla lesiwuja</td>
<td>dzakwa</td>
<td>si</td>
<td>dzakwa</td>
<td>si</td>
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<td>&quot;right hand&quot;</td>
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<td>si</td>
<td>dzakalisa</td>
<td>si</td>
<td>dzakalisa</td>
<td>dzakwa</td>
<td>si</td>
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<td>donkey (fermented from some kind of porridge)</td>
<td>dönki</td>
<td>mu</td>
<td>dönki</td>
<td>mu</td>
<td>wash whole body (vs. -hlata: cd be just a part)</td>
<td>dûma</td>
<td>si</td>
<td>dûma</td>
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<td>dûma</td>
<td>si</td>
<td>dûma</td>
<td>si</td>
<td>male</td>
<td>dvólo</td>
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<td>dvólo</td>
<td>si</td>
<td>drinking</td>
<td>dûma</td>
<td>si</td>
<td>dûma</td>
<td>si</td>
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<td>si</td>
<td>dûma</td>
<td>si</td>
<td>drinking</td>
<td>dûma</td>
<td>si</td>
<td>dûma</td>
<td>si</td>
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<td>si</td>
<td>dûma</td>
<td>si</td>
<td>drinking</td>
<td>dûma</td>
<td>si</td>
<td>dûma</td>
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<td>ekuseni</td>
<td>HLHL</td>
<td>adv, v</td>
<td>early, in the morning (± 6am to 8am)</td>
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<td>adv, H</td>
<td>in the late afternoon (± 4pm to 6pm)</td>
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<tr>
<td>ene</td>
<td>LL</td>
<td>conj</td>
<td>and</td>
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<td>H</td>
<td>April</td>
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<tr>
<td>fork (for eating)</td>
<td>HLL</td>
<td>fim</td>
<td>early, in the morning (± 6am to 8am)</td>
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<td>die</td>
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<td>v</td>
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<tr>
<td>face</td>
<td>HLL</td>
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<td>blind person</td>
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<td>hail</td>
<td>LL</td>
<td>n</td>
<td>man, husband</td>
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<td>be proper</td>
<td>H</td>
<td>v</td>
<td>Virgin Mary, Mother of God</td>
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<td>properly</td>
<td>LHH-H</td>
<td>adv</td>
<td>fork (for eating)</td>
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<td>crown</td>
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<td>cross (e.g. cross of Christ)</td>
<td>HHHL</td>
<td>n</td>
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<td>LLLL</td>
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<td>Ga-Fëpruwarî</td>
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<td>early, in the morning (± 6am to 8am)</td>
<td>HHHL</td>
<td>n</td>
<td>Ga-Fëpruwarî</td>
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<td>and</td>
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<td>reach; until</td>
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<td>---</td>
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<td>n</td>
<td>roof: thatched, or otherwise (even zinc)</td>
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<td>fûlûwa</td>
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<td>short</td>
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<tr>
<td>li</td>
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<td>fura</td>
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<td>v</td>
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<td>bu</td>
<td>fûtsana</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>futsha</td>
<td>HH</td>
<td>n</td>
<td>fat, grease, (not oil); sg: one quantity of fat/grease, e.g. one block of Holsum margerine</td>
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<td>ku</td>
<td>fuya</td>
<td>H</td>
<td>v</td>
<td>rear animals; be wealthy</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>fuyî</td>
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<td>stock farmer</td>
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<tr>
<td>u</td>
<td>eba</td>
<td>fwana</td>
<td>LL</td>
<td>n</td>
<td>young man (offhand, patronising, derogatory)</td>
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<td></td>
<td>gabha</td>
<td>HL</td>
<td>ide o</td>
<td>think (+COP = ...that it is)</td>
<td>gitshi gabha ukona LL HL HLH &quot;I think that he is here&quot;</td>
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<td>ku</td>
<td>gada</td>
<td>L</td>
<td>v</td>
<td>guard</td>
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<td>H</td>
<td>v</td>
<td>help really flatten; help stamp together with</td>
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<td>H</td>
<td>v</td>
<td>help e.o. really flatten; help e.o. stamp together with</td>
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<td>hold on firmly to (for a long time?)</td>
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<td>i</td>
<td>ti</td>
<td>godînnyana</td>
<td>LLHL</td>
<td>n</td>
<td>small danger</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>godla</td>
<td>HL</td>
<td>n</td>
<td>biggish bag (e.g. big backpack)</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>godlanana</td>
<td>HLL</td>
<td>n</td>
<td>bag, e.g. shoulder bag</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>godlananyana</td>
<td>HLHLL</td>
<td>n</td>
<td>small bag, e.g. pencil bag</td>
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<tr>
<td>ku</td>
<td>godvuka</td>
<td>L</td>
<td>v</td>
<td>go home</td>
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<tr>
<td>ku</td>
<td>godvusa</td>
<td>L</td>
<td>v</td>
<td>take home</td>
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</tr>
<tr>
<td>ku</td>
<td>godvusana</td>
<td>L</td>
<td>v</td>
<td>take e.o. home</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>godzî</td>
<td>LH</td>
<td>n</td>
<td>hole (any size)</td>
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<tr>
<td>si</td>
<td>ti</td>
<td>godzî</td>
<td>LH</td>
<td>n</td>
<td>palm (of hand)</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>gogo</td>
<td>LL</td>
<td>n</td>
<td>skin of dead animal</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>gogodlelo</td>
<td>LHLL</td>
<td>n</td>
<td>walking stick</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>gogodlo</td>
<td>HLL</td>
<td>n</td>
<td>spine</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>goni</td>
<td>LH</td>
<td>n</td>
<td>Xhosa person</td>
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<tr>
<td>mu</td>
<td>gqobi</td>
<td>gqopi</td>
<td>LL</td>
<td>n</td>
<td>leaf, ?branch</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>gqikga</td>
<td>LL</td>
<td>n</td>
<td>traditional doctor (man)</td>
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<tr>
<td>mu</td>
<td>gqobha</td>
<td>LL</td>
<td>n</td>
<td>dung</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>gqolanyana</td>
<td>LHLL</td>
<td>n</td>
<td>little piece left of sth</td>
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</tr>
<tr>
<td>ku</td>
<td>grinya</td>
<td>L</td>
<td>v</td>
<td>bite on a surface, e.g. from an apple, &lt;&gt; bite a piece out of</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>gubho</td>
<td>LL</td>
<td>n</td>
<td>blanket</td>
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</tr>
<tr>
<td>ku</td>
<td>gûdzka</td>
<td>L</td>
<td>v</td>
<td>cut hair (not other things), shear (e.g. sheep)</td>
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<tr>
<td>ku</td>
<td>gûdzana</td>
<td>L</td>
<td>v</td>
<td>cut e.o.'s hair</td>
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</tr>
<tr>
<td>ku</td>
<td>gûdzela</td>
<td>L</td>
<td>v</td>
<td>cut hair for, shear for (e.g. sheep)</td>
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<tr>
<td>ku</td>
<td>gûdzella</td>
<td>L  v</td>
<td>cut together with (eg. pimple)</td>
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<tr>
<td>ku</td>
<td>gûdzellana</td>
<td>L  v</td>
<td>cut together with (eg. pimple) on e.o.</td>
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<td>ku</td>
<td>gûdzellisa</td>
<td>L  v</td>
<td>cut together with (eg. pimple) on e.o.</td>
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<td>ku</td>
<td>gûdzellisana</td>
<td>L  v</td>
<td>cut together with (eg. pimple) on e.o.</td>
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<tr>
<td>ku</td>
<td>gûla</td>
<td>L  v</td>
<td>be sick</td>
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<tr>
<td>li ema</td>
<td>gulanyani</td>
<td>LLHL  n</td>
<td>initiate (male)</td>
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<td>mu eba</td>
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<td>LL  n</td>
<td>sick person</td>
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<td>ku ?ema</td>
<td>gûlisa</td>
<td>L  v</td>
<td>make (smn) sick</td>
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<td>bu ?ema</td>
<td>gûlo</td>
<td>LL  n</td>
<td>sickness</td>
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<tr>
<td>i ti</td>
<td>gwayi</td>
<td>LH  n</td>
<td>penis</td>
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<tr>
<td>i ti</td>
<td>gwe</td>
<td>L  n</td>
<td>leopard</td>
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<tr>
<td>ku</td>
<td>gwelela</td>
<td>L  v</td>
<td>change mind at last moment, be unreliable</td>
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<tr>
<td>gi-ya-gweleta</td>
<td>&quot;I change my mind&quot;</td>
<td>L-L-LLL</td>
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<tr>
<td>ku</td>
<td>gwinya</td>
<td>L  v</td>
<td>swallow</td>
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<td>li ema</td>
<td>gwinya</td>
<td>LH  n</td>
<td>vetkoek, fried dough</td>
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<tr>
<td>ku</td>
<td>halalela</td>
<td>L  v</td>
<td>become holy</td>
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<tr>
<td>mu eba</td>
<td>halaleli</td>
<td>HHHL  n</td>
<td>saint, holy person</td>
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<tr>
<td>si ti</td>
<td>halalelo</td>
<td>?  n</td>
<td>sanctuary, holy place</td>
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<tr>
<td>ku</td>
<td>halaletsa</td>
<td>L  v</td>
<td>make holy</td>
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<tr>
<td>ku</td>
<td>harelana</td>
<td>L  v</td>
<td>tie up, e.g. with rope</td>
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<tr>
<td>ku</td>
<td>harela</td>
<td>L  v</td>
<td>tie e.o. up, curl (e.g. hair)</td>
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<tr>
<td>ku</td>
<td>hêl(ô)</td>
<td>H(L)  intrj</td>
<td>hell! (exclamation of surprise, frustration)</td>
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<tr>
<td>ku</td>
<td>helebha</td>
<td>H  v</td>
<td>help, save</td>
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<tr>
<td>ku</td>
<td>helebhana</td>
<td>H  v</td>
<td>help e.o.</td>
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<tr>
<td>ku</td>
<td>helebhela</td>
<td>H  v</td>
<td>help for</td>
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<tr>
<td>ku</td>
<td>helebhelana</td>
<td>H  v</td>
<td>help for e.o. (e.g. looking after a child)</td>
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<td>ku</td>
<td>helebhelisa</td>
<td>L  v</td>
<td>make e.o. help for</td>
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<tr>
<td>ku</td>
<td>helebhella</td>
<td>H  v</td>
<td>help, lend a hand in sth</td>
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<tr>
<td>ku</td>
<td>helebellisa</td>
<td>L  v</td>
<td>cause to lend a hand in sth</td>
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<tr>
<td>ku</td>
<td>helebellisana</td>
<td>L  v</td>
<td>cause e.o. to lend a hand in sth</td>
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<tr>
<td>ku</td>
<td>helebhisa</td>
<td>L  v</td>
<td>make e.o. help</td>
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<td>ku</td>
<td>hhaka</td>
<td>H  v</td>
<td>become stuck tight</td>
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<td>-- ti</td>
<td>hhêlê</td>
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<td>hell</td>
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<td>LHL  v</td>
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<td>Word</td>
<td>Type</td>
<td>Meaning</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>day (24 hours); also = &quot;(on the day) when&quot;, as adverb</td>
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<td>hla</td>
<td>H n</td>
<td>beautiful&quot;</td>
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<tr>
<td>ku</td>
<td>hlabaga</td>
<td>stab indiscriminately</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>sand; pl: different types of sand</td>
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<tr>
<td>m</td>
<td>mi</td>
<td>flock (of any sort of animal)</td>
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<tr>
<td>ku</td>
<td>hlabulla</td>
<td>pull out, pluck out (e.g. thorn)</td>
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<tr>
<td>ku</td>
<td>hlagana</td>
<td>meet</td>
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<tr>
<td>i ti</td>
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<td>meeting</td>
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<td>ku</td>
<td>hlahlama</td>
<td>follow in family (i.e. sequence of siblings)</td>
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<td>ku</td>
<td>hlahlamana</td>
<td>follow e.o.</td>
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<tr>
<td>ku</td>
<td>hlala</td>
<td>live, stay, sit</td>
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<td>bu</td>
<td>hilali</td>
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<tr>
<td>ku</td>
<td>hlalla</td>
<td>just live, stay, sit on one's own (with rfx -ti-)</td>
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<td>i ti</td>
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<td></td>
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<td>near (cf dvuti, bhili)</td>
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<td>ku</td>
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<td>turn inside out</td>
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<td>become mad</td>
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<tr>
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<td>hlanyisa</td>
<td>cause to become mad</td>
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<td>li</td>
<td>hlaseli</td>
<td>ray of sunlight</td>
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<td>i ti</td>
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<tr>
<td></td>
<td>hle</td>
<td>beautiful, pretty, handsome</td>
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1067
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<th>H adv</th>
<th>well, nicely</th>
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<td>laugh</td>
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<td>cause to laugh</td>
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<td>hlenyana</td>
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<td>hlitiyo</td>
<td>HHL n</td>
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<td>hlo</td>
<td>H n</td>
<td>eye</td>
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<td>hlobo</td>
<td>LL n</td>
<td>summer</td>
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<td>need</td>
</tr>
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<td>ku</td>
<td>hlogakala</td>
<td>L v</td>
<td>be necessary; be dead</td>
</tr>
<tr>
<td>li</td>
<td>hlogwa</td>
<td>LH n</td>
<td>piece of grass (generic species?, dry? grass only)</td>
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<td>ku</td>
<td>hlohlonasl</td>
<td>L v</td>
<td>have a burn (burning feeling?) on body</td>
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<td>hlohono</td>
<td>HHHH n, adv</td>
<td>luck, blessing; ga- : ga-lihlohono &quot;luckily, fortunately&quot; L-HHHH</td>
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<tr>
<td>i ti</td>
<td>hlokosi</td>
<td>HL n</td>
<td>head</td>
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<td>ku</td>
<td>hlokumela</td>
<td>H v</td>
<td>take care of, look after; realise</td>
</tr>
<tr>
<td>mu mi</td>
<td>hloolo</td>
<td>LL n</td>
<td>miracle, sth surprising</td>
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<td>ku</td>
<td>hloma</td>
<td>L v</td>
<td>plant, e.g. tree (not &quot;sew seeds&quot;)</td>
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<td>ku</td>
<td>hlomolla</td>
<td>L v</td>
<td>dig up, pull out, e.g. tree</td>
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<td>hlomula</td>
<td>L v</td>
<td>be angry, sad (emotional)</td>
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<td>ku</td>
<td>hlomulisala</td>
<td>L v</td>
<td>make sad</td>
</tr>
<tr>
<td>i ti</td>
<td>hloni</td>
<td>HH n</td>
<td>embarrassment, shyness, shame u-ti-hloni HLHH &quot;s/he is embarrassed&quot;</td>
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<td>ku</td>
<td>hlonipa</td>
<td>H v</td>
<td>respect</td>
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<td>hloniphulla</td>
<td>H v</td>
<td>be disrespectful</td>
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<td>bu</td>
<td>hlugu</td>
<td>LH n</td>
<td>pain (?difficulty)</td>
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<td>si ti</td>
<td>hluluulu</td>
<td>HLL n</td>
<td>roof (genl term)</td>
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<td>ku</td>
<td>hlulukela</td>
<td>v</td>
<td>pine for, long for (+obj)</td>
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<td>mu</td>
<td>hluma</td>
<td>HH n</td>
<td>thinner sp of thatching grass</td>
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<td>hluta</td>
<td>L v</td>
<td>squeeze, wring out (e.g. cloth)</td>
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<td>ku</td>
<td>hlu:tha</td>
<td>L  v</td>
<td>squeeze, wring out (e.g. cloth); ct. -khama</td>
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<td>li</td>
<td>ema</td>
<td>LH n</td>
<td>door</td>
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<td>H  v</td>
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<td>si</td>
<td>ti</td>
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<td>mist</td>
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<td>ti</td>
<td>LH n</td>
<td>hour</td>
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<td>huwa</td>
<td>H  v</td>
<td>proclaim, say in a loud voice</td>
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<td>hweletsa</td>
<td>v</td>
<td>call (= -bîta)</td>
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<td>i</td>
<td>ibîlê</td>
<td>?  conj</td>
<td>then, and then</td>
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<td>igaba</td>
<td>HHL adv</td>
<td>it might be, can it be? igaba ukona?</td>
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<tr>
<td>u</td>
<td>bo</td>
<td>LH n</td>
<td>your father</td>
</tr>
<tr>
<td></td>
<td>îhlo</td>
<td></td>
<td>libîtso le(y)îhlo HHH HLH &quot;name of your father&quot;</td>
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<td>i</td>
<td>isale</td>
<td>HLH prep</td>
<td>since</td>
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<tr>
<td>u</td>
<td>bo</td>
<td>LH n</td>
<td>his father</td>
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<tr>
<td></td>
<td>îse</td>
<td></td>
<td>libîtso le(y)îse HHH HLH &quot;name of his father&quot;</td>
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<td>Òsîraele</td>
<td>HLHLL n</td>
<td>Israel (biblical)</td>
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<td>Òtjhu</td>
<td>HL intrj</td>
<td>ow! (= cry of pain)</td>
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<tr>
<td>ku</td>
<td>jala</td>
<td>H  v</td>
<td>scatter (of people, flower on pollinating), sow (seeds)</td>
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<tr>
<td>i</td>
<td>jatji</td>
<td>HL n</td>
<td>judge</td>
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<tr>
<td>ku</td>
<td>jatsha</td>
<td>L  v</td>
<td>carry on shoulder (only!), e.g. bag, baby, blanket</td>
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<tr>
<td>ku</td>
<td>jatshisa</td>
<td>L  v</td>
<td>help carry on shoulder (only!), e.g. bag, baby, blanket</td>
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<tr>
<td>ku</td>
<td>jenisa</td>
<td>H  v</td>
<td>show, point out</td>
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<tr>
<td>ku</td>
<td>jeta</td>
<td>H  v</td>
<td>tell (smn about sth)</td>
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<td>ku</td>
<td>jetana</td>
<td>H  v</td>
<td>tell e.o.</td>
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<td>jetisisa</td>
<td>H  v</td>
<td>tell intensely</td>
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<td>i</td>
<td>jha</td>
<td>H  n</td>
<td>dog</td>
</tr>
<tr>
<td>i</td>
<td>jhakalasi</td>
<td>LHLL n</td>
<td>jackal (&quot;Mr Jackal&quot; in folk story: cl.1a)</td>
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<tr>
<td>ku</td>
<td>jhayiva</td>
<td>H  v</td>
<td>dance (Western style)</td>
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<tr>
<td>verb</td>
<td>translation</td>
<td>part of speech</td>
<td>meaning</td>
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<td>H v</td>
<td>dance for e.o.</td>
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<td>H v</td>
<td>make dance</td>
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<td>dance for a long time</td>
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<td>ku</td>
<td>jhegokuba</td>
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<td>just as</td>
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<tr>
<td>li ema</td>
<td>Jheremani</td>
<td>LHLL n</td>
<td>German person</td>
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<tr>
<td>-- bo</td>
<td>Jhesû Krîste</td>
<td>HL HL n</td>
<td>Jesus Christ</td>
</tr>
<tr>
<td>-- bo</td>
<td>Jhulayi</td>
<td>LHL n</td>
<td>July</td>
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<tr>
<td>li ema</td>
<td>Jhunî</td>
<td>HL n</td>
<td>June</td>
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<tr>
<td>bu ema</td>
<td>jwala</td>
<td>LH n</td>
<td>beer (traditional); pl: different pots of beer</td>
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<tr>
<td>j</td>
<td>jwala</td>
<td>LH n</td>
<td>traditional beer; pl: different pots of beer</td>
</tr>
<tr>
<td>bu</td>
<td>? jwani</td>
<td>LH n</td>
<td>sp of grass</td>
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<tr>
<td>li ema</td>
<td>jwe</td>
<td>L n</td>
<td>stone, rock</td>
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<td>li ema</td>
<td>jwenyana</td>
<td>LLL n</td>
<td>small stone (dim)</td>
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<td>ku</td>
<td>jweta</td>
<td>H v</td>
<td>tell (cf. -jeta)</td>
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<tr>
<td>ku</td>
<td>kûpûlla</td>
<td>L v</td>
<td>take off (sheet), unroll, take out from under</td>
</tr>
<tr>
<td>ku</td>
<td>kûpûlluka</td>
<td>L v</td>
<td>come off (of sheet), become unrolled</td>
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<tr>
<td>li</td>
<td>kahleni</td>
<td>LHL intrj</td>
<td>okay...! just hang on a bit! not too fast!</td>
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<tr>
<td>ku</td>
<td>kaka</td>
<td>H v</td>
<td>defecate</td>
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<td>kakalla</td>
<td>H v</td>
<td>lie on the back</td>
</tr>
<tr>
<td>ku</td>
<td>kantshî</td>
<td>HLH conj</td>
<td>however, on the other hand, in constrast ?</td>
</tr>
<tr>
<td>ku</td>
<td>kapa</td>
<td>LL conj</td>
<td>or</td>
</tr>
<tr>
<td>ku</td>
<td>kapa</td>
<td>H v</td>
<td>chop (down)</td>
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<tr>
<td>i ti</td>
<td>karabho</td>
<td>HHL n</td>
<td>answer</td>
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<td>karasiya</td>
<td>HHLL n</td>
<td>grace (cf. Hail Mary)</td>
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<tr>
<td>i ti</td>
<td>kawûsî</td>
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<td>sock</td>
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<tr>
<td>si ti</td>
<td>kepe</td>
<td>HH n</td>
<td>ship</td>
</tr>
<tr>
<td>i ti</td>
<td>kêpisi</td>
<td>HLL n</td>
<td>cap (Western style)</td>
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<tr>
<td>i ti</td>
<td>kereke</td>
<td>HLL n</td>
<td>church</td>
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| ku | ketla | L v | relax (oneself) : always with rfx -ti-.
| i | ti | kgabi | HH | n | ox | i-kgabi yami
HHH HL "my ox"
<table>
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<td>i</td>
<td>ti?</td>
<td>kgadî</td>
<td>LH</td>
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<td>thatching material (plaited)</td>
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<td>i</td>
<td>ti</td>
<td>kgaligana</td>
<td>HHLL</td>
<td>n</td>
<td>lard, brown fat; boiled, congealed muhlelo (stomach fat)</td>
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<td>kgama</td>
<td>H</td>
<td>v</td>
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<td>ku</td>
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<td>H</td>
<td>v</td>
<td>spread, disperse, scatter, sprinkle</td>
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<td>H</td>
<td>v</td>
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<td>mercy, mercifulness</td>
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<td>v</td>
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<td>v</td>
<td>chop up, grind</td>
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<td>kgedla</td>
<td>L</td>
<td>v</td>
<td>look back (over shoulder), ?return</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>kgedla</td>
<td>HH</td>
<td>n</td>
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<td>ema</td>
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<td>ti</td>
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<td>v</td>
<td>want (...very much to do sth)</td>
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<td>kghalla</td>
<td>L</td>
<td>v</td>
<td>want sth badly</td>
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<td>H</td>
<td>v</td>
<td>tie up (e.g. horse, cow)</td>
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<td>e</td>
<td>Kghawûteni</td>
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<td>in Johannesburg (loc)</td>
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<td>H</td>
<td>v</td>
<td>turn aside, err</td>
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<td>v</td>
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<td>kghîba</td>
<td>L</td>
<td>v</td>
<td>dance the young women's dance</td>
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</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>kghofû</td>
<td>LH</td>
<td>n</td>
<td>snail (garden variety)</td>
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<td>kghöhlakala</td>
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<td>v</td>
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<td>v</td>
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<td>kghona</td>
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<td>teach to walk; cause to go to toilet (eg. of laxatives)</td>
<td>H v</td>
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<tr>
<td>teach to walk; cause to go to toilet (eg. of laxatives)</td>
<td>H v</td>
<td></td>
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<tr>
<td>visit</td>
<td>H v</td>
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<tr>
<td>visit</td>
<td>H v</td>
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<tr>
<td>vHkhabhisa ku</td>
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<td>vHkhabhella ku</td>
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<tr>
<td>just take a walk / go (for oneself) (with -ti-rfx)</td>
<td>L v</td>
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<tr>
<td>draw (water)</td>
<td>L v</td>
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<tr>
<td>hair on body (*bboya)</td>
<td>nLL kgwede mu</td>
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<td>scratch</td>
<td>nLL kgweba ku</td>
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<tr>
<td>scorpion</td>
<td>nLHL kgwankcela ti i</td>
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<tr>
<td>dried meat</td>
<td>nHH kgwabha ti si</td>
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<tr>
<td>piece of wood; ema: pieces of; (ti-: pl)</td>
<td>nHH kguni ema</td>
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<td>wood (mass noun)</td>
<td>nHH kguni ti --</td>
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<tr>
<td>very, a lot</td>
<td>HH kgulu ka</td>
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<tr>
<td>big, ?old</td>
<td>HH kgulu bu</td>
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<td>chicken (= ityiphu)</td>
<td>HH n</td>
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<td>piece of wood; ema: pieces of; (ti-: pl)</td>
<td>HH n</td>
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<tr>
<td>bull</td>
<td>HH n</td>
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<tr>
<td>dried meat</td>
<td>HH n</td>
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<td>scorpion</td>
<td>LHL n</td>
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<td>scratch</td>
<td>H v</td>
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<td>hair on body (*bboya)</td>
<td>LL n</td>
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<td>draw (water)</td>
<td>H v</td>
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<tr>
<td>go, walk</td>
<td>H v</td>
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<tr>
<td>just take a walk / go (for oneself) (with -ti-rfx)</td>
<td>H v</td>
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<tr>
<td>visit</td>
<td>H v</td>
<td></td>
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<tr>
<td>teach to walk; cause to go to toilet (eg. of laxatives)</td>
<td>H v</td>
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<td>travel(s)</td>
<td>LH n</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>khabho</td>
<td>LH</td>
<td>n</td>
<td>travel(s)</td>
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<td>--</td>
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<td>khabo-</td>
<td>HH</td>
<td>loc</td>
<td>at the home of X's family...</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>khala</td>
<td>LL</td>
<td>n</td>
<td>aloe plant</td>
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<tr>
<td>ku</td>
<td>kham</td>
<td>khamisa</td>
<td>HH</td>
<td>v</td>
<td>squeeze, throttle (e.g. neck, *cloth); ct. -hluta</td>
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<tr>
<td>ku</td>
<td>khamisa</td>
<td>khamisulla</td>
<td>HH</td>
<td>v</td>
<td>yawn, be open</td>
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<tr>
<td>ku</td>
<td>khamisulleka</td>
<td>khamisullula</td>
<td>H</td>
<td>v</td>
<td>open wide, e.g. a dog's mouth</td>
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<tr>
<td>ku</td>
<td>khanya</td>
<td>khanyaleka</td>
<td>H</td>
<td>v</td>
<td>become open</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>khanya</td>
<td>LH</td>
<td>n</td>
<td>light; also: divine Light</td>
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<tr>
<td>ku</td>
<td>khasa</td>
<td>khasa</td>
<td>L</td>
<td>v</td>
<td>crawl on stomach (e.g. child learning to walk)</td>
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<td>--</td>
<td>ema</td>
<td>khat</td>
<td>HH</td>
<td>n</td>
<td>cold (weather or body)</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>Khatholike</td>
<td>HHHL</td>
<td>n</td>
<td>Catholic person</td>
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<tr>
<td>ku</td>
<td>khatsha</td>
<td>khatsha</td>
<td>H</td>
<td>v</td>
<td>smear (e.g. butter on bread; also: smear floor); paint (picture, door)</td>
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<tr>
<td>ku</td>
<td>khatshala</td>
<td>khatshala</td>
<td>H</td>
<td>v</td>
<td>become tired</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>khatshala</td>
<td>HLH</td>
<td>n</td>
<td>tiredness (pl = of many people)</td>
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<tr>
<td>ge</td>
<td>khatshi</td>
<td>khatshi</td>
<td>HH</td>
<td>adv</td>
<td>e:- in between, in the middle of; ge:- inside</td>
<td></td>
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<tr>
<td>ku</td>
<td>khatshulla</td>
<td>khatshulla</td>
<td>H</td>
<td>v</td>
<td>refresh</td>
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</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>khatshulli</td>
<td>HHLL</td>
<td>n</td>
<td>refresher, one who gives rest</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>khatshuluka</td>
<td>khatshuluka</td>
<td>H</td>
<td>v</td>
<td>become refreshed</td>
<td></td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>khece</td>
<td>LH</td>
<td>n</td>
<td>ice</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>khetsho</td>
<td>LL</td>
<td>n</td>
<td>choice, decision</td>
<td></td>
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<tr>
<td></td>
<td>kho</td>
<td>L</td>
<td>&quot;there is no/noone&quot;</td>
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<td>existential [by default: akûkhọ LHL present indicative]</td>
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<td>mu</td>
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<td>LH</td>
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<tr>
<td>i</td>
<td></td>
<td>HHL</td>
<td>n</td>
<td>scrapings, what is taken out</td>
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<tr>
<td>ku</td>
<td></td>
<td>L</td>
<td>v</td>
<td>take out; cause</td>
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<tr>
<td>bu</td>
<td></td>
<td>HH</td>
<td>n</td>
<td>pot scrapings: maize, sorghum, etc</td>
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<tr>
<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>believe</td>
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<tr>
<td>bu</td>
<td></td>
<td>HH</td>
<td>n</td>
<td>difficult(y)</td>
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<td>mu</td>
<td></td>
<td>HH</td>
<td>n</td>
<td>friend</td>
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<td>si</td>
<td></td>
<td>HH</td>
<td>n</td>
<td>group of friends</td>
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<tr>
<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>remember</td>
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<tr>
<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>remember for, think for (e.g. help in schoolwork)</td>
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<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>help find out, help remind</td>
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<td>ku</td>
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<td>H</td>
<td>v</td>
<td>remember in detail</td>
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<tr>
<td>mu</td>
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<td>ku</td>
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<td>remind</td>
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<td>remind in detail</td>
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<td>ku</td>
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<td>H</td>
<td>v</td>
<td>remind e.o. in detail</td>
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<tr>
<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>grow up (of person, plant)</td>
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<tr>
<td>ku</td>
<td></td>
<td>H</td>
<td>v</td>
<td>grow up</td>
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<tr>
<td>li</td>
<td></td>
<td>LL</td>
<td>n</td>
<td>weeds; pl: different types of weeds</td>
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<tr>
<td>li</td>
<td></td>
<td>LL</td>
<td>n</td>
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<td>v</td>
<td>take off</td>
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<td>li</td>
<td></td>
<td>HH</td>
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<td>hundred (the cardinal numeral)</td>
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<td>ku</td>
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<td>v</td>
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<td>ku</td>
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<td>H</td>
<td>v</td>
<td>speak up on behalf of</td>
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<td>si</td>
<td></td>
<td>HHL</td>
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<td>speaker, spokesman?</td>
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<td>n</td>
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<td>li</td>
<td></td>
<td>LH</td>
<td>n</td>
<td>armpit, sole</td>
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<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td>take off (sheet), unroll</td>
<td>vLkûpûllaku</td>
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<tr>
<td>take out from under</td>
<td>LH kunye</td>
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<tr>
<td>Indian person</td>
<td>nHL Kûla ema li</td>
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<tr>
<td>far from (+ lha-) adv</td>
<td>H-HLL kudzeni e</td>
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<tr>
<td>Christianity</td>
<td>nHL Kreste bu</td>
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<tr>
<td>Christ</td>
<td>nHL Kreste</td>
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<td>stick for fighting, sceptre of king/ruler</td>
<td>nLL koto ti i</td>
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<tr>
<td>Sotho woven hat</td>
<td>nHLL korotlo mi mu</td>
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<tr>
<td>muscles become contracted</td>
<td>vHkopetseka ku</td>
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<tr>
<td>muscles contract</td>
<td>LLHL giyakopetsa</td>
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<tr>
<td>there, be present</td>
<td>LLHL &quot;My muscles contract&quot;</td>
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<td>there a little, be just a few</td>
<td>LLLL be there a little, be just a few</td>
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<td>right here</td>
<td>LLHL konnhakha</td>
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<tr>
<td>contract (of muscle), quiver</td>
<td>H v kopetsa</td>
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<td>become contracted (of muscle)</td>
<td>H v kopetseka</td>
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<td>Sotho woven hat</td>
<td>HLL n korotlo</td>
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<td>nape of neck</td>
<td>LL kotlo</td>
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<td>HLL n kotlolo</td>
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<tr>
<td>stick for fighting, sceptre of king/ruler</td>
<td>LL koto</td>
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<tr>
<td>Christ</td>
<td>HL n Kreste</td>
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<td>Christianity</td>
<td>HL n bu Kreste</td>
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<tr>
<td>far from (+ lha-)</td>
<td>H-HLL adv kudzeni</td>
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<td>Indian person</td>
<td>HL n li ema Kûla</td>
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<td>together (with: lha-)</td>
<td>LL adv kunye</td>
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<tr>
<td>take off (sheet), unroll, take out from under</td>
<td>L v kûpûllaku</td>
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<tr>
<td>ku</td>
<td>kūpūlluka</td>
<td>L</td>
<td>v</td>
<td>come off (of sheet), become unrolled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>kūpūlī</td>
<td>HHLL</td>
<td>n</td>
<td>unroller, one who unrolls</td>
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<td>kusasa</td>
<td>LHH</td>
<td>adv</td>
<td>tomorrow</td>
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<td>i</td>
<td>ti</td>
<td>kuseînî</td>
<td>LHLL</td>
<td>n</td>
<td>door frame</td>
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<td></td>
<td>kutshi</td>
<td>HL</td>
<td>conj</td>
<td>that</td>
<td></td>
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<tr>
<td>ku</td>
<td>kwatamisa</td>
<td>L</td>
<td>v</td>
<td>run after smn who is fleeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>kwayela</td>
<td>L</td>
<td>v</td>
<td>cover, put on lid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>kwayelo</td>
<td>HLL</td>
<td>n</td>
<td>lid</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>kwayulla</td>
<td>L</td>
<td>v</td>
<td>take off sheet (off body, bed), lid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>kwerekwere</td>
<td>HHLL</td>
<td>n</td>
<td>Black person from elsewhere than in southern Africa</td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>kwidla</td>
<td>HH</td>
<td>adv</td>
<td>autumn</td>
<td>S hwetla LH</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>kwipiri</td>
<td>LHLL</td>
<td>n</td>
<td>quince</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ema</td>
<td>la</td>
<td>L</td>
<td>n</td>
<td>lies</td>
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<td>mu</td>
<td>la</td>
<td>L</td>
<td>n</td>
<td>line</td>
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<tr>
<td>ku</td>
<td>labha</td>
<td>L</td>
<td>v</td>
<td>become hungry</td>
<td>gi-labhiye &quot;I'm hungry&quot;</td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>labho</td>
<td>LL</td>
<td>n</td>
<td>river</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladvula</td>
<td>L</td>
<td>v</td>
<td>refuse sth (which the asker can't see, but the one asked has &amp; won't give up)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>ladvu</td>
<td>LH</td>
<td>n</td>
<td>case; guilt</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladvulela</td>
<td>L</td>
<td>v</td>
<td>refuse smn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladvullela</td>
<td>L</td>
<td>v</td>
<td>refuse smn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladvullela</td>
<td>L</td>
<td>v</td>
<td>refuse e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladza</td>
<td>L</td>
<td>v</td>
<td>fetch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzela</td>
<td>L</td>
<td>v</td>
<td>follow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzelisa</td>
<td>L</td>
<td>v</td>
<td>put things in a line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzella</td>
<td>L</td>
<td>v</td>
<td>keep on following, pursue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzellana</td>
<td>L</td>
<td>v</td>
<td>keep on following e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzellisa</td>
<td>L</td>
<td>v</td>
<td>put things in a line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ladzellisana</td>
<td>L</td>
<td>v</td>
<td>put things consecutively, in a line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>laga</td>
<td>LL</td>
<td>n</td>
<td>sun, day (24 hours); pl: ema-lageni HHHLLL &quot;recently&quot;</td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>laga</td>
<td>L</td>
<td>v</td>
<td>sun; pl: days</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lagata</td>
<td>H</td>
<td>v</td>
<td>wish, (also: want [to fight with]), envy</td>
<td>bayagilagata &quot;they wish me&quot; (i.e. want to fight with me)</td>
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<td>--------------------------------------------------------</td>
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</tr>
<tr>
<td>ku</td>
<td>lagatelisana</td>
<td>H</td>
<td>v</td>
<td>cause (e.o.) to wish for e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lagatella</td>
<td>H</td>
<td>v</td>
<td>wish sth for smn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lagatellana</td>
<td>H</td>
<td>v</td>
<td>wish for e.o., eg. Xmas, birthday, health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lagatellana</td>
<td>L</td>
<td>v</td>
<td>cause to wish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lagatellana</td>
<td>H</td>
<td>v</td>
<td>cause to wish for e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lahla</td>
<td>H</td>
<td>v</td>
<td>throw away, miss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LHHH</td>
<td>adv</td>
<td>the following day (ga- = on...)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LL</td>
<td>n</td>
<td>small river (dim)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lalla</td>
<td>L</td>
<td>v</td>
<td>look for, lay a trap for e.o.</td>
<td>idiom: Lalla, igaphumi (HHL, HLHL) &quot;The more you search the less you find&quot;</td>
<td></td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>HHL</td>
<td>n</td>
<td>jacket (lumber jacket)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LL</td>
<td>n</td>
<td>law</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>HH</td>
<td>n</td>
<td>Coloured person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lawula</td>
<td>L</td>
<td>v</td>
<td>govern country, be in charge; ask counsel from; direct to do sth; give direction to; manage team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lawulisa</td>
<td>L</td>
<td>v</td>
<td>help govern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>layeta</td>
<td>L</td>
<td>v</td>
<td>send (smn) with a message</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LLH</td>
<td>n</td>
<td>message</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>LH</td>
<td>n</td>
<td>plough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lebhella</td>
<td>L</td>
<td>v</td>
<td>go down (eg. road)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lebhellisa</td>
<td>L</td>
<td>v</td>
<td>cause to go down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ga</td>
<td>Lebubïnî</td>
<td>HHLH</td>
<td>n, adv</td>
<td>Tuesday, on Tuesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ga</td>
<td>Lebuhanlu</td>
<td>HHLH</td>
<td>n, adv</td>
<td>Friday, on Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lebuka</td>
<td>L</td>
<td>v</td>
<td>thank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ga</td>
<td>Lebune</td>
<td>HHL</td>
<td>n, adv</td>
<td>Thursday, on Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ga</td>
<td>Lebutshatfu</td>
<td>HLHH</td>
<td>adv</td>
<td>Wednesday, on Wednesday</td>
<td></td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>ledzi</td>
<td>LH</td>
<td>n</td>
<td>hole (any size)</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>legisa</td>
<td>H</td>
<td>v</td>
<td>make stabbing gesture at</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>leketla</td>
<td>H</td>
<td>v</td>
<td>swing</td>
<td></td>
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</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>lepe</td>
<td>HH</td>
<td>n</td>
<td>axe</td>
<td></td>
</tr>
<tr>
<td>lha</td>
<td></td>
<td>H</td>
<td>pref</td>
<td>and, with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lha</td>
<td></td>
<td>H</td>
<td>conj</td>
<td>when</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lhaba (lhayiba)</td>
<td>HL</td>
<td>conj</td>
<td>even if (two forms:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>LHL</td>
<td></td>
<td>contracted &amp; non-)</td>
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</tr>
<tr>
<td>lhabani</td>
<td></td>
<td>LHH</td>
<td>adv</td>
<td>whoever</td>
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<tr>
<td>lhakekhi</td>
<td></td>
<td>LHH</td>
<td>adv</td>
<td>wherever</td>
<td></td>
<td></td>
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<tr>
<td>lhakha</td>
<td></td>
<td>HL</td>
<td>adv</td>
<td>here (dem: 1st pos)</td>
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<tr>
<td>lhakhayaa</td>
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<td>LHF</td>
<td>adv</td>
<td>over there (dem: 3rd position)</td>
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<tr>
<td>lhanini (tejhe)</td>
<td>HL</td>
<td>adv</td>
<td>there (dem: 2nd pos)</td>
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<tr>
<td>--</td>
<td>ema</td>
<td>H</td>
<td>n</td>
<td>blood</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>li</td>
<td></td>
<td></td>
<td>kuphuma emali</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;to bleed&quot;, lit. &quot;to come out blood&quot;</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>lianyewe</td>
<td>HHLL</td>
<td>n</td>
<td>Sotho woven hat</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>S mo-dianyewe L-LLLLL</td>
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</tr>
<tr>
<td>ku</td>
<td>libala</td>
<td>L</td>
<td>v</td>
<td>forget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>libalisa</td>
<td>L</td>
<td>v</td>
<td>cause to forget a thing</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(ct. -libatisa)</td>
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<tr>
<td>ku</td>
<td>libatisa</td>
<td>L</td>
<td>v</td>
<td>cause to forget (/delay)</td>
<td></td>
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<td></td>
<td></td>
<td>person, thing</td>
<td></td>
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<tr>
<td>ku</td>
<td>libatisana</td>
<td>L</td>
<td>v</td>
<td>cause e.o. to forget,</td>
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<td></td>
<td></td>
<td>(delay e.o.)</td>
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<tr>
<td>ku</td>
<td>libela</td>
<td>H</td>
<td>v</td>
<td>guard</td>
<td></td>
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</tr>
<tr>
<td>ku</td>
<td>libelana</td>
<td>H</td>
<td>v</td>
<td>guard e.o.</td>
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<tr>
<td>ku</td>
<td>libella</td>
<td>H</td>
<td>v</td>
<td>expect, guard smn/sth</td>
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<td></td>
</tr>
<tr>
<td>ku</td>
<td>libellana</td>
<td>H</td>
<td>v</td>
<td>expect, guard e.o.</td>
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<tr>
<td>ku</td>
<td>libhella</td>
<td>H</td>
<td>v</td>
<td>watch</td>
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<tr>
<td>ku</td>
<td>lidza</td>
<td>L</td>
<td>v</td>
<td>watch out for, keep</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>watch over</td>
<td></td>
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<tr>
<td>ku</td>
<td>liga</td>
<td>H</td>
<td>v</td>
<td>try, tempt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>si</td>
<td>ligani</td>
<td>HLL</td>
<td>n</td>
<td>group of friends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>liganisa</td>
<td>L</td>
<td>v</td>
<td>be equal to e.o., imitate e.o.</td>
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<tr>
<td>ku</td>
<td>ligela</td>
<td>H</td>
<td>v</td>
<td>try out for [also ?aux vb: &quot;continue&quot; + inf *Sgx]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ligisa</td>
<td>H</td>
<td>v</td>
<td>make stabbing gestures at, lunge towards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ligisana</td>
<td>H</td>
<td>v</td>
<td>make stabbing gestures at e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LH</td>
<td>n</td>
<td>temptation, attempt yhe wena, mligo! &quot;hey, you, temptation!&quot; (insult)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>likela</td>
<td>H</td>
<td>v</td>
<td>stand aside</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lima</td>
<td>L</td>
<td>v</td>
<td>cultivate</td>
<td></td>
<td></td>
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<tr>
<td>li</td>
<td>emo</td>
<td>HH</td>
<td>n</td>
<td>tongue</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>LL</td>
<td>n</td>
<td>crop farmer</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>limkela</td>
<td>H</td>
<td>v</td>
<td>watch out for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LL</td>
<td>n</td>
<td>piece of cultivated land; good things, nice things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>LL</td>
<td>n</td>
<td>year; spring (season) e-si-limo HHLL &quot;in ?fall/autumn&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>HH</td>
<td>n</td>
<td>cannibal, giant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mu</td>
<td>limu</td>
<td>HH</td>
<td>n</td>
<td>God</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lisa</td>
<td>L</td>
<td>v</td>
<td>leave off, skip (e.g. work)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>lisela</td>
<td>L</td>
<td>v</td>
<td>get rid of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>liselisa</td>
<td>L</td>
<td>v</td>
<td>cause to be rid of</td>
<td></td>
<td></td>
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<td>ka</td>
<td>lishume</td>
<td>LHH</td>
<td>adv</td>
<td>ten times</td>
<td></td>
<td></td>
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<tr>
<td>e</td>
<td>Lisuthu</td>
<td>HHH</td>
<td>n</td>
<td>in Lesotho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>LH</td>
<td>n</td>
<td>tail</td>
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<td>L v</td>
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<td>get rolled together (cf -ellana), lit. &amp; fig. (get all mixed up)</td>
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<td>ge</td>
<td>Mvulo</td>
<td>HLL</td>
<td>adv</td>
<td>Monday, on Monday</td>
<td></td>
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<tr>
<td>ku</td>
<td>nka</td>
<td>H</td>
<td>v</td>
<td>pick up</td>
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<tr>
<td>ku</td>
<td>na</td>
<td>L</td>
<td>v</td>
<td>rain</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>naba</td>
<td>L</td>
<td>v</td>
<td>stretch out straight (e.g. legs)</td>
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<tr>
<td></td>
<td>nabisisa</td>
<td>L</td>
<td>v</td>
<td>stretch out VERY straight (e.g. legs)</td>
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<tr>
<td>ku</td>
<td>nabulla</td>
<td>L</td>
<td>v</td>
<td>pull back up sth stretched out, e.g. legs</td>
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<td></td>
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<tr>
<td>mu</td>
<td>nadzi</td>
<td>LH</td>
<td>n</td>
<td>sth nice</td>
<td></td>
<td></td>
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<tr>
<td>li</td>
<td>ema naga</td>
<td>LH</td>
<td>n</td>
<td>horn</td>
<td></td>
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</tr>
<tr>
<td>i t</td>
<td>naha</td>
<td>LL</td>
<td>n</td>
<td>country</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>nahana</td>
<td>L</td>
<td>v</td>
<td>think</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nakana</td>
<td>L</td>
<td>v</td>
<td>think -yi-nakanela kutshi... ?T &quot;think how to...&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i t</td>
<td>nako</td>
<td>LL</td>
<td>n</td>
<td>time</td>
<td></td>
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<tr>
<td>ku</td>
<td>namhlajhé</td>
<td>HHLH</td>
<td>adv</td>
<td>today</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i t</td>
<td>nanabetsa</td>
<td>L</td>
<td>v</td>
<td>stretch to reach sth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncama</td>
<td>L</td>
<td>v</td>
<td>be disappointed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncamathela</td>
<td>L</td>
<td>v</td>
<td>stick to *[tsh]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncamathelana</td>
<td>L</td>
<td>v</td>
<td>stick to e.o.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncamathelisana</td>
<td>L</td>
<td>v</td>
<td>stick to e.o., (cause to stick to e.o.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>nci</td>
<td>H</td>
<td>adj</td>
<td>small</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ncinci</td>
<td>HH</td>
<td>adj</td>
<td>small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ka</td>
<td>ncincinyana</td>
<td>HLLL</td>
<td>adv</td>
<td>very little, a very tiny amount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>nconco</td>
<td>LL</td>
<td>n</td>
<td>sour porridge (lishilishili) either left to stand for two days, or with tartaric added to turn it sour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncumeka</td>
<td>L</td>
<td>v</td>
<td>light fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ncwetela</td>
<td>H</td>
<td>v</td>
<td>dish up (food)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ne</td>
<td>L</td>
<td>adj</td>
<td>four</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nebha</td>
<td>L</td>
<td>v</td>
<td>be right, correct (of the person being right)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nebhakala</td>
<td>L</td>
<td>v</td>
<td>be right (&quot;ergative&quot;, i.e. of the thing(s) consisting in the rightness) ti-ya-nebhakala HLLLFL &quot;they (the things) are correct&quot;</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>neka</td>
<td>H</td>
<td>v</td>
<td>lay out (e.g. to dry), hang up (explicitly to dry)</td>
<td></td>
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<tr>
<td></td>
<td>neke</td>
<td>HL</td>
<td>rel?</td>
<td>nine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nela</td>
<td>L</td>
<td>v</td>
<td>leak (lit. &quot;rain down from&quot;)</td>
<td>idlu iyanela HL HHLL &quot;the house leaks&quot; -nela etūlū &quot;rain down from on high&quot; ?T</td>
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<td>----------------------------------------------------------------------------------</td>
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<tr>
<td>mu</td>
<td>bo, eba ngali</td>
<td>HH</td>
<td>n</td>
<td>sir, Mr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ngana</td>
<td>HH</td>
<td>n</td>
<td>sp. of plant (tiny leaves on many small side branches of main leafstalk; used to boil &amp; drink or stuff up nose as medicine)</td>
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<tr>
<td>--</td>
<td>ema nganga</td>
<td>LH</td>
<td>n</td>
<td>stubbornness u-manganga HLHL &quot;he is stubborn&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema ngangajane</td>
<td>HHLL</td>
<td>n</td>
<td>dried fruit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ngcola</td>
<td>L</td>
<td>v</td>
<td>become dirty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ngcola</td>
<td>H</td>
<td>v</td>
<td>wash hands</td>
<td></td>
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<tr>
<td></td>
<td>nggatotshi</td>
<td>HLHL</td>
<td>conj</td>
<td>as if = igatotshi &quot;as if&quot;</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>nggatshi</td>
<td>HLH (?)</td>
<td>conj</td>
<td>as if</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema ngobhe</td>
<td>LL</td>
<td>n</td>
<td>donga, hole in dried muddy ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>ngola</td>
<td>H</td>
<td>v</td>
<td>write</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mu</td>
<td>eba ngoli</td>
<td>HL</td>
<td>n</td>
<td>writer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>li</td>
<td>ema ngolo</td>
<td>HH</td>
<td>n</td>
<td>letter; also: reading (liturgical)</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>ngwabha</td>
<td>L</td>
<td>v</td>
<td>scratch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>ti ngwali</td>
<td>LH</td>
<td>n</td>
<td>girl in initiate school</td>
<td></td>
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<tr>
<td></td>
<td>nhêti</td>
<td>HL</td>
<td>adv</td>
<td>only, just, when (+ particip)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>ni</td>
<td>H</td>
<td>q</td>
<td>what kind of...? &quot;which horses?&quot;</td>
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<tr>
<td>--</td>
<td>bo nkayî</td>
<td>LHH</td>
<td>n</td>
<td>paternal aunt</td>
<td></td>
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<tr>
<td>--</td>
<td>bo nkeke</td>
<td>HLH</td>
<td>n</td>
<td>grandmother, old woman</td>
<td></td>
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</tr>
<tr>
<td>ku</td>
<td>nkgani</td>
<td>LHL</td>
<td>n</td>
<td>trickery unemankgani HLHLHL &quot;unamaqhinga &quot;he is cunning&quot;</td>
<td></td>
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<tr>
<td>ku</td>
<td>nkgha</td>
<td>L</td>
<td>v</td>
<td>smell (bad)</td>
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<td></td>
</tr>
<tr>
<td>bo</td>
<td>nkhûlû</td>
<td>LHH n</td>
<td>grandfather</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>nko</td>
<td>HH n</td>
<td>helping (a helping), sth</td>
<td>*Sgx taken</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nna</td>
<td>L v</td>
<td>always</td>
<td></td>
<td></td>
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<tr>
<td>u</td>
<td>bo</td>
<td>nna</td>
<td>LL n</td>
<td>his mother (taboo)</td>
<td></td>
<td></td>
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<tr>
<td>ku</td>
<td>nona</td>
<td>L v</td>
<td>become fat</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>nonobetsani</td>
<td>HHLHL n</td>
<td>earthworm</td>
<td></td>
<td></td>
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<tr>
<td>i</td>
<td>ti</td>
<td>nonyana</td>
<td>HLL n</td>
<td>bird</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>nqadza</td>
<td>H v</td>
<td>be cold</td>
<td></td>
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<tr>
<td>i</td>
<td>ti</td>
<td>nqalo</td>
<td>LL n</td>
<td>lonely place, e.g. inqalo yhebafû graveyard (inqalo yhebafû) cemetery</td>
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<td></td>
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<tr>
<td>li</td>
<td>ema</td>
<td>nqanqayilana</td>
<td>HHHLLL n</td>
<td>ankle</td>
<td></td>
<td></td>
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<tr>
<td>li</td>
<td>nqeba</td>
<td>LL n</td>
<td>wound</td>
<td></td>
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<tr>
<td>ku</td>
<td>nqênékêla</td>
<td>H v</td>
<td>be possessive over / unwilling to part with sth</td>
<td></td>
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<tr>
<td>ku</td>
<td>nquma</td>
<td>L v</td>
<td>become dry, be ?still a little damp</td>
<td></td>
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<tr>
<td>bo</td>
<td>ntatë</td>
<td>HLH n</td>
<td>father</td>
<td></td>
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<tr>
<td>i</td>
<td>ti</td>
<td>ntshï</td>
<td>LH n</td>
<td>eyebrow / eyelash tintshî letigetûlû HLH HHLFL &quot;eyebrows&quot;, lit. upper lashes; tintshî letigettasi HLH HHH!HL &quot;eyelashes&quot;, lit. lower lashes.</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>ntwa</td>
<td>HL n</td>
<td>fight, war</td>
<td></td>
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</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>nugo</td>
<td>LL n</td>
<td>joint (e.g. knuckle, etc) i-nugo yhesadla H-LL L-HL &quot;knuckle joint&quot;</td>
<td></td>
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<tr>
<td>li</td>
<td>ema</td>
<td>nugu</td>
<td>LL n</td>
<td>joint on body, e.g. ankle joint, wrist, knuckle?</td>
<td></td>
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<tr>
<td>li</td>
<td>ema</td>
<td>nugu</td>
<td>LL n</td>
<td>wrist</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>nugutshwayi</td>
<td>LLHL n</td>
<td>sp of berry (edible)</td>
<td></td>
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<tr>
<td>ku</td>
<td>nuka</td>
<td>L v</td>
<td>smell (bad)</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>nwana</td>
<td>LL n</td>
<td>finger</td>
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<tr>
<td></td>
<td>nxa yikhi</td>
<td>v</td>
<td>which side? / which place? / where?</td>
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<tr>
<td>Word 1</td>
<td>Word 2</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Meaning</td>
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<td>----------------------------------------------------------------------</td>
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<td>singular</td>
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<td>one</td>
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<td>one</td>
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<td>one (person)</td>
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<tr>
<td>left hand</td>
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<td></td>
<td>side (used in prep. phrases: on this/that/that side of X)</td>
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<tr>
<td>foot</td>
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<td></td>
<td>side (used in prep. phrases: on this/that/that side of X)</td>
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<tr>
<td>hurry, be in a hurry</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>excrement, feces</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>bundle</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>doctor</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>doorway</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>meat; pl: muscles (sg: *muscle)</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>small animal</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>disappear</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<tr>
<td>suck, suckle on (mother's breast; sweets)</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<tr>
<td>give suck to, cause to suck(le)</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>peek around / over, etc</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<tr>
<td>tread</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>stop treading</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>foot</td>
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<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<td>one</td>
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<td></td>
<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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<tr>
<td>singular (grammar)</td>
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<td></td>
<td></td>
<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
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</tbody>
</table>
| ka | nyye | L | adj, adv | once | amunye, cl 1, "one (person)"
| i ti | nyebheti | LLL | n | tear (of crying) |
| ku | nyega | L | v | become nauseous, ?sick; lick (??) |
| ku | nyegelwa | L | v | become angry |
| ku | nyegisa | L | v | make angry, ?sick |
| ku | nyegisana | L | v | make e.o. angry, ?sick |
| ku | nyela | L | v | defecate in |
| bo | nyewu | HL | n | what's-his-name |
| nyheti | HL | adj | many | bba-nyheti H-!HL "they are many", i.e. "there are many of them"
<p>| bu ?ema | nyheti | HL | n | plural (grammar) |
| ka | nyheti | HL | adv | lot (a lot), (many at a time?) |
| ku | nyika | H | v | give |
| ku | nyiketela | H | v | give for a purpose, e.g. message |
| i ti | nyiko | HH | n | gift, present |
| u bo | nyogo | LL | n | your mother (taboo) |
| i ti | nyoka | HH | n | snake |
| ku | nyorulla | H | v | quench thirst |
| ku | nyorwa | H | v | become thirsty |
| gi-nyoruwe | L-HHL | | | |
| i ti | nyosi | HH | n | bee |
| bu | nyovu | HL | n | wasp |
| ku | nyulla | L | v | carry ?up, e.g. bag |
| ku | nyuluka | L | v | climb, go up |
| i | nyulukelo | HHLL | n | ascension |
| i ti | nywana | LL | n | vagina |
| i ti | nywele | HL | n | hair (usually pl.) = hair on head |</p>
<table>
<thead>
<tr>
<th>Noun</th>
<th>Part of Speech</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>odzi, hhodzi</td>
<td>adv</td>
<td>alone, only (always with class prefix)</td>
</tr>
<tr>
<td>paka</td>
<td>v</td>
<td>witness</td>
</tr>
<tr>
<td>patala</td>
<td>v</td>
<td>pay</td>
</tr>
<tr>
<td>patalana</td>
<td>v</td>
<td>pay one another</td>
</tr>
<tr>
<td>patallana</td>
<td>v</td>
<td>pay for one another</td>
</tr>
<tr>
<td>pekë</td>
<td>n</td>
<td>pick (e.g. roadwork)</td>
</tr>
<tr>
<td>penta</td>
<td>v</td>
<td>paint</td>
</tr>
<tr>
<td>peperana</td>
<td>v</td>
<td>become cracked</td>
</tr>
<tr>
<td>pere</td>
<td>n</td>
<td>horse</td>
</tr>
<tr>
<td>perekisi</td>
<td>v</td>
<td>peach</td>
</tr>
<tr>
<td>pewu</td>
<td>n</td>
<td>seed</td>
</tr>
<tr>
<td>pëkë</td>
<td>n</td>
<td>pick (e.g. roadwork)</td>
</tr>
<tr>
<td>pha</td>
<td>v</td>
<td>give</td>
</tr>
<tr>
<td>phabhana</td>
<td>v</td>
<td>be mad</td>
</tr>
<tr>
<td>phabhene</td>
<td>adj/rel</td>
<td>different</td>
</tr>
<tr>
<td>phade</td>
<td>n</td>
<td>skin (of sheep, goat, *cow) [sg]; bed [pl. always]</td>
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<tr>
<td>phadla</td>
<td>n</td>
<td>forehead; baldness</td>
</tr>
<tr>
<td>phado</td>
<td>n</td>
<td>place for training (e.g. initiation of men, seminary)</td>
</tr>
<tr>
<td>phadze</td>
<td>n</td>
<td>tree</td>
</tr>
<tr>
<td>phaga</td>
<td>n</td>
<td>arm (wrist to shoulder)</td>
</tr>
<tr>
<td>phahla</td>
<td>n</td>
<td>flock of animals (sheep, cattle, goats)</td>
</tr>
<tr>
<td>phahlo</td>
<td>n</td>
<td>clothes</td>
</tr>
<tr>
<td>li</td>
<td>n</td>
<td>twin</td>
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1088
<table>
<thead>
<tr>
<th>i</th>
<th>ti</th>
<th>phakama</th>
<th>HLH n</th>
<th>high place</th>
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<tbody>
<tr>
<td>ku</td>
<td>ti</td>
<td>phakama</td>
<td>H v</td>
<td>stand up, rise (in numbers)</td>
</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>phala</td>
<td>HH n</td>
<td>whistle</td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>phali</td>
<td>HL n</td>
<td>whip (sambok)</td>
</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>phaní</td>
<td>HL n</td>
<td>giver, generous person</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phanyeka</td>
<td>H v</td>
<td>hang up (e.g. shirt)</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phapha</td>
<td>LL ied</td>
<td>awake suddenly</td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>phaphu</td>
<td>LH n</td>
<td>lung</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phaqa</td>
<td>L v</td>
<td>hit on the head</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phaqaga</td>
<td>L v</td>
<td>hit indiscriminately on the head</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phara</td>
<td>L v</td>
<td>plaster, daub mud on wall done before you &quot;sidza&quot;</td>
</tr>
<tr>
<td>e</td>
<td></td>
<td>phasi</td>
<td>HL adv</td>
<td>down</td>
</tr>
<tr>
<td>ge</td>
<td></td>
<td>phasi</td>
<td>HL adv</td>
<td>floor (as poss. stem), on the floor</td>
</tr>
<tr>
<td>li</td>
<td>--</td>
<td>phasi</td>
<td>HL n</td>
<td>earth, ?country</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phatsha</td>
<td>H v</td>
<td>hold, manage, be head of (e.g. team, country, school), touch (and then pass by)</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phatshisa</td>
<td>H v</td>
<td>help hold, manage, be head of; make carry (e.g. letter)</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phebha</td>
<td>H v</td>
<td>feed young</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>phedula</td>
<td>L v</td>
<td>answer</td>
</tr>
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<td>ku</td>
<td></td>
<td>phedulana</td>
<td>L v</td>
<td>answer e.o.</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>pheduleka</td>
<td>L v</td>
<td>be answerable, answered</td>
</tr>
<tr>
<td>ku</td>
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<td>L v</td>
<td>answer for</td>
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<tr>
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<td></td>
<td>phedvula</td>
<td>L v</td>
<td>answer</td>
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<td>ku</td>
<td></td>
<td>pheka</td>
<td>L v</td>
<td>cook</td>
</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>phekî</td>
<td>LL n</td>
<td>cook</td>
</tr>
<tr>
<td>ku</td>
<td></td>
<td>pheleketa</td>
<td>H v</td>
<td>accompany</td>
</tr>
<tr>
<td>--</td>
<td>ema</td>
<td>phelo</td>
<td>HH n</td>
<td>end (e.g. of month) e-ma-phelweni a-Meyi HLHHL LHL &quot;at the end of May&quot;</td>
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<td>L v</td>
<td>save (also: religious sense)</td>
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<td>ti</td>
<td>phepheni</td>
<td>HLL n</td>
<td>scorpion</td>
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<td>Word</td>
<td>Meaning</td>
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<td>gather</td>
<td>phuthsheka</td>
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<tr>
<td>Phuthi language</td>
<td>Phûthî -- si</td>
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<td>Phuthi person</td>
<td>Phûthî eba mu</td>
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<tr>
<td>delay</td>
<td>phutha</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>maize meal (powder)</td>
<td>phuphu ?i</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>give rest</td>
<td>phumuta ku</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nose</td>
<td>phumulo ti i</td>
<td></td>
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</tr>
<tr>
<td>rest</td>
<td>phumula ku</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>succeed, come out on</td>
<td>phumella ku</td>
<td></td>
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</tr>
<tr>
<td>come out to, make progress/develop (+ ebhili HLL)</td>
<td>phumela</td>
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<tr>
<td>west</td>
<td>phûla ti i</td>
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<tr>
<td>mistake</td>
<td>phoso ti i</td>
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</tr>
<tr>
<td>kidney</td>
<td>phîyo</td>
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<tr>
<td>present</td>
<td>pho</td>
<td></td>
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</tr>
<tr>
<td>animal</td>
<td>phofolo HHL n</td>
<td></td>
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<tr>
<td>fly</td>
<td>phôkgani LHL n</td>
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<td>get well, better</td>
<td>phola H v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mistake</td>
<td>phoso LL n</td>
<td></td>
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<tr>
<td>take down and put inside (e.g. clothes); put sheep (etc) into kraal [PT: roll up]</td>
<td>photsha L v</td>
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<tr>
<td>blow a lot (e.g. storm, wind) =v.i.; beat vigorously = v.t.</td>
<td>phûdla H v</td>
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<tr>
<td>drink (sth hot)</td>
<td>phuga L vt</td>
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<tr>
<td>get broken</td>
<td>phuka H v</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>break</td>
<td>phula H v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>take off fire if ready, dish up</td>
<td>phula L v</td>
<td></td>
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<td>valley</td>
<td>phûla</td>
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<td>come out to, make progress/develop (+ ebhili HLL)</td>
<td>phumella H v</td>
<td></td>
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<tr>
<td>succeed, come out on</td>
<td>phumella H v</td>
<td></td>
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</tr>
<tr>
<td>rest</td>
<td>phumula H v</td>
<td></td>
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</tr>
<tr>
<td>nose</td>
<td>phumulo HLL n</td>
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<td></td>
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<tr>
<td>give rest</td>
<td>phumuta H v</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>maize meal (powder)</td>
<td>phuphu LL n</td>
<td></td>
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</tr>
<tr>
<td>delay</td>
<td>phuta H v</td>
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<tr>
<td>Phuthi</td>
<td>Phûthî eba</td>
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<td>Phuthi language</td>
<td>Phûthî</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gather</td>
<td>phutsheka L v</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>cover</td>
<td>phutshela L v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>phutshulla</td>
<td>L</td>
<td>v</td>
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<tr>
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<td>adv</td>
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<td>v</td>
<td>rinse (clothes)</td>
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<td>ti</td>
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<td>v</td>
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<td>mi</td>
<td>pûtsa</td>
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<td>n</td>
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<td>v</td>
<td>start</td>
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<td>qalella</td>
<td>H</td>
<td>v</td>
<td>start to do sth</td>
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<td>ku</td>
<td>qalisa</td>
<td>H</td>
<td>v</td>
<td>start (sth)</td>
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<td>i</td>
<td>ti</td>
<td>qalo</td>
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<td>n</td>
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<td>qedza</td>
<td>H</td>
<td>v</td>
<td>finish</td>
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<td>qedzelana</td>
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<td>v</td>
<td>finish for e.o.</td>
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<td>qedzelisa</td>
<td>L</td>
<td>v</td>
<td>help finish sth; do sth for the last time</td>
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<tr>
<td>ku</td>
<td>qedzelisana</td>
<td>L</td>
<td>v</td>
<td>help e.o. finish sth; do sth to/with e.o. for the last time</td>
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<tr>
<td>ku</td>
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<td>L</td>
<td>v</td>
<td>finish thoroughly</td>
</tr>
<tr>
<td>ku</td>
<td>qedzella</td>
<td>L</td>
<td>v</td>
<td>finish off (e.g. water in glass; aso: kill if sick)</td>
</tr>
<tr>
<td>ku</td>
<td>qedzellella</td>
<td>L</td>
<td>v</td>
<td>push off (?), finish off for smn</td>
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<td>qedzellellan</td>
<td>L</td>
<td>v</td>
<td>finish off for e.o.</td>
</tr>
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<td>ti</td>
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<td>L</td>
<td>v</td>
<td>finish thoroughly</td>
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<td>ti</td>
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<td>Word</td>
<td>Gender</td>
<td>Case</td>
<td>Root</td>
<td>Meaning</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>qethuka</td>
<td>H</td>
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<td>qethu</td>
<td>look up at</td>
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<td>qhaba</td>
<td>L</td>
<td></td>
<td>qha</td>
<td>rise (of the sun)</td>
</tr>
<tr>
<td>qhaqha</td>
<td>L</td>
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<td>qha</td>
<td>pull apart, e.g. engine, sewn hat</td>
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<tr>
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<td>L</td>
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<td>qha</td>
<td>pull apart, e.g. engine, sewn hat</td>
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<td>qathâhula</td>
<td>H</td>
<td></td>
<td>qath</td>
<td>prop up, hold up</td>
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<td>at Qhoboshane</td>
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<td>ankle / shin / calf</td>
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<td>jump over</td>
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<td>qhomela</td>
<td>L</td>
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<td>jump over sth into sth</td>
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<td>n</td>
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<td>qhwele</td>
<td>LH</td>
<td>n</td>
<td>qhwe</td>
<td>sg: small piece of string, rope, etc, including shoelace; pl: shoelaces</td>
</tr>
<tr>
<td>qina</td>
<td>H</td>
<td></td>
<td>qin</td>
<td>be strong, tight</td>
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<tr>
<td>qininisa</td>
<td>H</td>
<td></td>
<td>qini</td>
<td>be correct</td>
</tr>
<tr>
<td>qobella</td>
<td>H</td>
<td></td>
<td>qobe</td>
<td>force</td>
</tr>
<tr>
<td>qobisa</td>
<td>L</td>
<td></td>
<td>qob</td>
<td>save</td>
</tr>
<tr>
<td>qoda</td>
<td>L</td>
<td></td>
<td>qod</td>
<td>realise</td>
</tr>
<tr>
<td>qokwa</td>
<td>LH</td>
<td>n</td>
<td>qok</td>
<td>thatching grass, a thicker sp of -- (Sgx)</td>
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<tr>
<td>qoqo</td>
<td>LL</td>
<td>n</td>
<td>qoq</td>
<td>short story</td>
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<tr>
<td>qoqotho</td>
<td>HLL</td>
<td>n</td>
<td>qoq</td>
<td>larynx, Adam's apple</td>
</tr>
<tr>
<td>qotsha</td>
<td>H</td>
<td></td>
<td>qo</td>
<td>expel (cf -xotsha)</td>
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<tr>
<td>qu</td>
<td>L</td>
<td>n</td>
<td>q</td>
<td>maize cob, stripped of kernels</td>
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<tr>
<td>qubha</td>
<td>L</td>
<td></td>
<td>qub</td>
<td>get annoyed</td>
</tr>
<tr>
<td>qubhisa</td>
<td>L</td>
<td></td>
<td>qub</td>
<td>make annoyed</td>
</tr>
<tr>
<td>qubhisanà</td>
<td>L</td>
<td></td>
<td>qub</td>
<td>make e.o. very angry</td>
</tr>
<tr>
<td>röbala</td>
<td>L</td>
<td></td>
<td>rob</td>
<td>sleep [mid vowel does not harmonise]</td>
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<tr>
<td>röbatisa</td>
<td>L</td>
<td></td>
<td>rob</td>
<td>put to sleep</td>
</tr>
<tr>
<td>eba-ra</td>
<td>H</td>
<td>n</td>
<td></td>
<td>son</td>
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1092
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<tr>
<th>si</th>
<th>ti</th>
<th>ra</th>
<th>L</th>
<th>n</th>
<th>enemy</th>
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<tr>
<td>ku</td>
<td>rabhela</td>
<td>L</td>
<td>v</td>
<td>pray</td>
<td></td>
</tr>
<tr>
<td>bu</td>
<td>rabhelî</td>
<td>HLL</td>
<td>n</td>
<td>community of people praying</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rabhelisisa</td>
<td>L</td>
<td>v</td>
<td>pray thoroughly, intensely, completely</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rabhellana</td>
<td>L</td>
<td>v</td>
<td>pray for e.o.</td>
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<td>li</td>
<td>ema</td>
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<td>LH</td>
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<td>noise</td>
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<td>LH</td>
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<td>n</td>
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<tr>
<td>mu</td>
<td>eba</td>
<td>ralî</td>
<td>HL</td>
<td>n</td>
<td>daughter; smn who plans</td>
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<tr>
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<td>ema</td>
<td>ralla</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>rantha</td>
<td>LLH</td>
<td>n</td>
<td>poor, dirty, ragged person</td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>rapa</td>
<td>LH</td>
<td>n</td>
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</tr>
<tr>
<td>ku</td>
<td>rarulla</td>
<td>H</td>
<td>v</td>
<td>explain, simplify</td>
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</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>ratûwa</td>
<td>HLL</td>
<td>n</td>
<td>boyfriend, girlfriend</td>
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<tr>
<td>ku</td>
<td>raya</td>
<td>L</td>
<td>v</td>
<td>kick</td>
<td></td>
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<tr>
<td>ku</td>
<td>rayaga</td>
<td>L</td>
<td>v</td>
<td>kick indiscriminately</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>rayagano</td>
<td>HHLL</td>
<td>n</td>
<td>indiscriminate mutual kicking</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rayagellana</td>
<td>L</td>
<td>v</td>
<td>to kick for e.o. indiscriminately</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rayagisisa</td>
<td>L</td>
<td>v</td>
<td>to kick indiscriminately (&amp;) intensively</td>
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</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>rayagisiso</td>
<td>LLHLL</td>
<td>n</td>
<td>indiscriminate (&amp;) intensive kicking</td>
</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>rena</td>
<td>LL</td>
<td>n</td>
<td>chief</td>
</tr>
<tr>
<td>si</td>
<td>ti</td>
<td>rethe</td>
<td>Hh</td>
<td>n</td>
<td>heel</td>
</tr>
<tr>
<td>ku</td>
<td>rhola</td>
<td>H</td>
<td>v</td>
<td>roll up</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rholulla</td>
<td>H</td>
<td>v</td>
<td>unroll</td>
<td></td>
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<tr>
<td>ku</td>
<td>rholululela</td>
<td>H</td>
<td>v</td>
<td>unroll for</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rholullelana</td>
<td>H</td>
<td>v</td>
<td>unroll for e.o.</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rhûsa</td>
<td>H</td>
<td>v</td>
<td>rust</td>
<td></td>
</tr>
<tr>
<td>ku</td>
<td>rhûsisa</td>
<td>H</td>
<td>v</td>
<td>cause to rust</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>rimini</td>
<td>HHL</td>
<td>n</td>
<td>gum (of teeth)</td>
</tr>
<tr>
<td>--</td>
<td>ema</td>
<td>riya</td>
<td>HH</td>
<td>n</td>
<td>winter</td>
</tr>
<tr>
<td>ku</td>
<td>roga</td>
<td>H</td>
<td>v</td>
<td>praise</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>u-ti-roga gemrena</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HHHL LHLL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;he praises the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>chief (lit. praises</td>
<td></td>
</tr>
</tbody>
</table>
|        |           |    |    | self by the chief);
|        |           |    |    | ba-ya- rogana |
|        |           |    |    | HHLHL "they sing |
|        |           |    |    | e.o.'s praise names" |

<table>
<thead>
<tr>
<th>mu</th>
<th>eba</th>
<th>HL</th>
<th>n</th>
<th>praise singer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>rogî</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| si     | ti        | rogo | LH | n  | praise; singing by male |
|--------|-----------|------|----|----|initiates (& on exiting |
|        |           |      |    |    |initiation school) |

| bu     | emo       | podrho | HH | n  | bridge |

<table>
<thead>
<tr>
<th>ku</th>
<th>rora</th>
<th>L</th>
<th>v</th>
<th>purr (of cat)</th>
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</table>

<table>
<thead>
<tr>
<th>ku</th>
<th>roftsa</th>
<th>L</th>
<th>v</th>
<th>praise, glorify</th>
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</table>

<table>
<thead>
<tr>
<th>si</th>
<th>ti</th>
<th>rubhi</th>
<th>LL</th>
<th>n</th>
<th>thigh</th>
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</table>

<table>
<thead>
<tr>
<th>ku</th>
<th>rûda</th>
<th>H</th>
<th>v</th>
<th>study, teach</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>mu</th>
<th>eba</th>
<th>rûdî</th>
<th>HL</th>
<th>n</th>
<th>minister, priest, teacher</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>mu</th>
<th>eba</th>
<th>rûdî</th>
<th>HL</th>
<th>n</th>
<th>teacher</th>
</tr>
</thead>
</table>

| ku     | rûdîsa    | H   | v  | teach (person or |
|--------|-----------|-----|----|subject) |

<table>
<thead>
<tr>
<th>ku</th>
<th>rûdisana</th>
<th>H</th>
<th>v</th>
<th>teach e.o.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>i</th>
<th>ti</th>
<th>rûdo</th>
<th>LH</th>
<th>n</th>
<th>teaching</th>
</tr>
</thead>
</table>

| mu     | eba       | rûdûwa | HLL | n  | student, one being |
|--------|-----------|--------|-----|----|taught |

<table>
<thead>
<tr>
<th>mu</th>
<th>eba</th>
<th>rûdwana</th>
<th>HLL</th>
<th>n</th>
<th>student</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>si</th>
<th>ti</th>
<th>rûrûbelê</th>
<th>HHHL</th>
<th>n</th>
<th>butterfly, moth</th>
</tr>
</thead>
</table>

| ku     | rûlîla    | H   | v  | pull |

| ku     | sa        | H   | v  | dawn, clear up (of |
|--------|-----------|-----|----|clouds) |
|        |           |    |    | liyasa HLH "the |
|        |           |    |    | sky is clearing |
|        |           |    |    | up" |

| mu     | --        | sa-  | H   | n  | kindness, mercy, |
|--------|-----------|------|-----|----|goodness, bounty |

|        |            | sa-pref | H  |    | still, just |
|        |            |         |    |    | begisava "I was |
|        |            |         |    |    | just tasting" |

<table>
<thead>
<tr>
<th>ku</th>
<th>saba</th>
<th>H</th>
<th>v</th>
<th>fear, be afraid of</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>i</th>
<th>sabo</th>
<th>HH</th>
<th>n</th>
<th>fear</th>
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<table>
<thead>
<tr>
<th>i</th>
<th>ti</th>
<th>sabule</th>
<th>HLL</th>
<th>n</th>
<th>sword</th>
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<table>
<thead>
<tr>
<th>li</th>
<th>emo</th>
<th>saga</th>
<th>LH</th>
<th>n</th>
<th>cattle kraal</th>
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| ku     | sarela    | L   | v  | become weak with |
|--------|-----------|-----|----|hunger / bad news |

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<table>
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<th>ku</th>
<th>seba</th>
<th>L</th>
<th>v</th>
<th>be rude</th>
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<tr>
<td>ku</td>
<td>sebeta</td>
<td>H</td>
<td>v</td>
<td>work</td>
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<tr>
<td>ku</td>
<td>sebetellana</td>
<td>H</td>
<td>v</td>
<td>work for e.o.</td>
</tr>
<tr>
<td>mu</td>
<td>mi</td>
<td>HHH</td>
<td>n</td>
<td>job (more particular than general work?) hu-sebeti wam H-HHH HL &quot;my work&quot;</td>
</tr>
<tr>
<td>mu</td>
<td>eba</td>
<td>HLL</td>
<td>n</td>
<td>worker</td>
</tr>
<tr>
<td>ku</td>
<td>sebeti</td>
<td>HHL</td>
<td>n</td>
<td>job</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>LL</td>
<td>n</td>
<td>rudeness, act of</td>
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<td>ema</td>
<td>LL</td>
<td>n</td>
<td>testicle</td>
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<td>ku</td>
<td>sehla</td>
<td>L</td>
<td>v</td>
<td>chaff</td>
</tr>
<tr>
<td>ku</td>
<td>sehlisa</td>
<td>L</td>
<td>v</td>
<td>make chaff, make life hard &quot;I will make life hard for you&quot;</td>
</tr>
<tr>
<td>ku</td>
<td>seka</td>
<td>H</td>
<td>v</td>
<td>cut (eg. paper)</td>
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<td>ku</td>
<td>sola</td>
<td>H</td>
<td>v</td>
<td>drink</td>
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<td>shapa</td>
<td>H</td>
<td>v</td>
<td>hit, punish</td>
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<td>i</td>
<td>ti</td>
<td>HLL</td>
<td>n</td>
<td>shilling, 10 cents</td>
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<td>ge</td>
<td>ema</td>
<td>HH</td>
<td>adv</td>
<td>except; outside</td>
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<tr>
<td>li</td>
<td>ema</td>
<td>LLLL</td>
<td>n</td>
<td>watery porridge (maize meal poured into boiling water)</td>
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<td>i</td>
<td>ti</td>
<td>LHL</td>
<td>n</td>
<td>insect, gogga</td>
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<tr>
<td>ku</td>
<td>shiya</td>
<td>H</td>
<td>v</td>
<td>leave (e.g. children, house) (ct. -lesa)</td>
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<td>li</td>
<td>ema</td>
<td>HH</td>
<td>adj</td>
<td>ten (cardinal numeral)</td>
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<tr>
<td>mu</td>
<td>mi</td>
<td>H</td>
<td>n</td>
<td>smoke; plural: different columns of smoke</td>
</tr>
<tr>
<td>si</td>
<td>sî</td>
<td>H</td>
<td>n</td>
<td>large amount of smoke</td>
</tr>
<tr>
<td>li</td>
<td>ema</td>
<td>HH</td>
<td>n</td>
<td>feather</td>
</tr>
<tr>
<td>ku</td>
<td>sibekela</td>
<td>L</td>
<td>v</td>
<td>put lid on; become cloudy</td>
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<tr>
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<td>sibekelisa</td>
<td>L</td>
<td>v</td>
<td>put the lid on tightly / properly</td>
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<tr>
<td>--</td>
<td>--</td>
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<td>n</td>
<td>Sebapala River (southern Lesotho)</td>
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<tr>
<td>ku</td>
<td>sidla</td>
<td>H</td>
<td>v</td>
<td>skin an animal</td>
</tr>
<tr>
<td>ku</td>
<td>sidza</td>
<td>L</td>
<td>v</td>
<td>smear mud, cow dung on floor</td>
</tr>
<tr>
<td>ku</td>
<td>sidzela</td>
<td>H</td>
<td>v</td>
<td>trespass, sin cf Ntate Wetfu (Pater Noster)</td>
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<tr>
<td>ku</td>
<td>sidzwa</td>
<td>H</td>
<td>v</td>
<td>not to know (how to do)..., be unsure</td>
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<td>------</td>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>--------------------------------------</td>
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<td>e</td>
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<td>at Sigxodo (Singxondo)</td>
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<td>sikati</td>
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<td>n</td>
<td>left, left side (e.g. left hand: followed by possessive)</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>sikati</td>
<td>HLH</td>
<td>female &quot;cow&quot; Xh: imazi yenkomo</td>
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<td>sîla</td>
<td>L</td>
<td>v</td>
<td>grind</td>
</tr>
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<td>sîlafala</td>
<td>L</td>
<td>v</td>
<td>become dirty</td>
</tr>
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<td>mu</td>
<td>mi</td>
<td>sîma</td>
<td>HH</td>
<td>valley</td>
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<td>ti</td>
<td>simi</td>
<td>HH</td>
<td>field</td>
</tr>
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<td>sînya</td>
<td>H</td>
<td>v</td>
<td>waste, destroy (Sgx)</td>
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<tr>
<td>ku</td>
<td>sînyeka</td>
<td>H</td>
<td>v</td>
<td>suffer injuries</td>
</tr>
<tr>
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<td>sînyisa</td>
<td>H</td>
<td>v</td>
<td>cause to destroy</td>
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<td>mu</td>
<td>mi</td>
<td>sîpha</td>
<td>LL</td>
<td>muscle</td>
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<td>ku</td>
<td>sîta</td>
<td>H</td>
<td>v</td>
<td>help (a)</td>
</tr>
<tr>
<td>ku</td>
<td>sîtsa</td>
<td>L</td>
<td>v</td>
<td>give, grant favours with</td>
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<td>H</td>
<td>v</td>
<td>convert, change smn's heart</td>
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<td>v</td>
<td>convert e.o.</td>
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<td>v</td>
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<td>L</td>
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<td>point to</td>
</tr>
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<td>sûbhaga</td>
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<td>point all over the place, here and there...</td>
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<td>v</td>
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<td>move aside, give way</td>
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<td>L</td>
<td>v</td>
<td>be in process of moving aside, giving way</td>
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<td>v</td>
<td>be in process of moving aside, giving way to e.o.</td>
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<td>go away, leave</td>
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<td>suku</td>
<td>HH</td>
<td>n</td>
<td>night, nighttime</td>
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<td>v</td>
<td>to embarrass (erg? be embarrassing)</td>
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<td>v</td>
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<td>v</td>
<td>tie up, tie around</td>
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<td>ti</td>
<td>tapule</td>
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<td>be very tired</td>
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<td>L</td>
<td>v</td>
<td>do sth (e.g. talk) slowly</td>
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<tr>
<td>ku</td>
<td>tepelletsana</td>
<td>L</td>
<td>v</td>
<td>make e.o. do sth slowly (e.g. talk slowly to e.o.);</td>
</tr>
<tr>
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<td>L</td>
<td>v</td>
<td>do sth (e.g. talk) slowly</td>
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<td>tšili</td>
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<td>n</td>
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<td>H</td>
<td>n</td>
<td>nothing (in negative sentence frame)</td>
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<td>ti</td>
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</tr>
<tr>
<td>i</td>
<td>ti</td>
<td>tòga</td>
<td>LH n</td>
<td>fighting stick; also: for walking (?)</td>
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<tr>
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<td>tfòga</td>
<td>H v</td>
<td>insult</td>
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<td>tiògo</td>
<td>LL n</td>
<td>sleep</td>
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<td>tò</td>
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<td>tfò</td>
<td>L n</td>
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<td>eba</td>
<td>tfò lamejhe</td>
<td>L HLH n</td>
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<td>tfubho</td>
<td>LL n</td>
<td>intestines, bowel</td>
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<td>tfubho</td>
<td>LL n</td>
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<td>H v</td>
<td>sew</td>
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<td>tfugakana</td>
<td>H v</td>
<td>get sewn together</td>
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<td>H v</td>
<td>sew together</td>
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<td>tfugellana</td>
<td>H v</td>
<td>get sewn together (cf. -tfugakana)</td>
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<td>get a fright</td>
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<td>tfukulla</td>
<td>L v</td>
<td>set free +OBJ; take off (-OBJ)</td>
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<td>tfukulleka</td>
<td>L v</td>
<td>be free</td>
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<td>tfula</td>
<td>H v</td>
<td>be quiet</td>
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<td>tfulela</td>
<td>H v</td>
<td>just keep quiet (with -ti- rfx)</td>
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<td>H v</td>
<td>send</td>
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<td>mi</td>
<td>tfuti</td>
<td>LH n</td>
<td>shade</td>
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<td>si</td>
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<td>tfuti</td>
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<td>shadow</td>
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<td>eba</td>
<td>Tfwa</td>
<td>H n</td>
<td>Bushman / San person</td>
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<td>ku</td>
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<td>be on the head (e.g. dish, wood, bag, water, chicken, anything, but NOT a hat)</td>
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<td>child</td>
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<td>help put on the head (e.g. dish, wood, bag, water, chicken, anything, but NOT a hat)</td>
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<td>thakghîsa</td>
<td>L v</td>
<td>nail, crucify</td>
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<td>i</td>
<td>ti</td>
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<td>mi</td>
<td>thapo</td>
<td>HH n</td>
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<td>bu</td>
<td>thata</td>
<td>HH</td>
<td>difficulty, problem</td>
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<td>become hard, difficult</td>
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<td>ti</td>
<td>LLLL</td>
<td>tartar(ic), added to</td>
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<td>itshabeni</td>
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<td>thewuka</td>
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<td>go down</td>
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<tr>
<td>ku</td>
<td>thewusela</td>
<td>H</td>
<td>descend (e.g. mountain,</td>
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<td></td>
<td></td>
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<td>*onto/from a roof)</td>
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<td>thûnda</td>
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<td>teach</td>
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<tr>
<td>i</td>
<td>ti</td>
<td>LH</td>
<td>teaching</td>
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<td>li?</td>
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<td>end (of folktale)</td>
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<td>(eba)</td>
<td>HL</td>
<td>praise singer (syn with</td>
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<td>-rogi?)</td>
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<td>go / get down</td>
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<td>stick</td>
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<td>ti</td>
<td>LH</td>
<td>flat place, ?clearing</td>
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<td>ti</td>
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<td>ti</td>
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<td>ti</td>
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<td>kwehlûlûla</td>
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<td>&quot;start of summer&quot;)</td>
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<td>mu</td>
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<td>L</td>
<td>village, homestead</td>
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<td>LH</td>
<td>body</td>
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<td>?ema</td>
<td>?</td>
<td>depths, deep place</td>
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<td>tîmela</td>
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<td>be (too) difficult for</td>
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*"descend the mountain"*  
*"I learn Ph", i.e. "I teach myself Ph"*
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<th>Type</th>
<th>Part of Speech</th>
<th>Meaning</th>
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<td>difficult(y), heavy</td>
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<td>tima</td>
<td>H</td>
<td>v</td>
<td>refuse, deprive, hold back, give very little</td>
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<td>H</td>
<td>v</td>
<td>refuse e.o. food</td>
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<td>glands on the face, under the lower jaw; also: doubt (?)</td>
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<td>mi</td>
<td>HHHL</td>
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<td>little tin of sth (e.g. beer, coke)</td>
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<td>ema</td>
<td>HLL</td>
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<td>young (offspring) of any animal</td>
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<td>ema</td>
<td>HH</td>
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<td>tooth</td>
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<td>ema</td>
<td>LL</td>
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<td>nail (toe or finger)</td>
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<td>ti</td>
<td>HL</td>
<td>n</td>
<td>tea (pl: different types)</td>
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<td>v</td>
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<td>v</td>
<td>move (always backwards)</td>
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<td>tjhetjella</td>
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<td>v</td>
<td>move in the direction of (always backwards)</td>
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1101
<p>| ku   | kutsheya | L   | v  | get happy |
| li   | tshewo   | LH  | n  | bone      |
| li   | tshewo   | LH  | n  | bone      |
| ku   | tshadza  | H   | v  | love      |
| ku   | tshadzisa | L  | v  | cause to love; make |
|      |          |     |    | smn do sth without |
|      |          |     |    | considering whether |
|      |          |     |    | they like it      |
|      |          |     |    | aba-ta-gi-tshadzi |
|      |          |     |    | si &quot;they made me |
|      |          |     |    | do (it) without |
|      |          |     |    | considering whether |
|      |          |     |    | I like it&quot;       |
| i   | tshaga   | LH  | n  | pumpkin seed |
| i   | tshaga   | LL  | n  | seed       |
| ku   | tshanyela | H  | v  | sweep     |
| ku   | tshanyellana | H    | v  | sweep for e.o. |
| li   | tshanyelo | HLL | n  | broom    |
| ka   | tshatfu   | HH  | adj | three |
| --   | tshaga   | H   | n  | spit, saliva |
| ku   | tshebha   | H   | v  | hope, believe |
| ku   | tshebhalala | L  | v  | be trustworthy, honest |
| i   | tshetha   | L   | n  | trustworthiness, honesty |
| ku   | tshehanna | L   | v  | hope for e.o.? |
| ku   | tshega    | H   | v  | buy |
| mu   | tshegi    | HL  | n  | buyer |
| ku   | tshegisa  | H   | v  | sell |
| mu   | tshegisí  | LHL | n  | seller |
| i   | tshegiso  | LHL | n  | sale |
| i   | tshego    | LH  | n  | purchase |
| ku   | tshethetsa | ?  | v  | hold tightly |
| ku   | tshela    | L   | v  | pour in (till full; ct.-chata) |
| ku   | tshetshaga | H  | n  | shout |
|      |           |     |    | kuyatshetshwa ~ |
|      |           |     |    | *tfwa |
|      |           |     |    | HLHL&quot;there is |
|      |           |     |    | shouting going |
|      |           |     |    | on&quot;         |
| ku   | tshetshana | H  | v  | be harsh |
| ku   | tshetshaga | H   | v  | shout indiscriminately |
| si   | tshetshana | HLL | n  | garden |
| i    | tshetsho  | HH  | n  | harshness |
| li   | tshewo    | HH  | n  | name, noun |
| ku   | tsheya    | H   | v  | name (e.g. a child) |</p>
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<td>say, do; AUX (with ideophones)</td>
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<td>cross over</td>
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<td>comforter</td>
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<td>fly</td>
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<td>ku tshiriyanana</td>
<td>L v</td>
<td>be a fool</td>
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<td>depend on sth (with rfx -ti-)</td>
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<td>ochre; pl: packets of ochre</td>
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<td>ku tšūbha</td>
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<td>smoke (cigarette, etc)</td>
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<td>red ochre</td>
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<td>ku tšūkūnya</td>
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<td>rinse (mouth)</td>
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<td>ku tsuma</td>
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<td>hunt big animals</td>
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<tr>
<td>li ema tsupa</td>
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<td>clay; pl: different amounts or types of clay</td>
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<td>li ema tswayî</td>
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<td>salt; pl: different types of salt</td>
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<td>HLH n</td>
<td>girl recently returned from initiate school</td>
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<td>e ttasi</td>
<td>HL adv</td>
<td>down (e-); down, underneath (with movt: ge-)</td>
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<td>put onto a body extremity, e.g. hat (not dish, etc) on head; socks/shoes on feet; gloves on hands; earrings on ears; glasses on nose; nose-ring (hypothetical)</td>
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[turn to the next page for English-Phuthi]
### English-Phuthi

- The notes given at the start of this appendix apply likewise to the English-Phuthi lexicon below, save that column 6 has been promoted to first position, as it is the sort category for this second section of the lexicon. To facilitate reading comments above relating to column numbers, the same column numbers have been retained (albeit now out of sequence).

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<th>6</th>
<th>Engish Gloss</th>
<th>Prefix singular</th>
<th>Prefix plural</th>
<th>Lexical Phuthi stem</th>
<th>Stem tone pattern</th>
<th>Stem category</th>
<th>Phrase Examples</th>
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<td>odzi, hhodzi [vowel in σ1 is always breathy], edzi</td>
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<td>adv</td>
<td>gi-ngedzi H-LHL &quot;I alone&quot; u-whedzi H-HL &quot;you alone&quot; a-yhedzi H-HL &quot;s/he alone&quot; ba-bbodzi H-HL &quot;they alone&quot;, etc</td>
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<td>--</td>
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<td>ga-'Agasti L-HHL &quot;in August&quot;; also: ga-'Ogasti L-HLL</td>
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<td>bî</td>
<td>H adv</td>
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<td>ti-ya-nebhakala HLLLFL &quot;they (the things) are correct&quot;</td>
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<td>bba-hle H-H &quot;they are beautiful&quot;</td>
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<td>become hard, difficult</td>
<td>ku</td>
<td>H v</td>
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<td>become ripe / cooked (only passive)</td>
<td>ku</td>
<td>H v</td>
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<tr>
<td>become, be</td>
<td>ku</td>
<td>L v</td>
<td>gi-funa kuba yi-titjhere LHL HL LHLL &quot;I want to be(come) a teacher&quot;</td>
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<tr>
<td>bee</td>
<td>i, ti, nyosi</td>
<td>HH n</td>
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<tr>
<td>beer (traditional); pl:</td>
<td>bu, ema, jwala</td>
<td>LH n</td>
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<td>different pots of beer</td>
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<tr>
<td>believe</td>
<td>ku, kholwa</td>
<td>H v</td>
<td>giyamukholwa &quot;I believe in him&quot; LLLHL</td>
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<td>bend</td>
<td>ku, goba</td>
<td>L v</td>
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<tr>
<td>berry (edible), sp of —</td>
<td>mu, mi, nugutshwayi</td>
<td>LLHL n</td>
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<tr>
<td>between, in —, in the middle of (e-);</td>
<td>ge, khatshi</td>
<td>HH adv</td>
<td></td>
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<tr>
<td>inside (ge-)</td>
<td></td>
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<td>big, ?old</td>
<td></td>
<td>HH adj</td>
<td></td>
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<tr>
<td>bird</td>
<td>i, ti, nonyana</td>
<td>HLL n</td>
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<tr>
<td>birth to, give —</td>
<td>ku, beleka</td>
<td>L v</td>
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<tr>
<td>bite on a surface, e.g from an apple, &lt;&gt;</td>
<td>ku, grinya</td>
<td>L v</td>
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<tr>
<td>bite a piece out of</td>
<td></td>
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<td>bite</td>
<td>ku, luma</td>
<td>H v</td>
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<tr>
<td>bite indiscriminately</td>
<td>ku, lumaga</td>
<td>H v</td>
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<tr>
<td>bitter (to taste), be —</td>
<td>ku, baba</td>
<td>L v</td>
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<td>Black person from elsewhere than in</td>
<td>li, ema, kwerekwere</td>
<td>HHLL n</td>
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<tr>
<td>southern Africa</td>
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<td>blame</td>
<td>ku, sola</td>
<td>L v</td>
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<tr>
<td>blame on, put — (not instead of...?)</td>
<td>ku, yetella</td>
<td>L v</td>
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<td>blanket</td>
<td>i, ti, gubho</td>
<td>LL n</td>
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<tr>
<td>blind person</td>
<td>si, ti, fofû</td>
<td>LL n</td>
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<tr>
<td>blood</td>
<td>--, ema, lî</td>
<td>H n</td>
<td>kuphuma emalî &quot;to bleed&quot;, lit. &quot;to come out blood&quot;</td>
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<td>English</td>
<td>Tswana</td>
<td>Affix</td>
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<tr>
<td>blow (of wind)</td>
<td>ku bhûbhûdla</td>
<td>H v</td>
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<td>blow</td>
<td>ku bhûdla</td>
<td>L v</td>
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<tr>
<td>blow a lot (e.g. storm, wind) =v.i.; beat vigorously = v.t.</td>
<td>ku phûdla</td>
<td>H v</td>
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<tr>
<td>blow</td>
<td>ku vutshela</td>
<td>L v</td>
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<tr>
<td>body</td>
<td>mu mi tibha</td>
<td>LH n</td>
<td></td>
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<tr>
<td>boil</td>
<td>ku bilisa</td>
<td>L v</td>
<td></td>
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<tr>
<td>bone</td>
<td>li tshabho</td>
<td>LH n</td>
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<tr>
<td>box (e.g. of matches)</td>
<td>i ti dlwana</td>
<td>LL n</td>
<td>i-dlwana yhe-mullo H-LL LHLL</td>
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<tr>
<td>boy (13-21 yrs)</td>
<td>mu eba zwali</td>
<td>LH n</td>
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<tr>
<td>boy, young (0-14)</td>
<td>mu eba zwadlana</td>
<td>LHL n</td>
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<tr>
<td>boyfriend, girlfriend</td>
<td>mu eba ratûwa</td>
<td>HLL n</td>
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<tr>
<td>bread</td>
<td>mu mi khupha</td>
<td>LL n</td>
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<tr>
<td>break</td>
<td>ku phula</td>
<td>H v</td>
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<tr>
<td>breast</td>
<td>li tshanyelo</td>
<td>HL n</td>
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<tr>
<td>bride</td>
<td>i bo makotî</td>
<td>LLH n</td>
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<tr>
<td>bridegroom</td>
<td>mu eba tekî</td>
<td>HL n</td>
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<tr>
<td>bridge of nose</td>
<td>m mi mobho</td>
<td>LH n</td>
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<tr>
<td>bridge</td>
<td>bu tshobho</td>
<td>HH n</td>
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<td>brighten</td>
<td>ku hlwegisa</td>
<td>H v</td>
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<td>bring</td>
<td>ku tîsa</td>
<td>L v</td>
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<tr>
<td>broken, get —</td>
<td>ku qhetuka</td>
<td>L v</td>
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<tr>
<td>broom</td>
<td>li tshanyelo</td>
<td>HLL n</td>
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<tr>
<td>brother (respectful)</td>
<td>i bo abûtî</td>
<td>LHL n</td>
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<tr>
<td>brother, younger</td>
<td>mu eba yena</td>
<td>LH n</td>
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<td>build</td>
<td>ku yakha</td>
<td>H v</td>
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<tr>
<td>builder</td>
<td>mu eba yakhî</td>
<td>HL n</td>
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<tr>
<td>building</td>
<td>mu mi yakho</td>
<td>HH n</td>
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<tr>
<td>bull</td>
<td>i ti kguti</td>
<td>HH n</td>
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<tr>
<td>bundle</td>
<td>i ti nyadza</td>
<td>LL n</td>
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<tr>
<td>burn (burning feeling?)</td>
<td>ku hlohlona</td>
<td>L v</td>
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<td>on body, have a —</td>
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<td>burn</td>
<td>ku tjha</td>
<td>H v</td>
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<tr>
<td>bury, e.g. roots, person</td>
<td>ku dzitela</td>
<td>L v</td>
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<td>bury, hide</td>
<td>ku fihla</td>
<td>H v</td>
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<tr>
<td>Bushman / San person</td>
<td>mu eba Tûwa</td>
<td>H n</td>
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<tr>
<td>butterfly, moth</td>
<td>si rûrûbêlê</td>
<td>HHHL n</td>
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<td>buy</td>
<td>mu tshega</td>
<td>H v</td>
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<tr>
<td>buyer</td>
<td>mu tshegî</td>
<td>HL n</td>
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<tr>
<td>call</td>
<td>ku bita</td>
<td>H v</td>
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<tr>
<td>Call (= -bîta)</td>
<td>Ku</td>
<td>Hweletsa</td>
<td>V</td>
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<tr>
<td>Cannibal, giant</td>
<td>Li</td>
<td>Ema</td>
<td>Lîmu</td>
<td>HH</td>
<td>n</td>
<td></td>
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<tr>
<td>Cap (Western style)</td>
<td>I</td>
<td>Ti</td>
<td>Kêpisi</td>
<td>HLL</td>
<td>n</td>
<td></td>
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<tr>
<td>Car</td>
<td>I</td>
<td>Ti</td>
<td>Koloyî</td>
<td>LHL</td>
<td>n</td>
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<tr>
<td>Care of, take —, look after; realise</td>
<td>Ku</td>
<td>Hlokomela</td>
<td>H</td>
<td>v</td>
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<tr>
<td>Carry on the back; give birth</td>
<td>Ku</td>
<td>Bhebha</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry in addition to (sth already on the back)</td>
<td>Ku</td>
<td>Bhebhlêla</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry sth in addition for e.o.</td>
<td>Ku</td>
<td>Bhebhellana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry on the back, help —; help give birth</td>
<td>Ku</td>
<td>Bhebhisala</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry on the back, help e.o. —</td>
<td>Ku</td>
<td>Bhebhisana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry on shoulder (only), e.g. bag, baby, blanket</td>
<td>Ku</td>
<td>Jatsha</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry on shoulder (only), help —, e.g. bag, baby, blanket</td>
<td>Ku</td>
<td>Jatshisa</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry ?up, e.g. bag</td>
<td>Ku</td>
<td>Nyulla</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Carry on the head (e.g. dish, wood, bag, water, chicken, anything, but not a hat)</td>
<td>Ku</td>
<td>Tfwatsha</td>
<td>H</td>
<td>v</td>
<td></td>
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<tr>
<td>Carve</td>
<td>Ku</td>
<td>Betla</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Case; guilt</td>
<td>Mu</td>
<td>Mi</td>
<td>Ladvu</td>
<td>LH</td>
<td>n</td>
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<tr>
<td>Catholic person</td>
<td>Mu</td>
<td>Eba</td>
<td>Khatholîke</td>
<td>HHHL</td>
<td>n</td>
<td></td>
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<tr>
<td>Cattle hooves, noise of —</td>
<td>Ku</td>
<td>Gidiza</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Cattle kraal</td>
<td>Li</td>
<td>Ema</td>
<td>Saga</td>
<td>LH</td>
<td>n</td>
<td></td>
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<tr>
<td>Cause (sth); abduct</td>
<td>Ku</td>
<td>Baga</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Cause to earn for e.o.</td>
<td>Ku</td>
<td>Yamukelisana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Cause, reason</td>
<td>Li</td>
<td>Ema</td>
<td>Baga</td>
<td>LL</td>
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<tr>
<td>Cave</td>
<td>Li</td>
<td>Ema</td>
<td>Wha</td>
<td>H</td>
<td>n</td>
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<tr>
<td>Chaff</td>
<td>Ku</td>
<td>Ema</td>
<td>Sehla</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Chaff, make —, make life hard</td>
<td>Ku</td>
<td>Sehlisa</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Change mind at last moment, be unreliable</td>
<td>Ku</td>
<td>Gweleta</td>
<td>L</td>
<td>v</td>
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<tr>
<td>Cheek</td>
<td>Li</td>
<td>Ema</td>
<td>Rama</td>
<td>HH</td>
<td>n</td>
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<tr>
<td>Chicken (= itviphu)</td>
<td>I</td>
<td>Ti</td>
<td>Kgukgu</td>
<td>HH</td>
<td>n</td>
<td></td>
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<tr>
<td>Chicken (=intshontsho)</td>
<td>I</td>
<td>Ti</td>
<td>Tsîyonyani</td>
<td>HLHL</td>
<td>n</td>
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<td>English</td>
<td>Sesotho</td>
<td>Setswana (N)</td>
<td>Setswana (L)</td>
<td>Setswana (LL)</td>
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<tr>
<td>chief</td>
<td>mu 'eba</td>
<td>rena</td>
<td>LL n</td>
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<tr>
<td>child</td>
<td>mu 'eba</td>
<td>tfwana</td>
<td>LL n</td>
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<tr>
<td>child, first born —</td>
<td>li 'ema</td>
<td>tibu</td>
<td>LLL n</td>
<td>(*-tibulo)</td>
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<td>Chinese person</td>
<td>li 'ema</td>
<td>Tjhayina</td>
<td>LHL n</td>
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<tr>
<td>choice, decision</td>
<td>i 'ti</td>
<td>khetsho</td>
<td>LL n</td>
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<tr>
<td>chop (down)</td>
<td>ku 'ti</td>
<td>kapa</td>
<td>H v</td>
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<tr>
<td>chop up, grind</td>
<td>ku 'ti</td>
<td>kgay ila</td>
<td>L v</td>
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<tr>
<td>chop up on</td>
<td>ku 'ti</td>
<td>kgay ilella</td>
<td>L v</td>
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<tr>
<td>chop up very finely</td>
<td>ku 'ti</td>
<td>kgay ili sisa</td>
<td>L v</td>
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<tr>
<td>Christ</td>
<td>bu 'ti</td>
<td>Kreste</td>
<td>HL n</td>
<td></td>
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<td>Christianity</td>
<td>bu 'ti</td>
<td>Kreste</td>
<td>HL n</td>
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<td>church</td>
<td>i 'ti</td>
<td>kereke</td>
<td>HLL n</td>
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<td>circumcised, be —</td>
<td>ku 'ti</td>
<td>bulla</td>
<td>H v</td>
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<tr>
<td>clan</td>
<td>li 'emu</td>
<td>lugo (cf.</td>
<td>LL n</td>
<td>lilo lugo</td>
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<td></td>
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<td>mu-lugo</td>
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<td>lakaMpapa HLL</td>
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<td>HHLL = &quot;all</td>
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<td>those with</td>
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<td>surname Mpapa&quot;</td>
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<td>clay</td>
<td>si 'dzaka</td>
<td>dzaka</td>
<td>LL n</td>
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<tr>
<td>clay; pl: different</td>
<td>li 'ema</td>
<td>tsupa</td>
<td>HH n</td>
<td></td>
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<tr>
<td>amounts or types of clay</td>
<td></td>
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<tr>
<td>climb, go up</td>
<td>ku 'ti</td>
<td>nyuluka</td>
<td>L v</td>
<td></td>
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<tr>
<td>clinging (+ dir. obj)</td>
<td>ku 'ti</td>
<td>kghumarela</td>
<td>? v</td>
<td></td>
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<tr>
<td>close in, close on (smn), e.g. close door on smn</td>
<td>ku 'ti</td>
<td>valella</td>
<td>L v</td>
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<tr>
<td>close in, close on e.o. e.g. if people don't want to see e.o.</td>
<td>ku 'ti</td>
<td>valellana</td>
<td>L v</td>
<td></td>
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<tr>
<td>clothes</td>
<td>i 'ti</td>
<td>phahlo</td>
<td>LL n</td>
<td></td>
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<tr>
<td>cloud</td>
<td>li 'ema</td>
<td>fu</td>
<td>L n</td>
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<tr>
<td>coffee (pl: types of coffee)</td>
<td>i 'ti</td>
<td>kofi</td>
<td>HL n</td>
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<tr>
<td>cold (weather or body)</td>
<td>-- 'ema</td>
<td>khata</td>
<td>HH n</td>
<td>gi-genůwa</td>
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<td>ge-makhata &quot;I have a cold&quot;</td>
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<tr>
<td>cold, be —</td>
<td>ku 'ti</td>
<td>melela</td>
<td>H v</td>
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<tr>
<td>cold, be —</td>
<td>ku 'ti</td>
<td>memela</td>
<td>H v</td>
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<tr>
<td>cold, be —</td>
<td>ku 'ti</td>
<td>nqadza</td>
<td>H v</td>
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<tr>
<td>collect</td>
<td>ku 'ti</td>
<td>bugella</td>
<td>H v</td>
<td></td>
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<tr>
<td>colour</td>
<td>mu 'mi</td>
<td>bala</td>
<td>LH n</td>
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<tr>
<td>Coloured person</td>
<td>li 'ema</td>
<td>lawû</td>
<td>HH n</td>
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<td>English</td>
<td>Setswana</td>
<td>Xhosa</td>
<td>Xhosa sound</td>
<td>Setswana sound</td>
<td>Xhosa meaning</td>
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<tr>
<td>come out to, make progress/develop (+ ebhili HLL)</td>
<td>ku ku ku phumela</td>
<td>H v</td>
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<tr>
<td>come</td>
<td>ku ku ta</td>
<td>L v</td>
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<tr>
<td>come from</td>
<td>ku ku vela</td>
<td>L v</td>
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<tr>
<td>comfort</td>
<td>ku ku khotshata</td>
<td>H v</td>
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<tr>
<td>comforter</td>
<td>mu eba tshilisi</td>
<td>HHL n</td>
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<tr>
<td>community of people praying</td>
<td>bu -- rabhelî</td>
<td>HLL n</td>
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<tr>
<td>completely, (not) at all</td>
<td>tû</td>
<td>H ? iede</td>
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<td></td>
<td>batshi tû &quot;they are completely (finished)&quot;, e.g. telling a story</td>
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<tr>
<td>conceive, become pregnant</td>
<td>ku yemula</td>
<td>H v</td>
<td></td>
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<tr>
<td>contract (of muscle), ?quiver</td>
<td>ku kopetsa</td>
<td>H v</td>
<td></td>
<td>giyakopetsa</td>
<td>LLHHL &quot;my muscles contract&quot;</td>
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<tr>
<td>contracted (of muscle), become —</td>
<td>ku kopetsa</td>
<td>H v</td>
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<tr>
<td>convert</td>
<td>ku sogulla</td>
<td>L v</td>
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<tr>
<td>convert e.o.</td>
<td>ku sogullana</td>
<td>L v</td>
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<tr>
<td>convert, change smn's heart</td>
<td>ku sogulla</td>
<td>H v</td>
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<tr>
<td>convert, become a —, have a change of heart</td>
<td>ku sogulluka</td>
<td>H v</td>
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<tr>
<td>cook</td>
<td>ku pheka</td>
<td>L v</td>
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<td>cook</td>
<td>mu eba phekî</td>
<td>LL n</td>
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<td>correct, be —</td>
<td>ku qinisisa</td>
<td>H v</td>
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<tr>
<td>cotton, string (for thatching with)</td>
<td>mu mi sûwela</td>
<td>HLL n</td>
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<tr>
<td>country</td>
<td>i ti naha</td>
<td>LL n</td>
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<tr>
<td>cousin</td>
<td>mu eba zala</td>
<td>HL n</td>
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<tr>
<td>cover</td>
<td>ku phutshela</td>
<td>L v</td>
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<tr>
<td>cover, put on lid</td>
<td>ku kwayela</td>
<td>L v</td>
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<tr>
<td>cow</td>
<td>i ti womo</td>
<td>LH n</td>
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<tr>
<td>cow</td>
<td>i ti yomo</td>
<td>LH n</td>
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<tr>
<td>crab</td>
<td>li ti kghala</td>
<td>HH n</td>
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<tr>
<td>crawl on stomach (e.g. child learning to walk)</td>
<td>ku khasa</td>
<td>L v</td>
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<tr>
<td>cripple</td>
<td>si ti hole</td>
<td>HH n</td>
<td></td>
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<tr>
<td>crop farmer</td>
<td>mu eba limî</td>
<td>LL n</td>
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<tr>
<td>cross (e.g. cross of Christ)</td>
<td>si ti fapano</td>
<td>HHL n</td>
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<td>Word</td>
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<td>Root Word</td>
<td>Verb Form</td>
<td>Pronoun</td>
<td>Noun</td>
<td>Suffix</td>
<td>Meaning</td>
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<td>cross over</td>
<td>ku</td>
<td>tshilela</td>
<td>H</td>
<td>v</td>
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<tr>
<td>crow</td>
<td>li</td>
<td>ema</td>
<td>khwaba</td>
<td>HL</td>
<td>n</td>
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<tr>
<td>crown</td>
<td>mu</td>
<td>mi</td>
<td>fapahloho</td>
<td>HHHL</td>
<td>n</td>
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<td>S mu-fapahloho</td>
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<td>cruel</td>
<td></td>
<td></td>
<td>kghopo</td>
<td>HH</td>
<td>rel</td>
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<tr>
<td>cruel, be —</td>
<td>ku</td>
<td></td>
<td>kghöhlakala</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cry (person); miaow (cat)</td>
<td>ku</td>
<td></td>
<td>lla</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cry, cause to —, cause to make a noise</td>
<td>ku</td>
<td>llisa</td>
<td>L</td>
<td>v</td>
<td></td>
<td></td>
<td>-llisa ematipho &quot;make sound of fingernails, especially for squashing sth, e.g. lice&quot;</td>
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<tr>
<td>crying</td>
<td>i</td>
<td>ti</td>
<td>llo</td>
<td>LL</td>
<td>n</td>
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<tr>
<td>cultivate</td>
<td>ku</td>
<td></td>
<td>lima</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cultivated land, piece of —; good things, nice things</td>
<td>mu</td>
<td>mi</td>
<td>limo</td>
<td>LL</td>
<td>n</td>
<td></td>
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<tr>
<td>cup</td>
<td>mu</td>
<td>mi</td>
<td>khobhe</td>
<td>LH</td>
<td>n</td>
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<tr>
<td>cut into strips (meat for cooking)</td>
<td>ku</td>
<td>begin</td>
<td>L</td>
<td>v</td>
<td></td>
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<tr>
<td>cut hair (not other things), shear (eg. sheep)</td>
<td>ku</td>
<td>gûdza</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut e.o.’s hair</td>
<td>ku</td>
<td></td>
<td>gûdzana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut hair for, shear for (eg. sheep)</td>
<td>ku</td>
<td>gûdzela</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut together with (eg. pimple)</td>
<td>ku</td>
<td></td>
<td>gûdzella</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut together with (eg. pimple) on e.o.</td>
<td>ku</td>
<td>gûdzellana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut together with (eg. pimple) on e.o.</td>
<td>ku</td>
<td>gûdzellisa</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut together with (eg. pimple) on e.o.</td>
<td>ku</td>
<td>gûdzellisana</td>
<td>L</td>
<td>v</td>
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<tr>
<td>cut (eg. paper)</td>
<td>ku</td>
<td></td>
<td>seka</td>
<td>H</td>
<td>v</td>
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<tr>
<td>damn!</td>
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<td>dêm</td>
<td>H(L)</td>
<td>intrj</td>
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<tr>
<td>dance</td>
<td>ku</td>
<td></td>
<td>dantsha</td>
<td>H</td>
<td>v</td>
<td></td>
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<tr>
<td>dance (Western style)</td>
<td>ku</td>
<td></td>
<td>jhayiva</td>
<td>H</td>
<td>v</td>
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<tr>
<td>dance for e.o.</td>
<td>ku</td>
<td></td>
<td>jhayivelana</td>
<td>H</td>
<td>v</td>
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<tr>
<td>dance for a long time</td>
<td>ku</td>
<td></td>
<td>jhayivisisa</td>
<td>H</td>
<td>v</td>
<td></td>
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<tr>
<td>dance the young women's dance</td>
<td>ku</td>
<td></td>
<td>kghîba</td>
<td>L</td>
<td>v</td>
<td></td>
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<tr>
<td>dance the young men's dance</td>
<td>ku</td>
<td></td>
<td>kgubela</td>
<td>L</td>
<td>v</td>
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<td>English Word</td>
<td>Tsonga Word</td>
<td>Tsonga Word</td>
<td>Tsonga Word</td>
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<td>godif</td>
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<td>i-godi &quot;ritual cleansing from danger, misfortune&quot;</td>
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<td>danger, small —</td>
<td>i ti</td>
<td>godínyana</td>
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<tr>
<td>daughter; smn who plans</td>
<td>mu eba</td>
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<td>HL n</td>
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<td>dawn, clear up (of clouds)</td>
<td>ku sa</td>
<td></td>
<td>H v</td>
<td>liyasa HLH &quot;the sky is clearing up&quot;</td>
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<td>day (24 hours); also = &quot;(on the day) when&quot;, as adverb</td>
<td>mu mi hla</td>
<td></td>
<td>H n</td>
<td>muhlaliu H'H HH &quot;on the day of death&quot;</td>
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<td>LHHH adv H</td>
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<td>mu eba fû</td>
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<td>H n</td>
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<td>li fû</td>
<td></td>
<td>H n</td>
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<td>deed, sth done; verb</td>
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<td>deny, cause smn to —, refuse</td>
<td>ku yhalisa</td>
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<td>depend on sth (with rfx -ti-)</td>
<td>ku tshitleka</td>
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<td>depths, deep place</td>
<td>bu ?em tibo</td>
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<td>? n</td>
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<td>descend (e.g. mountain, *onto/from a roof)</td>
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<td>H v</td>
<td>-thewusela itshaba/ etshabeni &quot;descend the mountain&quot;</td>
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<td>ku kghesa</td>
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<td>L v itfo iyagitimela &quot;the thing is too difficult for me&quot;</td>
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<td>dig up, pull out, e.g. tree</td>
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<td>dish (a particular one) of food, e.g. milk, beans</td>
<td>si ti dlo</td>
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<td>H n u-wa-gi-bițulla HLL HHL &quot;he is disrespectful to me&quot;</td>
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<td>disrespectful (to one’s name), be —</td>
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<td>bitulla</td>
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<td>yarula</td>
<td>H v</td>
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<td>divide among one another, share</td>
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<td>yarulelana</td>
<td>H v ma-si-yarulelana-e &quot;let us share&quot; L-H-HHHL-L</td>
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<td>do sth as if ignorant (with rfx -ti-)</td>
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<td>yetisa</td>
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<td>do, make</td>
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<td>&quot;in the east&quot;</td>
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licici lephumulo H-HH HHLL "nose ring"
e-bu-tjhabela H-H-HLL "in the east"
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<th>Gender</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>eat</td>
<td>ku</td>
<td>dle</td>
<td>H v</td>
<td></td>
<td>idiomatic: agi-ku-dli &quot;I don't care about you&quot;</td>
</tr>
<tr>
<td>egg</td>
<td>li</td>
<td>qayî</td>
<td>HH n</td>
<td></td>
<td>&quot;there is no/none&quot;</td>
</tr>
<tr>
<td>eight</td>
<td>li</td>
<td>yakga</td>
<td>HL rel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>elbow</td>
<td>si</td>
<td>tsû</td>
<td>H n</td>
<td></td>
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<tr>
<td>elephant</td>
<td>i ti</td>
<td>dlovu</td>
<td>LL n</td>
<td></td>
<td></td>
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<tr>
<td>embarassed, become —</td>
<td>ku</td>
<td>swaba</td>
<td>L v</td>
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</tr>
<tr>
<td>embarrass, to — (be embarrassing)</td>
<td>ku</td>
<td>swaba</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>embarrassment</td>
<td>i ti</td>
<td>hloni</td>
<td>HH n</td>
<td></td>
<td>u-ti-hloni HLHHL &quot;s/he is embarrassed&quot;</td>
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<tr>
<td>end (e.g. of month)</td>
<td>--</td>
<td>phelo</td>
<td>HH n</td>
<td></td>
<td>e-ma-phelweni a-Meyi HLHHL LHL &quot;at the end of May&quot;</td>
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<tr>
<td>end (of work: chk...)</td>
<td>li</td>
<td>qedzello</td>
<td>LLHL n</td>
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<tr>
<td>end (of folktales)</td>
<td>li</td>
<td>thitho</td>
<td>LL n</td>
<td></td>
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<tr>
<td>end, decision, conclusion</td>
<td>i ti</td>
<td>qedzo</td>
<td>LH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enemy</td>
<td>si ti</td>
<td>ra</td>
<td>L n</td>
<td></td>
<td></td>
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<tr>
<td>English speaking (white) person</td>
<td>li</td>
<td>kghuwa</td>
<td>HH n</td>
<td></td>
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</tr>
<tr>
<td>enlarge</td>
<td>ku</td>
<td>yadzisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enter</td>
<td>ku</td>
<td>gena</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enter, make —, let in</td>
<td>ku</td>
<td>genisa</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>entry</td>
<td>i ti</td>
<td>geno</td>
<td>LH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equal to e.o., be —, imitate e.o.</td>
<td>ku</td>
<td>liganisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eternity</td>
<td>bu</td>
<td>gadagada</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>even if (contracted from lhayiba)</td>
<td></td>
<td>lhaba</td>
<td>HL conj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>example</td>
<td>mu mi</td>
<td>hlala</td>
<td>LH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>except; outside</td>
<td>ge</td>
<td>sheyî</td>
<td>HH adv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>excrement, feces</td>
<td>bu</td>
<td>nya</td>
<td>L n</td>
<td></td>
<td></td>
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<tr>
<td>existential [by default: present indicative]</td>
<td>kho</td>
<td></td>
<td>L</td>
<td></td>
<td>akûkho LHL &quot;there is no/no none&quot;</td>
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<tr>
<td>expect, guard smn/sth</td>
<td>ku</td>
<td>libella</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>expect, guard e.o.</td>
<td>ku</td>
<td>libellana</td>
<td>H v</td>
<td></td>
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</tr>
<tr>
<td>expel (cf -xotsha)</td>
<td>ku</td>
<td>qotsha</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>explain</td>
<td>ku</td>
<td>chaza</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>Zai</td>
<td>Zai (lit.)</td>
<td>Meaning</td>
<td></td>
<td></td>
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<td>---------</td>
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<td>-----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>explain, simplify</td>
<td>ku</td>
<td>cimeta</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>extinguish</td>
<td>ku</td>
<td>cimeta</td>
<td>? v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eye</td>
<td>li</td>
<td>hlo</td>
<td>H n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eyebrow / eyelash</td>
<td>i</td>
<td>ti</td>
<td>ntshî</td>
<td>LH n</td>
<td>tintshî letigêtuľû HHHL HHHLFL &quot;eyebrows&quot;, lit. upper lashes; tintshî letigettasi HHHL HHH!HL &quot;eyelashes&quot;, lit. lower lashes;</td>
</tr>
<tr>
<td>face</td>
<td>si</td>
<td>ti</td>
<td>fahleho</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>fall into a deep sleep</td>
<td>ku</td>
<td>kghaleka</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td>ku</td>
<td>wa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall down from, fall down on</td>
<td>ku</td>
<td>wela</td>
<td>L v</td>
<td>-wela etûlu &quot;fall down from on top&quot;</td>
<td></td>
</tr>
<tr>
<td>falling down, of —</td>
<td></td>
<td>zilikithi</td>
<td>LLLL ideo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>far from (+ lha-)</td>
<td>e</td>
<td>kudzeni</td>
<td>H-HLL adv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fast</td>
<td>ka</td>
<td>pili</td>
<td>LL adv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fat, grease, (not oil); sg: one quantity of fat/grease, e.g. one block of Holsum margerine</td>
<td>li</td>
<td>ema</td>
<td>futscha</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>fat, lard, brown fat; boiled, congealed</td>
<td>i</td>
<td>ti</td>
<td>kgalîgana</td>
<td>HHLL n</td>
<td></td>
</tr>
<tr>
<td>fat, stomach —</td>
<td>mu</td>
<td>hlehlo</td>
<td>? n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fat, become —</td>
<td>ku</td>
<td>nona</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>father</td>
<td>bo</td>
<td>ntatê</td>
<td>HLH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>father, your —</td>
<td>u</td>
<td>bo</td>
<td>îhlo</td>
<td>LH n</td>
<td>libîtsö le(y)îhlo HHHL HH &quot;name of your father&quot;</td>
</tr>
<tr>
<td>father, his —</td>
<td>u</td>
<td>bo</td>
<td>îse</td>
<td>LH n</td>
<td>libîtsö le(y)îse HHHL HH &quot;name of his father&quot;</td>
</tr>
<tr>
<td>fear</td>
<td>i</td>
<td>?te</td>
<td>sabo</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>fear, be afraid of</td>
<td>ku</td>
<td>saba</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>feather</td>
<td>li</td>
<td>siha</td>
<td>HH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>Fêbêrwarî</td>
<td>HHHL n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>Fêpruwarî</td>
<td>HHHL n</td>
<td>ga-Fêpruwarî L-HHHL &quot;in Feb&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>Zulu</td>
<td>Part of Speech</td>
<td>Sense</td>
<td></td>
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<td>---------</td>
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<tr>
<td>fire</td>
<td>ku</td>
<td>L</td>
<td>ku-dziga m-khupha &quot;to fight over bread&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fire, light —</td>
<td>ku</td>
<td>L</td>
<td>kcnumeka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fire; poison</td>
<td>ku</td>
<td>H</td>
<td>dlisha</td>
<td></td>
<td></td>
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<tr>
<td>female &quot;cow&quot; (Xh: imazi yenkompo)</td>
<td>i  ti sikati</td>
<td>HLH</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fetch</td>
<td>ku</td>
<td>L</td>
<td>ladza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>field</td>
<td>i  ti simi</td>
<td>HH</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fig</td>
<td>i  ti feyhiye</td>
<td>LHL</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fight over sth (e.g. bread)</td>
<td>ku</td>
<td>L</td>
<td>dziga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fight</td>
<td>ku</td>
<td>L</td>
<td>lwana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fight for e.o.</td>
<td>ku</td>
<td>L</td>
<td>lwanelana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fight, cause to —; help fight</td>
<td>ku</td>
<td>L</td>
<td>lwanelana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fight, war</td>
<td>i  ti ntwa</td>
<td>HL?</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fighting stick; also: for walking (?)</td>
<td>i  ti tfoga</td>
<td>LH</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fill up</td>
<td>ku</td>
<td>H</td>
<td>tatsa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finger</td>
<td>mu  mi nwana</td>
<td>LL</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish</td>
<td>ku</td>
<td>H</td>
<td>qedza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish for e.o.</td>
<td>ku</td>
<td>L</td>
<td>qedzelana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish sth, help —; do sth for the last time</td>
<td>ku</td>
<td>L</td>
<td>qedzelisa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish sth, help e.o. —; do sth to/with e.o. for the last time</td>
<td>ku</td>
<td>L</td>
<td>qedzelisana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish thoroughly</td>
<td>ku</td>
<td>L</td>
<td>qedzelisana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish off (e.g. water in glass; aso: kill if sick)</td>
<td>ku</td>
<td>L</td>
<td>qedzella</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish off for smn, ?push off</td>
<td>ku</td>
<td>L</td>
<td>qedzellela</td>
<td></td>
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</tr>
<tr>
<td>finish off for e.o.</td>
<td>ku</td>
<td>L</td>
<td>qedzellelana</td>
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</tr>
<tr>
<td>finish thoroughly</td>
<td>ku</td>
<td>L</td>
<td>qedzisisa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish thoroughly</td>
<td>ku</td>
<td>L</td>
<td>qedzulla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish for</td>
<td>ku</td>
<td>L</td>
<td>qedzullela</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish for e.o.</td>
<td>ku</td>
<td>L</td>
<td>qedzullelana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>finish, reach the end of sth</td>
<td>ku</td>
<td>L</td>
<td>phetsha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fire</td>
<td>mu  mi llo</td>
<td>LL</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fire, light —</td>
<td>ku</td>
<td>L</td>
<td>ncumeka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>firstly</td>
<td>yhebhili</td>
<td>HLL</td>
<td>adv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>firstly</td>
<td>yhekuqala</td>
<td>LHHL</td>
<td>adv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fish</td>
<td>i  ti hlaf</td>
<td>LL</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fish</td>
<td>ku</td>
<td>H</td>
<td>tjheya</td>
<td></td>
<td></td>
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<tr>
<td>English</td>
<td>Xhosa</td>
<td></td>
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<td>Xhosa</td>
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<tr>
<td>fishmoth</td>
<td>i</td>
<td>ti</td>
<td>tshwele</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>five</td>
<td>hlanu</td>
<td>HL</td>
<td>adj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fix, help e.o. —; fix e.o. (e.g. take fluff off e.o.'s shirts), give e.o. one's share</td>
<td>ku</td>
<td>lugisana</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>flash (e.g. of lightning)</td>
<td>ku</td>
<td>--</td>
<td>benya</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>flat place, ?clearing</td>
<td>i</td>
<td>ti</td>
<td>thûda</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>flatten, help really —; help stamp together with</td>
<td>ku</td>
<td>gadzellisa</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>flatten, help e.o. really —; help e.o. stamp together with</td>
<td>ku</td>
<td>gadzellisana</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>flea</td>
<td>li</td>
<td>ema</td>
<td>tsëtsë</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>flock (of any sort of animal)</td>
<td>m</td>
<td>mi</td>
<td>hlabhi</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>flock of animals (sheep, cattle, goats)</td>
<td>i</td>
<td>ti</td>
<td>phahla</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>floor (as poss. stem), on the floor</td>
<td>ge</td>
<td>phasi</td>
<td>HL</td>
<td>adv</td>
<td></td>
</tr>
<tr>
<td>fly</td>
<td>ku</td>
<td>fufa</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>fly</td>
<td>i</td>
<td>ti</td>
<td>phòkgani</td>
<td>LHL</td>
<td>n</td>
</tr>
<tr>
<td>fly</td>
<td>i</td>
<td>ti</td>
<td>tshîtshît</td>
<td>HLL</td>
<td>n</td>
</tr>
<tr>
<td>folded up, gather, e.g. bed</td>
<td>ku</td>
<td>dlalulla</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>folded up, become — e.g. bed</td>
<td>ku</td>
<td>dlaluka</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>folded, get —, rolled up together</td>
<td>ku</td>
<td>minellana</td>
<td>L</td>
<td>v</td>
<td>ti-minellene &quot;they are all confused&quot;</td>
</tr>
<tr>
<td>folk tale</td>
<td>i</td>
<td>ti</td>
<td>tshomu</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>folk story (told to children)</td>
<td>i</td>
<td>ti</td>
<td>tshomû</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>folk tale, story</td>
<td>i</td>
<td>ti</td>
<td>tshumo</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>follow in family (i.e. sequence of siblings) (follow in a line: -ladzela)</td>
<td>ku</td>
<td>hlahlama</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>follow e.o.</td>
<td>ku</td>
<td>hlahlamana</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>follow</td>
<td>ku</td>
<td>ladzela</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>following e.o., keep on</td>
<td>ku</td>
<td>ladzellana</td>
<td>L</td>
<td>v</td>
<td></td>
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<tr>
<td>following, keep on —, pursue</td>
<td>ku</td>
<td>ladzella</td>
<td>L</td>
<td>v</td>
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</tr>
<tr>
<td>food</td>
<td>bu</td>
<td>--</td>
<td>dla</td>
<td>H</td>
<td>n</td>
</tr>
<tr>
<td>English</td>
<td>Setswana</td>
<td>Noun</td>
<td>Verb</td>
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<tr>
<td>get drunk</td>
<td>ku</td>
<td>dzakwa</td>
<td>L</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>get broken</td>
<td>ku</td>
<td>phuka</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>gift, present</td>
<td>i</td>
<td>ti</td>
<td>nyiko</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>girl in initiate school</td>
<td>i</td>
<td>ti</td>
<td>ngwali</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>girl (post-puberty)</td>
<td>i</td>
<td>ti</td>
<td>tfothi</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>girl recently returned</td>
<td>i</td>
<td>ti</td>
<td>tswejani</td>
<td>HLH</td>
<td>n</td>
</tr>
<tr>
<td>initiation school</td>
<td>nagwali</td>
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<tr>
<td>post-puberty</td>
<td>tfothi</td>
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<td>initiation school</td>
<td>tswejani</td>
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<td>English</td>
<td>Xitsonga</td>
<td>Notes</td>
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<td>---------------------------------------------</td>
<td>-------------------</td>
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</tr>
<tr>
<td>give</td>
<td>ku nyika</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give for a purpose, e.g. message</td>
<td>ku nyiketela</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give rest</td>
<td>ku phumuta</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give, grant favours with</td>
<td>ku sitša</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>giver, generous person</td>
<td>mu eba phanị</td>
<td>HL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glands on the face, under the lower jaw;</td>
<td>i ti timitwani</td>
<td>HHLL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>also: doubt (?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glory</td>
<td>i ti tlolola</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>go down (eg. road)</td>
<td>ku lebhella</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>go down, cause to —</td>
<td>ku lebhellisa</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>go down, get down</td>
<td>ku thewuka</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>go down, get down</td>
<td>ku thowuka</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>go and check sth, take a look at, keep an</td>
<td>ku vella</td>
<td>L</td>
<td></td>
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<tr>
<td>eye on sth/smn</td>
<td></td>
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<tr>
<td>go to</td>
<td>ku ya</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>goat</td>
<td>i ti bhùtì</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>God</td>
<td>Mu limu</td>
<td>HH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>govern country, be in charge; ask counsel</td>
<td>ku lawula</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from; direct to do sth; give direction to;</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>manage team</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>govern, help —</td>
<td>ku lawulisa</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>mi mūso</td>
<td>HH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grace (cf. Hail Mary)</td>
<td>i karasiya</td>
<td>HHL</td>
<td></td>
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</tr>
<tr>
<td>grandfather</td>
<td>bo nkhûlû</td>
<td>LHH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grandmother, old woman</td>
<td>bo cece</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grandmother, old woman</td>
<td>bo nkeke</td>
<td>HLH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grandmother, old woman</td>
<td>li ema xhegwatana</td>
<td>LLHL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grass (generic species?, dry? grass only),</td>
<td>li hlogwa</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>piece of —</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grass, sp of —</td>
<td>bu jwani</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grave</td>
<td>li bitlha</td>
<td>LL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>graze</td>
<td>ku fula</td>
<td>v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>green</td>
<td>ku dala</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>greet (even without object)</td>
<td>ku lûmelîsa</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grind</td>
<td>ku sîla</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ground, flat area</td>
<td>li dlabha</td>
<td>LH</td>
<td></td>
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</table>

1126
<table>
<thead>
<tr>
<th>Phrase</th>
<th>Language</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>group of friends</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>group of friends</td>
<td>HLL</td>
<td>n</td>
</tr>
<tr>
<td>grow up (of person, plant)</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>grow up</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>grow old</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>guard</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>guard e.o.</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>gum (of teeth)</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>gun</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>hail</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>hair on body (<em>bboya</em>)</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>hair (usually pl.) = hair on head</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>hand (~ whole arm) (for: left hand, right hand: cf. egs)</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>hang up (e.g. shirt)</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>hang</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>happen</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>happy, be —</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>happy, be — for e.o.</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>happy, get —</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>hare (long ears, has tail)</td>
<td>HHHL</td>
<td>n</td>
</tr>
<tr>
<td>harsh, be —</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>harshness</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>harvest thoroughly</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>harvest thoroughly for e.o.</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>harvest</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>head, be on the — (e.g. dish, wood, bag, water, chicken, anything, but NOT a hat)</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td><strong>hear, understand, sense;</strong></td>
<td><strong>ku</strong></td>
<td><strong>va</strong></td>
</tr>
<tr>
<td>----------------------------</td>
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</tr>
<tr>
<td><strong>-ti-va: be proud,</strong></td>
<td></td>
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<tr>
<td><strong>arrogant,</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>heart</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>heel</td>
<td>si</td>
<td>ti</td>
</tr>
<tr>
<td>hell</td>
<td>--</td>
<td>ti</td>
</tr>
<tr>
<td>hell! (exclamation of</td>
<td></td>
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<tr>
<td>surprise, frustration)</td>
<td></td>
<td></td>
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<tr>
<td>help e.o.</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help for</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help for e.o. (e.g. looking</td>
<td>ku</td>
<td></td>
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<tr>
<td>after a child)</td>
<td></td>
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<tr>
<td>help for, make e.o.</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help find out, help</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>remind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>help (a)</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help (b)</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>help reap</td>
<td>ku</td>
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<tr>
<td>help, save</td>
<td>ku</td>
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<tr>
<td>help, lend a hand in sth</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>help, make e.o. —</td>
<td>ku</td>
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<tr>
<td>helper</td>
<td>mu</td>
<td>eba</td>
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<tr>
<td>helping (a helping), sth</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>taken</td>
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<tr>
<td>here (dem: 1st pos)</td>
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<tr>
<td>here, right —</td>
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<tr>
<td>high place</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>hip</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>history, short story</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>hit on the head</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>hit indiscriminately on</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>the head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hit</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>hit, punish</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>hold in fist</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>hold on firmly to (for a</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>long time?)</td>
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</tr>
<tr>
<td>hold (stat)</td>
<td>ku</td>
<td></td>
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<tr>
<td>hold tightly</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>hold, manage, be head of</td>
<td>ku</td>
<td></td>
</tr>
<tr>
<td>(e.g. team, country,</td>
<td></td>
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<tr>
<td>school), touch (and then</td>
<td></td>
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<tr>
<td>pass by)</td>
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</tr>
<tr>
<td>English</td>
<td>Zulu</td>
<td>Part of Speech</td>
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<tr>
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</tr>
<tr>
<td>hold, help —, manage, be head of; make carry (e.g. letter)</td>
<td>ku</td>
<td>phatshisa</td>
</tr>
<tr>
<td>hole (any size)</td>
<td>mu</td>
<td>mi</td>
</tr>
<tr>
<td>holy person, saint</td>
<td>mu</td>
<td>eba</td>
</tr>
<tr>
<td>holy place, sanctuary</td>
<td>si</td>
<td>ti</td>
</tr>
<tr>
<td>holy, become —</td>
<td>ku</td>
<td>halalela</td>
</tr>
<tr>
<td>holy, make —</td>
<td>ku</td>
<td>halaletsas</td>
</tr>
<tr>
<td>home of X's family, at the —</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>home, go —</td>
<td>ku</td>
<td>godvuuka</td>
</tr>
<tr>
<td>home, take —</td>
<td>ku</td>
<td>godvusa</td>
</tr>
<tr>
<td>home, take e.o. —</td>
<td>ku</td>
<td>godvusana</td>
</tr>
<tr>
<td>hook (fish)</td>
<td>i</td>
<td>(ti)</td>
</tr>
<tr>
<td>hope, believe</td>
<td>ku</td>
<td>tshebha</td>
</tr>
<tr>
<td>horn</td>
<td>li</td>
<td>ema</td>
</tr>
<tr>
<td>horse</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>hour</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>house, small —; small building (dim)</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>house; building</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>however, on the other hand, in contrast?</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>humanity</td>
<td>bu</td>
<td>--</td>
</tr>
<tr>
<td>hundred (the cardinal numeral)</td>
<td>li</td>
<td>khulu</td>
</tr>
<tr>
<td>hunt small animals, eg. mice, birds</td>
<td>ku</td>
<td>kgwhejisa</td>
</tr>
<tr>
<td>hunt big animals</td>
<td>ku</td>
<td>tsuma</td>
</tr>
<tr>
<td>hurry</td>
<td>ku</td>
<td>tata</td>
</tr>
<tr>
<td>hurry, be in a hurry</td>
<td>ku</td>
<td>nxama</td>
</tr>
<tr>
<td>hurt, injure</td>
<td>ku</td>
<td>dzakalisa</td>
</tr>
<tr>
<td>Term</td>
<td>Short Form</td>
<td>Description</td>
</tr>
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<td>-------------------------------------</td>
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<tr>
<td>hut, stony —</td>
<td>li,ema, ralla</td>
<td>HHL n</td>
</tr>
<tr>
<td>hyena</td>
<td>i,ti,phirí</td>
<td>HH n</td>
</tr>
<tr>
<td>hymn, religious song</td>
<td>si,ti,fela</td>
<td>LL n</td>
</tr>
<tr>
<td>ice</td>
<td>mu,mi,khece</td>
<td>LH n</td>
</tr>
<tr>
<td>if</td>
<td>ayiba</td>
<td>HHL conj</td>
</tr>
<tr>
<td>in front of</td>
<td>e, bhili</td>
<td>LL adv bhilini LHL &quot;before&quot; (in time); ge-bhili kwa- &quot;in front of&quot;</td>
</tr>
<tr>
<td>insect, gogga</td>
<td>i,ti,kokonyani</td>
<td>LLHL n</td>
</tr>
<tr>
<td>increase, expand</td>
<td>ku,yadza</td>
<td>L v</td>
</tr>
<tr>
<td>increase, expand sth, e.g. kraal</td>
<td>ku,yadzulla</td>
<td>L v</td>
</tr>
<tr>
<td>Indian person</td>
<td>li,ema,Kula</td>
<td>HL n</td>
</tr>
<tr>
<td>indigestion, have —</td>
<td>ku,pipitlewa</td>
<td>H v</td>
</tr>
<tr>
<td>indiscriminate mutual kicking</td>
<td>i,rayagano</td>
<td>HHLL n</td>
</tr>
<tr>
<td>indiscriminate (&amp; intensive kicking</td>
<td>i,ti,rayagiso</td>
<td>LLHL n</td>
</tr>
<tr>
<td>inherit</td>
<td>ku,futa</td>
<td>H v</td>
</tr>
<tr>
<td>initiate (male)</td>
<td>li,ema,gulanyani</td>
<td>LLHL n</td>
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<tr>
<td>injure e.o.</td>
<td>ku,dzakalisana</td>
<td>L v</td>
</tr>
<tr>
<td>insect, gogga</td>
<td>i,ti,shishana</td>
<td>LHL n</td>
</tr>
<tr>
<td>insert</td>
<td>ku,phaka</td>
<td>H v</td>
</tr>
<tr>
<td>insult</td>
<td>ku,tfoga</td>
<td>H v</td>
</tr>
<tr>
<td>intestines</td>
<td>li,ema,tfubho</td>
<td>LL n</td>
</tr>
<tr>
<td>intestines, bowel</td>
<td>li,ema,tfubho</td>
<td>LL n</td>
</tr>
<tr>
<td>invite</td>
<td>ku,mema</td>
<td>H v</td>
</tr>
<tr>
<td>invited person, guest</td>
<td>m,ebe,memiuwa</td>
<td>HLL n</td>
</tr>
<tr>
<td>invited person, guest</td>
<td>m,ebe,menywa</td>
<td>HL n</td>
</tr>
<tr>
<td>inviter, host</td>
<td>m,ebe,memi</td>
<td>HL n</td>
</tr>
<tr>
<td>Israel (biblical)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jackal (&quot;Mr Jackal&quot; in folk story: cl.1a)</td>
<td>i,ti,jhakalasi</td>
<td>LHLL n</td>
</tr>
<tr>
<td>jacket (lumber jacket)</td>
<td>si,ti,lambha</td>
<td>HHL n</td>
</tr>
<tr>
<td>January</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jesus Christ</td>
<td>--,bo,Jhesu Kriste</td>
<td>HL HL n</td>
</tr>
<tr>
<td>job (more particular than general work?)</td>
<td>mu,mi,sebeti</td>
<td>HHH n</td>
</tr>
<tr>
<td>job</td>
<td>i,ti,sebeto</td>
<td>HHL n</td>
</tr>
</tbody>
</table>

1130
<table>
<thead>
<tr>
<th>Term</th>
<th>Transcription</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>e bo Juhanni</td>
<td>LHLL n</td>
</tr>
<tr>
<td>joint (e.g. knuckle, etc)</td>
<td>i ti nugo</td>
<td>LL n i-nugo yhesadla H-LL L-HL &quot;knuckle joint&quot;</td>
</tr>
<tr>
<td>joint on body, e.g. ankle joint, wrist, knuckle?</td>
<td>li ema nugu</td>
<td>LL n</td>
</tr>
<tr>
<td>joint, ball (of foot)</td>
<td>i ti kómîkî</td>
<td>HHL n i-kómîkî yhelinyawo H-HHL LHLL</td>
</tr>
<tr>
<td>journey</td>
<td>li ema yedzo</td>
<td>LL n</td>
</tr>
<tr>
<td>journey, travel (long distance)</td>
<td>ku yedza</td>
<td>L v</td>
</tr>
<tr>
<td>judge</td>
<td>mu eba ahlulî</td>
<td>HHL n</td>
</tr>
<tr>
<td>judge</td>
<td>i ti jatji</td>
<td>HL n</td>
</tr>
<tr>
<td>July</td>
<td>Jhulayi</td>
<td>LHL n ga-Jhulayi H-LHL &quot;in July&quot;</td>
</tr>
<tr>
<td>jump over</td>
<td>ku qhoma</td>
<td>L v</td>
</tr>
<tr>
<td>jump over sth into sth</td>
<td>ku qhomela</td>
<td>L v</td>
</tr>
<tr>
<td>jump over, ?in</td>
<td>ku tlula</td>
<td>H v</td>
</tr>
<tr>
<td>June</td>
<td>Jhunî</td>
<td>HL n ga-Jhunî H-HL</td>
</tr>
<tr>
<td>just as</td>
<td>jhegokuba</td>
<td>HLHH conj</td>
</tr>
<tr>
<td>just, only, however</td>
<td>te</td>
<td>H conj</td>
</tr>
<tr>
<td>just, only</td>
<td>têjbê</td>
<td>HL adv</td>
</tr>
<tr>
<td>keep</td>
<td>ku gcina</td>
<td>L v</td>
</tr>
<tr>
<td>keep e.o.</td>
<td>ku gcinakalisana</td>
<td>L v</td>
</tr>
<tr>
<td>keep e.o.</td>
<td>ku gcinana</td>
<td>L v</td>
</tr>
<tr>
<td>keep for e.o.</td>
<td>ku gcinelana</td>
<td>L v</td>
</tr>
<tr>
<td>keep safe, thoroughly for</td>
<td>ku gcinisisa</td>
<td>L v</td>
</tr>
<tr>
<td>kick</td>
<td>ku raya</td>
<td>L v</td>
</tr>
<tr>
<td>kick indiscriminately</td>
<td>ku rayaga</td>
<td>L v</td>
</tr>
<tr>
<td>kick for e.o. indiscriminately</td>
<td>ku rayagellana</td>
<td>L v</td>
</tr>
<tr>
<td>kick indiscriminately (&amp;) intensively</td>
<td>ku rayagisisa</td>
<td>L v</td>
</tr>
<tr>
<td>kid (goat, dim.)</td>
<td>i ti bhûtana</td>
<td>LHL n</td>
</tr>
<tr>
<td>kidney</td>
<td>i ti phîyo</td>
<td>HH n</td>
</tr>
<tr>
<td>kill</td>
<td>ku bulala</td>
<td>H v</td>
</tr>
<tr>
<td>kill</td>
<td>ku bulaya</td>
<td>H v</td>
</tr>
<tr>
<td>kill e.o.</td>
<td>ku bulalana</td>
<td>H v</td>
</tr>
<tr>
<td>killer</td>
<td>mu eba bulayî</td>
<td>HLL n</td>
</tr>
<tr>
<td>English</td>
<td>Shona</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>lean (+ ge- against)</td>
<td>ku</td>
<td>yama</td>
</tr>
<tr>
<td>king, prince</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>knead : bread; m-fino (when chopped); soil &amp; dung (for floor, cf e.g.); hit</td>
<td>ku</td>
<td>lûba</td>
</tr>
<tr>
<td>knee</td>
<td>li</td>
<td>ema</td>
</tr>
<tr>
<td>knife</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>know</td>
<td>ku</td>
<td>yati</td>
</tr>
<tr>
<td>know, not to — (how to do)..., be ?unsure</td>
<td>ku</td>
<td>sidzwâ</td>
</tr>
<tr>
<td>kraal</td>
<td>li</td>
<td>ema</td>
</tr>
<tr>
<td>lamb</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>lame, crippled person</td>
<td>si</td>
<td>ti</td>
</tr>
<tr>
<td>larger, become —, e.g. body</td>
<td>ku</td>
<td>yadzulluka</td>
</tr>
<tr>
<td>larger, become —, e.g. body</td>
<td>ku</td>
<td>yadzuluka</td>
</tr>
<tr>
<td>larynx, Adam's apple</td>
<td>i</td>
<td>ti</td>
</tr>
<tr>
<td>lastly, finally</td>
<td></td>
<td>yhekuqedzela</td>
</tr>
<tr>
<td>laugh</td>
<td>ku</td>
<td>hleka</td>
</tr>
<tr>
<td>laugh, cause to —</td>
<td>ku</td>
<td>chadzisâ</td>
</tr>
<tr>
<td>laugh, make e.o. —</td>
<td>ku</td>
<td>chadzisana</td>
</tr>
<tr>
<td>laugh, cause to —</td>
<td>ku</td>
<td>hlekisâ</td>
</tr>
<tr>
<td>law</td>
<td>mu</td>
<td>mi</td>
</tr>
<tr>
<td>lay out (e.g. to dry), hang up (explicitly to dry)</td>
<td>ku</td>
<td>neka</td>
</tr>
<tr>
<td>lay (the table)</td>
<td>ku</td>
<td>teka</td>
</tr>
<tr>
<td>lead, e.g. sheep, country</td>
<td>ku</td>
<td>yisa</td>
</tr>
<tr>
<td>leaf, ?branch</td>
<td>li</td>
<td>ema</td>
</tr>
<tr>
<td>leaf, ?branch</td>
<td>li</td>
<td>ema</td>
</tr>
<tr>
<td>leak (lit. &quot;rain down from&quot;)</td>
<td>ku</td>
<td>nela</td>
</tr>
<tr>
<td>&quot;the house leaks&quot;</td>
<td>idlu iyanela HL HHLHLL -nela etûlû &quot;rain down from on high&quot; ?T</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>English</th>
<th>Voiced</th>
<th>Laryngeal</th>
<th>Noun</th>
<th>Pronoun</th>
</tr>
</thead>
<tbody>
<tr>
<td>leave (e.g. children, house) (ct. -lesa)</td>
<td>ku</td>
<td>shiya</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>leave, depart</td>
<td>ku</td>
<td>muka</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>leave, go away</td>
<td>ku</td>
<td>suka</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>LEC church person / French person</td>
<td>mu</td>
<td>eba</td>
<td>fura</td>
<td>LH</td>
</tr>
<tr>
<td>left hand (on the left hand side: gelinxeleni LHHHL)</td>
<td>li</td>
<td>nxele</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>left, left side (e.g. left hand: followed by possessive)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lend a hand in sth, cause to —</td>
<td>ku</td>
<td>helebhellisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>lend a hand in sth, cause e.o. to —</td>
<td>ku</td>
<td>helebellisana</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>leopard</td>
<td>i</td>
<td>ti</td>
<td>gwe</td>
<td>L</td>
</tr>
<tr>
<td>Lesotho, in —</td>
<td>e</td>
<td>Lisuthu</td>
<td>HHH</td>
<td>n</td>
</tr>
<tr>
<td>letter; also: reading (liturgical)</td>
<td>li</td>
<td>ema</td>
<td>ngolo</td>
<td>HH</td>
</tr>
<tr>
<td>liar</td>
<td>li</td>
<td>ema</td>
<td>menemene</td>
<td>LLLL</td>
</tr>
<tr>
<td>liar, be a —</td>
<td></td>
<td>nemala</td>
<td>LHL</td>
<td>adj</td>
</tr>
<tr>
<td>lid</td>
<td>si</td>
<td>ti</td>
<td>kwayelo</td>
<td>HLL</td>
</tr>
<tr>
<td>lid on, put —; become cloudy</td>
<td>ku</td>
<td>sibekela</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>lid on, put — on tightly, properly</td>
<td>ku</td>
<td>sibekelisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>lie on stomach</td>
<td>ku</td>
<td>bhacama</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>lie down properly (on stomach)</td>
<td>ku</td>
<td>bhacamisisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>lie on the back</td>
<td>ku</td>
<td>kakalla</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>lies</td>
<td></td>
<td>la</td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>light; also: divine Light</td>
<td>li</td>
<td>ema</td>
<td>khanya</td>
<td>LH</td>
</tr>
<tr>
<td>like that</td>
<td>ka</td>
<td>gako</td>
<td>HL</td>
<td>adv</td>
</tr>
<tr>
<td>line</td>
<td>mu</td>
<td>la</td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>lion</td>
<td>i</td>
<td>ti</td>
<td>dawû</td>
<td>LH</td>
</tr>
<tr>
<td>listen to (radio, parents...)</td>
<td>ku</td>
<td>mamela</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>listen to e.o.</td>
<td>ku</td>
<td>mamelana</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>listener</td>
<td>m</td>
<td>eba</td>
<td>mameli</td>
<td>HHL</td>
</tr>
<tr>
<td>English</td>
<td>Xhosa</td>
<td>Meaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>little, very —, a very tiny amount</td>
<td>ka</td>
<td>ncincinyana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>live, stay, sit</td>
<td>ku</td>
<td>hlala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>live, just —, stay, sit on one's own (with rfx -ti-)</td>
<td>ku</td>
<td>hlalla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>liver</td>
<td>si</td>
<td>bidzi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lonely place, e.g. graveyard (inqalo yhebafû)</td>
<td>i</td>
<td>nqalo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>long time ago, late, at length</td>
<td>ka</td>
<td>dze</td>
<td></td>
<td></td>
</tr>
<tr>
<td>long, tall</td>
<td>dze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>look at (*go towards)</td>
<td>ku</td>
<td>bheka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look at e.o.</td>
<td>ku</td>
<td>bhekana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look back (over shoulder), ?return</td>
<td>ku</td>
<td>kgedla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look for, lay a trap for</td>
<td>ku</td>
<td>lalla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look up at</td>
<td>ku</td>
<td>qethuka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look, glance</td>
<td>i</td>
<td>bheko</td>
<td></td>
<td></td>
</tr>
<tr>
<td>loose (boiled) maize</td>
<td>i</td>
<td>qhûbhû</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lot (a lot), (many at a time?)</td>
<td>ka</td>
<td>nnyheti</td>
<td></td>
<td></td>
</tr>
<tr>
<td>louse, lice</td>
<td>i</td>
<td>chwala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>love</td>
<td>ku</td>
<td>tshadza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>love, cause to —; make smn do sth without considering whether they like it</td>
<td>ku</td>
<td>tshadzisa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lowly, be —, humble</td>
<td>ku</td>
<td>kokobetsa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>luck, blessing; fortunately</td>
<td>li</td>
<td>hlohono</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lung</td>
<td>li</td>
<td>ema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mad, become —</td>
<td>ku</td>
<td>hlanya</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mad, cause to become —</td>
<td>ku</td>
<td>hlanyisa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mad, be —</td>
<td>ku</td>
<td>phabhana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>maize</td>
<td>i</td>
<td>bhoni</td>
<td></td>
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</tbody>
</table>

 idioms:
- "The more you search the less you find" (Lalla, igaphumi (HHL, HLHL))
- "they made me do (it) without considering whether I like it" (aba-ta-gi-tshadzisi)
- "luckily, fortunately" (ga-lihlohono)
<table>
<thead>
<tr>
<th>English</th>
<th>Xitsonga</th>
<th>Meaning</th>
<th>Xitsonga</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>maize meal (powder)</td>
<td>i ti phuphu</td>
<td>LL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>maize cob, stripped of kernels</td>
<td>si ti qu</td>
<td>L n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>make laugh; satisfy (e.g. food)</td>
<td>ku chadza</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>make confused</td>
<td>ku firiganya</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>make noise</td>
<td>ku fudzekela</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>make dance</td>
<td>ku jhayivisa</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>make e.o.</td>
<td>ku ti yetana</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>i ti dvuna</td>
<td>HL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>man, husband</td>
<td>u eba fo</td>
<td>H n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>many</td>
<td>nyheti</td>
<td>HL adj</td>
<td></td>
<td></td>
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<tr>
<td>March</td>
<td>Matjh</td>
<td>H(L) n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>marrow (bone)</td>
<td>m mogo</td>
<td>LH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>marry (man to woman)</td>
<td>ku teka</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary (e.g. Mary, the mother of Jesus)</td>
<td>bo Marîya</td>
<td>LHH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary, Virgin —, Mother of God</td>
<td>mu -- firîko</td>
<td>HLL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>masculinity; right, as in &quot;right hand&quot;, lit. &quot;male hand&quot;</td>
<td>si dvuna</td>
<td>HL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>matter, affair; pl: news</td>
<td>i ti dzaba</td>
<td>LL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>Meyî</td>
<td>HL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>maybe</td>
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<td>meat; pl: muscles (sg: *muscle)</td>
<td>i ti nyama</td>
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<tr>
<td>meet</td>
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<td>mercy, mercifulness</td>
<td>mu kgawu</td>
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Cf. Chapter 2 §2.2.2.1
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<th>Message</th>
<th>Mu</th>
<th>Mi</th>
<th>Layeta</th>
<th>LLH</th>
<th>N</th>
<th>Description</th>
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<td>li-bisi leli-rithiye HHH HLLL &quot;sour milk&quot; [no separate lex item]</td>
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<td>mix foody things, e.g. crumble papa (to which milk will be added); e.g.</td>
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<td>dzedze</td>
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<td>mu</td>
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<td>lomo</td>
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<td>move aside, give way</td>
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<td>suduka</td>
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<td>move (?always backwards)</td>
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<td>muscle</td>
<td>mu</td>
<td>sipha</td>
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<tr>
<td>music; pl: different pieces of music</td>
<td>mu</td>
<td>bhîno</td>
<td>LH n</td>
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<td>i</td>
<td>mîsterî</td>
<td>HHL n</td>
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<td>li</td>
<td>tipho</td>
<td>LL n</td>
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<td>okay...! just hang on a bit! not too fast!</td>
<td>kahleni</td>
<td>LHL intrj</td>
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<td>old man</td>
<td>li</td>
<td>qheku</td>
<td>LL n</td>
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<tr>
<td>music; pl: different pieces of music</td>
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<td>bhîno</td>
<td>LH n</td>
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<td>LL n</td>
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<td>old man</td>
<td>li</td>
<td>xhegu</td>
<td>LL n</td>
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<td>old man, little —; man who is a little bit old</td>
<td>li</td>
<td>ema</td>
<td>xhегнымиa</td>
<td>LLHL n</td>
<td>amunye, cl 1, &quot;one (person)&quot; HLL; ct. lamunye, cl 1, HHL &quot;another (person)&quot;</td>
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<tr>
<td>once</td>
<td>ka</td>
<td>nye</td>
<td>L</td>
<td>adj, adv</td>
<td>khеmисуlla</td>
<td>amunye, cl 1, &quot;one (person)&quot; HLL</td>
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<td>one</td>
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<td>L</td>
<td>adj</td>
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<td>only, just, when (+ particip)</td>
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<td>khamisulla</td>
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<td>vulelana</td>
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<td>open sth with smn / sth</td>
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<td>vulelella</td>
<td>L</td>
<td>v</td>
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<td>open for (= vulela)</td>
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<td>vulella</td>
<td>L</td>
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<td>khamisulleka</td>
<td>H</td>
<td>v</td>
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<td>open; make happy</td>
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<td>vula</td>
<td>L</td>
<td>v</td>
<td>ba-bа-vule &quot;they shd make them happy&quot;</td>
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<td>ti</td>
<td>vulo</td>
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<td>or</td>
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<td>kapa</td>
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<td>moncuka</td>
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<td>lee [equiv to 3rd position demonstrative]</td>
<td>HL</td>
<td>adv</td>
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<td>overclothes: blanket, jacket, jersey</td>
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<td>bhatshо</td>
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<td>kghaphatseka</td>
<td>H</td>
<td>v</td>
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<td>ow! (= cry of pain)</td>
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<td>HL</td>
<td>intrj</td>
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<td>ox</td>
<td>i</td>
<td>ti</td>
<td>kgабi</td>
<td>HH</td>
<td>n</td>
<td>i-kgаbi yhami HHH HL &quot;my ox&quot;</td>
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<td>hlugu</td>
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<td>pick (e.g. roadwork)</td>
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<td>piece left of sth, little —</td>
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<td>piece, portion (of meat)</td>
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<td>piece, small — of string, rope, etc, including shoelace; pl: shoelaces</td>
<td>li ′ ′ ′ ema ′ ′ qhwele</td>
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<td>pine for, long for (+obj)</td>
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<td>v</td>
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<td>place for training (e.g. initiation of men, seminary)</td>
<td>mu' mi phado</td>
<td>LH n</td>
<td>muphado whebazwali HLH LHLH &quot;place for men's initiation&quot;, muphado whebaprista HLH LFHL &quot;seminary&quot;, muphado whebarudi HLH HFHL &quot;teachers training college&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>place of origin</td>
<td>i ti velo</td>
<td>LL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>place, city</td>
<td>si ti baga</td>
<td>LL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant, sp. of —, in order to warm on fire and press on joints which are sore</td>
<td>li dabhi'sa</td>
<td>LHL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant, e.g. tree (not &quot;sew seeds&quot;)</td>
<td>ku hloma</td>
<td>L v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant, sp of —</td>
<td>i ti kolitshani</td>
<td>LLHL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant, sp of — (tiny leaves on many small side branches of main leafstalk; used to boil &amp; drink or stuff up nose as medicine)</td>
<td>li ngana</td>
<td>HH n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant, sp of —, with shary, tiny leaves</td>
<td>i ti tjhitjhi</td>
<td>LH n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plaster, daub mud on wall</td>
<td>ku phara</td>
<td>L v</td>
<td>done before you &quot;sidza&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play</td>
<td>ku dlla</td>
<td>H v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play with e.o.</td>
<td>ku dalisana</td>
<td>H v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>player</td>
<td>mu eba dla'</td>
<td>HL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>player (professional)</td>
<td>si ti dla'</td>
<td>HL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plough</td>
<td>li ema lebhe</td>
<td>LH n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plural (grammatical)</td>
<td>bu ?em nyeti</td>
<td>HL n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point to</td>
<td>ku s'ubha</td>
<td>L v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point all over the place, here and there...</td>
<td>ku s'ubhaga</td>
<td>L v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>point intensely</td>
<td>ku s'ubhi'sa</td>
<td>L v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>poison e.o.</td>
<td>ku d'lisana</td>
<td>H v</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pontius Pilate</td>
<td>bo Ponso Pilato</td>
<td>HHL n HLL</td>
<td></td>
<td></td>
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</tr>
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</table>

1140
<table>
<thead>
<tr>
<th>English</th>
<th>Setswana</th>
<th>Meaning</th>
<th>NH</th>
</tr>
</thead>
<tbody>
<tr>
<td>poor person</td>
<td>mu eba fûtsana</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>poor, dirty, ragged person</td>
<td>li ema rantha</td>
<td>LLH n</td>
<td></td>
</tr>
<tr>
<td>porridge, watery —</td>
<td>li ema shilishili</td>
<td>LLLL n</td>
<td></td>
</tr>
<tr>
<td>(maize meal poured into boiling water)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>position, be in a good —,</td>
<td>ku veella</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>vantage point (e.g. of visibility on a wall, on a mt. top)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>position, be in a good —,</td>
<td>ku veellelana</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>vantage point (e.g. of visibility on a wall, on a mt. top) to see e.o.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>possessive over, be —,</td>
<td>ku nqënëkëla</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>be unwilling to part with sth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pot</td>
<td>i ti bhîta</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>potato</td>
<td>i ti tapule</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>pound, two Rands</td>
<td>i ti ponto</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>pour in a bit, but not to fill (e.g. sugar) (ct. -tshela)</td>
<td>ku chata</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>pour away (e.g. water); waste</td>
<td>ku chitsha</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>pour in (till full; ct. -chata)</td>
<td>ku tshela</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>poverty</td>
<td>bu fûtsana</td>
<td>HLH n</td>
<td></td>
</tr>
<tr>
<td>power, strength</td>
<td>-- em adla</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>praise</td>
<td>ku boga</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>praise</td>
<td>ku roga</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>praise singer</td>
<td>mu (eba) rogi</td>
<td>HL n</td>
<td></td>
</tr>
<tr>
<td>praise singer (i.e. by trade, not just chancing to sing [rarer!])</td>
<td>si ti rogi</td>
<td>HL n</td>
<td></td>
</tr>
<tr>
<td>praise singer</td>
<td>mu eba thogi</td>
<td>HL n</td>
<td></td>
</tr>
<tr>
<td>praise, glorify</td>
<td>ku roîsa</td>
<td>L v</td>
<td></td>
</tr>
</tbody>
</table>

"he praises the chief (lit. praises himself by the chief)";
"they praise e.o."

"u-ti-rogena gemrena HHHL LHFL"
"he praises the chief (lit. praises himself by the chief)"
"ba-ya-rogana"
"they praise e.o."
<table>
<thead>
<tr>
<th>English</th>
<th>Zulu</th>
<th>English</th>
<th>Zulu</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>praise; singing by male initiates (&amp; on exiting initiation school)</td>
<td>i ti rogo</td>
<td>LH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pray</td>
<td>ku rabhela</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pray thoroughly, intensely, completely</td>
<td>ku rabhelisisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pray for e.o.</td>
<td>ku rabhella</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prayer</td>
<td>i ti thapelo</td>
<td>HLL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prepare for e.o.</td>
<td>ku lugisellana</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prepare, repair for smn</td>
<td>ku lugisella</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>present</td>
<td>im ti pho</td>
<td>H n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>present [vb]</td>
<td>ku vetisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>preserve, keep</td>
<td>ku gcinakalisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pretend to sleep</td>
<td>ku ti-robatisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>priest</td>
<td>mu eba prista</td>
<td>HL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prisoner, lit: one who has been captured</td>
<td>mu eba tfu lamejhwe</td>
<td>L HLH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>problem</td>
<td>i ti tsîyetsî</td>
<td>HLH n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>process, be in — of moving aside, giving way</td>
<td>ku sudukella</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>process, be in — of moving aside, giving way to e.o.</td>
<td>ku sudukellana</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proclaim, say in a loud voice</td>
<td>ku huwa</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prop up, hold up</td>
<td>ku qhathîsa</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proper, be —</td>
<td>ku faneleka</td>
<td>H v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>properly</td>
<td>galoku fanelekiyeh</td>
<td>LHH-H adv HHHH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prophet</td>
<td>mu eba porofeta</td>
<td>HLHL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>protect</td>
<td>ku sitshetela</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>protection</td>
<td>i ? sitshetelo</td>
<td>HHLL n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>proud, be —</td>
<td>ku kgihomusa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pull out, pluck out (e.g. thorn)</td>
<td>ku hlabulla</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pull (cf. -tsala)</td>
<td>ku kgola</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pull back up sth stretched out, e.g. legs</td>
<td>ku nabulla</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pull apart, e.g. engine, sewn hat</td>
<td>ku qhaqha</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pull apart, e.g. engine, sewn hat</td>
<td>ku qhaqhulla</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>Seeso</td>
<td>Sotho</td>
<td>Tswana</td>
<td>Sona</td>
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<td>--------</td>
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</tr>
<tr>
<td>pull</td>
<td>ku</td>
<td>ṭûla</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>pull away</td>
<td>ku</td>
<td>ṭjhopola</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>pull (also cf: -rhola)</td>
<td>ku</td>
<td>ṭsala</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>pumpkin</td>
<td>mu</td>
<td>mi</td>
<td>gobhû</td>
<td>LH n</td>
</tr>
<tr>
<td>pumpkin seed</td>
<td>i</td>
<td>ti</td>
<td>tšhaga</td>
<td>LH n</td>
</tr>
<tr>
<td>purchase</td>
<td>i</td>
<td>ti</td>
<td>tšhego</td>
<td>LH n</td>
</tr>
<tr>
<td>purr (of cat)</td>
<td>ku</td>
<td>rora</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put down</td>
<td>ku</td>
<td>beka</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>put on blanket (not other items of clothing)</td>
<td>ku</td>
<td>bhatsha</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put on blanket, help —</td>
<td>ku</td>
<td>bhatshisa</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put on clothes</td>
<td>ku</td>
<td>dzina</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>put in a line</td>
<td>ku</td>
<td>ladzela</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put things in a line</td>
<td>ku</td>
<td>ladzellisa</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put things consecutively, in a line</td>
<td>ku</td>
<td>ladzellisana</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put right, arrange, fix, repair</td>
<td>ku</td>
<td>lugisa</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>put on the head, help — (e.g. dish, wood, bag, water, chicken, anything, but NOT a hat)</td>
<td>ku</td>
<td>tʃwatshisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>put onto a body extremity, e.g. hat (not dish, etc) on head; socks/shoes on feet; gloves on hands; earrings on ears; glasses on nose; nose-ring (hypothetical)</td>
<td>ku</td>
<td>vatsha</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>put onto a body extremity, help —</td>
<td>ku</td>
<td>vatshisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>Qhoboshane, at —</td>
<td>e</td>
<td>qhoboshani</td>
<td>HLHL adv, n</td>
<td></td>
</tr>
<tr>
<td>queen, Mrs</td>
<td>mu</td>
<td>eba</td>
<td>fûmakatî</td>
<td>HHLL n</td>
</tr>
<tr>
<td>quench thirst</td>
<td>ku</td>
<td>nyorrula</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>quickly, soon</td>
<td>ka</td>
<td>pili</td>
<td>LH adv</td>
<td></td>
</tr>
<tr>
<td>quiet, be —</td>
<td>ku</td>
<td>tfula</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>quiet, just keep — (with -ti- rfx)</td>
<td>ku</td>
<td>tfulela</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>quince</td>
<td>i</td>
<td>ti</td>
<td>kwipiri</td>
<td>HLL n</td>
</tr>
<tr>
<td>rabbit</td>
<td>i</td>
<td>ti</td>
<td>tlholo</td>
<td>LL n</td>
</tr>
<tr>
<td>rain</td>
<td>ku</td>
<td>na</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>rat</td>
<td>i</td>
<td>ti</td>
<td>kgodo</td>
<td>LH n</td>
</tr>
</tbody>
</table>

1143
<table>
<thead>
<tr>
<th>English</th>
<th>Zulu</th>
<th>Part 1</th>
<th>Part 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>reach, arrive</td>
<td>ku</td>
<td>fika</td>
<td>L v</td>
</tr>
<tr>
<td>reach; until</td>
<td>ku</td>
<td>fikella</td>
<td>L v</td>
</tr>
<tr>
<td>read, learn</td>
<td>ku</td>
<td>bala</td>
<td>L v</td>
</tr>
<tr>
<td>reader, learner</td>
<td>m</td>
<td>eba</td>
<td>LL n</td>
</tr>
<tr>
<td>ready, be —, be good, right, polite</td>
<td>ku</td>
<td>luga</td>
<td>L v</td>
</tr>
<tr>
<td>realise</td>
<td>ku</td>
<td>qoda</td>
<td>L v</td>
</tr>
<tr>
<td>reap, harvest</td>
<td>ku</td>
<td>vuna</td>
<td>H v</td>
</tr>
<tr>
<td>rear animals; be wealthy</td>
<td>ku</td>
<td>fuya</td>
<td>H v</td>
</tr>
<tr>
<td>red</td>
<td></td>
<td>bovu</td>
<td>LH rel</td>
</tr>
<tr>
<td>red ochre</td>
<td>li</td>
<td>ema</td>
<td>LH n</td>
</tr>
<tr>
<td>refresh</td>
<td>ku</td>
<td>khatshulla</td>
<td>H v</td>
</tr>
<tr>
<td>refreshed, become —</td>
<td>ku</td>
<td>khatshuluka</td>
<td>H v</td>
</tr>
<tr>
<td>refresher, one who gives rest</td>
<td>mu</td>
<td>eba</td>
<td>HHHLL</td>
</tr>
<tr>
<td>refuse sth (which the asker can't see, but the one asked has &amp; won't give up)</td>
<td>ku</td>
<td>ladvula</td>
<td>L v</td>
</tr>
<tr>
<td>refuse smn</td>
<td>ku</td>
<td>ladvulela</td>
<td>L v</td>
</tr>
<tr>
<td>refuse e.o.</td>
<td>ku</td>
<td>ladvullelana</td>
<td>L v</td>
</tr>
<tr>
<td>refuse e.o. food</td>
<td>ku</td>
<td>tîmana</td>
<td>H v</td>
</tr>
<tr>
<td>refuse</td>
<td>ku</td>
<td>yhala</td>
<td>H v</td>
</tr>
<tr>
<td>refuse, deprive, hold back, give very little</td>
<td>ku</td>
<td>tîma</td>
<td>H v</td>
</tr>
<tr>
<td>rejoice in</td>
<td>ku</td>
<td>nyakallela</td>
<td>H v</td>
</tr>
<tr>
<td>relax (oneself) : always with rfx -ti-.</td>
<td>ku</td>
<td>ketla</td>
<td>L v</td>
</tr>
<tr>
<td>remember</td>
<td>ku</td>
<td>khubbula</td>
<td>H v</td>
</tr>
<tr>
<td>remember for, think for (e.g. help in schoolwork)</td>
<td>ku</td>
<td>khubbulelana</td>
<td>H v</td>
</tr>
<tr>
<td>remember in detail</td>
<td>ku</td>
<td>khubhulisisa</td>
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<td>return, go back</td>
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<td>rib</td>
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<td>LL n</td>
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<td>rid of, get —</td>
<td></td>
<td>ku</td>
<td>L v</td>
</tr>
<tr>
<td>rid of, cause to be —</td>
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<td>ku</td>
<td>L v</td>
</tr>
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<td>right hand (on the right hand side = geliwujeni LHL HLH)</td>
<td>li</td>
<td>wuja</td>
<td>LH n</td>
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<td>right, be —, correct (of the person being right)</td>
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<td>nebha</td>
<td>L v</td>
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<td>rinse (clothes)</td>
<td></td>
<td>ku</td>
<td>H v</td>
</tr>
<tr>
<td>rinse (mouth)</td>
<td></td>
<td>ku</td>
<td>H v</td>
</tr>
<tr>
<td>rise (of the sun)</td>
<td></td>
<td>ku</td>
<td>L v</td>
</tr>
<tr>
<td>rise (of the sun)</td>
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<td>L v</td>
</tr>
<tr>
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<td></td>
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<td>LL n</td>
</tr>
<tr>
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<td>HLL n</td>
</tr>
<tr>
<td>road, way</td>
<td></td>
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<td>LL n</td>
</tr>
<tr>
<td>roar (of an animal)</td>
<td></td>
<td>ku</td>
<td>L v</td>
</tr>
<tr>
<td>roast meat</td>
<td></td>
<td>ku</td>
<td>L v</td>
</tr>
<tr>
<td>rock rabbit (no tail)</td>
<td></td>
<td>i 'ti</td>
<td>LH n</td>
</tr>
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<td>roll up, fold up</td>
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<td>ku</td>
<td>L v</td>
</tr>
<tr>
<td>roll up</td>
<td></td>
<td>ku</td>
<td>H v</td>
</tr>
<tr>
<td>rolled together, get — (cf -ellana), lit. &amp; fig. (get all mixed up)</td>
<td>ku</td>
<td>minakana</td>
<td>L v</td>
</tr>
<tr>
<td>roof (genl term)</td>
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<td>HLL n</td>
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<tr>
<td>roof: thatched, or otherwise (even zinc)</td>
<td>--</td>
<td>ema</td>
<td>HHL n</td>
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<tr>
<td>root (of plant)</td>
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<td>mu 'mi</td>
<td>HH n</td>
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<tr>
<td>rubber dump</td>
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<td>i 'ti</td>
<td>LLHL n</td>
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<td>L v</td>
</tr>
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<td>rudeness, act of</td>
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<td>LL n</td>
</tr>
<tr>
<td>ruin</td>
<td></td>
<td>li 'ema</td>
<td>LH n</td>
</tr>
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<td>rule, govern, be in charge of</td>
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<td>ku</td>
<td>H v</td>
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<tr>
<td>ruler</td>
<td></td>
<td>m 'eba</td>
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</tr>
<tr>
<td>run away</td>
<td></td>
<td>ku</td>
<td>H v</td>
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<tr>
<td>run away frantically</td>
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<td>ku</td>
<td>H v</td>
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</table>

1145
<p>| run after smn who is fleeing | ku | kwatamisa | L v |
| run | ku | matha | L v |
| run here and there | ku | mathaga | L v |
| rust | ku | rhûsa | H v |
| rust, cause to — | ku | rhûsisa | H v |
| sad, make — | ku | hlonulisa | L v |
| sale | i | ti | tshigiso | LHL n |
| salivating, watering of mouth in anticipation of food | -- | ti | gcegca | LL n |
| salt; pl: different types of salt | li | ema | tswayî | HL n |
| sand; pl: different types of sand | li | ema | hlabatshi | HLH n |
| Saturday, on Saturday | ge | Mgqibelo | LLHL v |
| save (also: opening formula in greeting), take care of | ku | baballa | H v |
| save | ku | buluga | H v |
| save (e.g. from drowning, also from death (Christian)) | ku | lubhulla | L v |
| save (also: religious sense) | ku | phemisa | L v |
| save | ku | qobisa | L v |
| saved (also in religious sense), get — | ku | ti | lubhulluka | L v |
| saviour, redeemer | m | eba | mulugî | HHL n |
| say so | ku | tjho | L v |
| say, do; AUX (with ideophones) | ku | tshi | L v |
| scatter (of people, flower on pollinating), sow (seeds) | ku | jala | H v |
| scene, sth seen | i | ti | bono | HH n |
| school | si | ti | kolo | HL n |
| scorpion | i | ti | kgwankela | LHL n |
| scorpion | i | ti | phepheni | HLL n |
| scrapings, what is taken out | i | khokalo | HHL n |</p>
<table>
<thead>
<tr>
<th>English</th>
<th>Superscript</th>
<th>Tswana</th>
<th>Superscript</th>
<th>Word Type</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>scrapings, pot —: maize, sorghum, etc</td>
<td></td>
<td>bu</td>
<td></td>
<td></td>
<td><strong>khokho</strong> (HH) — HH: n — sewn together, get — (cf. -tfugakana)**</td>
</tr>
<tr>
<td>scratch</td>
<td></td>
<td>ku</td>
<td></td>
<td></td>
<td><strong>kgweba</strong> (H) — V — scratch**</td>
</tr>
<tr>
<td>scratch</td>
<td></td>
<td>ku</td>
<td></td>
<td></td>
<td><strong>ngwabha</strong> (L) — V — scratch**</td>
</tr>
<tr>
<td>sea shells</td>
<td>i</td>
<td>ti</td>
<td></td>
<td></td>
<td><strong>kgetla</strong> (HH) — n — share**</td>
</tr>
<tr>
<td>sea shell</td>
<td>i</td>
<td>ti</td>
<td></td>
<td></td>
<td><strong>kgetla</strong> (HH) — n — share**</td>
</tr>
<tr>
<td>Sebapala River, southern Lesotho</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
<td><strong>Sibhabhala</strong> (HHLL) — n —)**</td>
</tr>
<tr>
<td>second, short while</td>
<td>mu</td>
<td>mi</td>
<td></td>
<td></td>
<td><strong>tutunyana</strong> (LHLL) — n —)**</td>
</tr>
<tr>
<td>second, short while; recently (locative: cf. e.g.)</td>
<td>mu</td>
<td>mi</td>
<td></td>
<td></td>
<td><strong>tutwana</strong> (LHL) — n —)**</td>
</tr>
<tr>
<td>second, short while</td>
<td>mu</td>
<td>mi</td>
<td></td>
<td></td>
<td><strong>tutwana</strong> (LHL) — n —)**</td>
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<tr>
<td>second, short while</td>
<td>mu</td>
<td>mi</td>
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<td><strong>tutwana</strong> (LHL) — n —)**</td>
</tr>
<tr>
<td>second, short while</td>
<td>mu</td>
<td>mi</td>
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<td></td>
<td><strong>tutwana</strong> (LHL) — n —)**</td>
</tr>
<tr>
<td>see</td>
<td>ku</td>
<td></td>
<td></td>
<td></td>
<td><strong>bona</strong> (H) — V — seven**</td>
</tr>
<tr>
<td>see e.o. clearly</td>
<td>ku</td>
<td></td>
<td></td>
<td></td>
<td><strong>bonisisana</strong> (H) — V — seven**</td>
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<tr>
<td>seed</td>
<td>i</td>
<td>ti</td>
<td></td>
<td></td>
<td><strong>pewu</strong> (HL) — n — sew together**</td>
</tr>
<tr>
<td>seed</td>
<td>i</td>
<td>ti</td>
<td></td>
<td></td>
<td><strong>tshaga</strong> (LL) — n — sew together**</td>
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<tr>
<td>sell</td>
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<td></td>
<td><strong>tshegisa</strong> (H) — V — seven**</td>
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<tr>
<td>seller</td>
<td>mu</td>
<td>eba</td>
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<td><strong>tshegisî</strong> (LHL) — n —)**</td>
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<tr>
<td>send (smn) with a message</td>
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<td><strong>layeta</strong> (L) — V — seven**</td>
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<tr>
<td>send</td>
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<td><strong>tfuma</strong> (H) — V — seven**</td>
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<tr>
<td>servant</td>
<td>mu</td>
<td>eba</td>
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<td><strong>hlanka</strong> (LHL) — n —)**</td>
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<td>servant (small child)</td>
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<td>ema</td>
<td></td>
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<td><strong>kghabûnyani</strong> (HHHL) — n —)**</td>
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<td>set free +OBJ; take off ( -OBJ)</td>
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<td><strong>tfukula</strong> (L) — V — seven**</td>
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<tr>
<td>set (of the sun)</td>
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<td><strong>tjhubela</strong> (H) — V — seven**</td>
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<td><strong>sûbhîye</strong> (LLH) — rel — seven**</td>
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<td>sew</td>
<td>ku</td>
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<td><strong>tfugellana</strong> (H) — V — seven**</td>
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<td>mu</td>
<td>mi</td>
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<td><strong>tfuti</strong> (LH) — n — seven**</td>
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<td>shadow</td>
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<td>show, point out</td>
<td>ku</td>
<td>jenisa</td>
<td>H</td>
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<td>shut in with (e.g. shut smn/sth in with a stone)</td>
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<td>valelella</td>
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<td>valla</td>
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<td>shut e.o. in</td>
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<td>vallana</td>
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<td>khanya</td>
<td>LH</td>
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<td>tsi</td>
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<td>LHHLL</td>
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<td>i</td>
<td>tsi</td>
<td>HHL</td>
<td></td>
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<tr>
<td>shout</td>
<td>ku</td>
<td>tshetsha</td>
<td>H</td>
<td></td>
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</tr>
<tr>
<td>shout indiscriminately</td>
<td>ku</td>
<td>tshetshaga</td>
<td>H</td>
<td></td>
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</tr>
<tr>
<td>show</td>
<td>ku</td>
<td>bonisa</td>
<td>H</td>
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<tr>
<td>show</td>
<td>i</td>
<td>tsi</td>
<td>HHL</td>
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<tr>
<td>show off to</td>
<td>ku</td>
<td>khalisela</td>
<td>L</td>
<td></td>
<td></td>
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<tr>
<td>show, point out</td>
<td>ku</td>
<td>jenisa</td>
<td>H</td>
<td></td>
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<tr>
<td>shut in with (e.g. shut smn/sth in with a stone)</td>
<td>ku</td>
<td>valelella</td>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shut in; close for (?)</td>
<td>ku</td>
<td>valla</td>
<td>L</td>
<td></td>
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<tr>
<td>shut e.o. in</td>
<td>ku</td>
<td>vallana</td>
<td>L</td>
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<tr>
<td>Sigxodo, at —</td>
<td>e</td>
<td>sigxodo</td>
<td>HHL</td>
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<tr>
<td>(Singxondo)</td>
<td></td>
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<td>adv, n</td>
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<tr>
<td>sick person</td>
<td>mu</td>
<td>eba</td>
<td>LL</td>
<td></td>
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<tr>
<td>sick, be —</td>
<td>ku</td>
<td>gûlî</td>
<td>L</td>
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<tr>
<td>sick, make (smn) —</td>
<td>ku</td>
<td>gûlîsa</td>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sickness</td>
<td>bu</td>
<td>gûlo</td>
<td>LL</td>
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<tr>
<td>English</td>
<td>Setswana</td>
<td>Pedi</td>
<td>Zulu</td>
<td>Northern Sotho</td>
<td>Setswana</td>
</tr>
<tr>
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<tr>
<td>side (used in prep. phrases: on this/that/that over there side of X)</td>
<td>lepelletsana ku slowly, make e.o. do sth — (e.g. talk slowly to e.o.);</td>
<td>lepelletsana ku slowly, do sth — (e.g. talk)</td>
<td>lemnyuka ku slip</td>
<td>lemnyuka ku slip</td>
<td>lemnyuka kgu</td>
</tr>
<tr>
<td>silent, be —</td>
<td>ku</td>
<td>kghûtsa</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>sing</td>
<td>i</td>
<td>ti</td>
<td>bi (*i-bî)</td>
<td>H</td>
<td>n</td>
</tr>
<tr>
<td>sing indiscriminately, unpredictably</td>
<td>ku</td>
<td>bhînâga</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>singer (casual, not as a profession)</td>
<td>mu</td>
<td>eba</td>
<td>bhînî</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>singer (professional)</td>
<td>si</td>
<td>ti</td>
<td>bhînî</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>singular (grammar)</td>
<td>bu</td>
<td>nye</td>
<td></td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>sir, Mr</td>
<td>mu</td>
<td>bo, eba</td>
<td>ngalî</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>sister</td>
<td>bo</td>
<td>âûsî</td>
<td>LHH</td>
<td>n</td>
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</tr>
<tr>
<td>sit in the sun, next to a fire</td>
<td>ku</td>
<td>wotsha</td>
<td>H</td>
<td>v</td>
<td></td>
</tr>
<tr>
<td>six</td>
<td></td>
<td>tshilele</td>
<td>HHH</td>
<td>rel</td>
<td></td>
</tr>
<tr>
<td>size</td>
<td>bu</td>
<td>kgulu</td>
<td>HH</td>
<td>n</td>
<td></td>
</tr>
</tbody>
</table>
| skin of dead animal | li | ema | gogo | LL | n | wabhatsha ligogo lheli "he put on this skin (to wear)"
<p>| skin (of sheep, goat, *cow) [sg]: bed [pl. always] | i | ti | phade | LH | n | |
| skin an animal | ku | sidla | H | v | | |
| skunk | li | ema | qaqa | HH | n | |
| sky, heaven(s) | li | ema | tûlû | LL | n | |
| sleep [mid vowel does not harmonise] | ku | rõbala | L | v | | |
| sleep | bu | tfogo | LL | n | | |
| sleep, put to — | ku | rõbatîsa | L | v | | |
| slip | ku | munyuka | L | v | | |
| slowly | | bûtle | HL | adv | | |
| slowly, do sth — (e.g. talk) | ku | tepelletsâsa | L | v | | |
| slowly, make e.o. do sth — (e.g. talk slowly to e.o.); | ku | tepelletsâna | L | v | | |</p>
<table>
<thead>
<tr>
<th>English</th>
<th>Sotho</th>
<th>Simplification</th>
<th>Part of Speech</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>slowly, do sth — (e.g. talk)</td>
<td>ku</td>
<td>tepellisa</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>slyness, craftiness, trickery</td>
<td>bu</td>
<td>hlali</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>small</td>
<td>nci</td>
<td>H adj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>small</td>
<td>ncinci</td>
<td>HH adj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>smash</td>
<td>t'hanisa</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>smash indiscriminately</td>
<td>t'hanisaga</td>
<td>L v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>smear (e.g. butter on bread;</td>
<td>ku</td>
<td>khatsha</td>
<td>H v</td>
<td>ku-khatsha</td>
</tr>
<tr>
<td>also: smear floor; paint</td>
<td></td>
<td></td>
<td></td>
<td>si-tshwantsho</td>
</tr>
<tr>
<td>(picture, door)</td>
<td></td>
<td></td>
<td></td>
<td>H-HL H-HLL &quot;to paint a picture&quot;</td>
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<tr>
<td>smear mud, cow dung on floor</td>
<td>ku</td>
<td>sidza</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smell (bad)</td>
<td>ku</td>
<td>nkgha</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smell (bad)</td>
<td>ku</td>
<td>nuka</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smell, sniff</td>
<td>ku</td>
<td>fufunela</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smile</td>
<td>ku</td>
<td>bobosela</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smile</td>
<td>ku</td>
<td>bobotsheka</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>smoke (cigarette, etc)</td>
<td>ku</td>
<td>tsûbha</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>smoke, large amount of</td>
<td>si</td>
<td>sî</td>
<td>H n</td>
<td></td>
</tr>
<tr>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>smoke; plural: different</td>
<td>mu</td>
<td>mî</td>
<td>H n</td>
<td></td>
</tr>
<tr>
<td>columns of smoke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>snail (garden variety)</td>
<td>i</td>
<td>t'i</td>
<td>kghofû</td>
<td>LH n</td>
</tr>
<tr>
<td>snake</td>
<td>i</td>
<td>t'i</td>
<td>nyoka</td>
<td>HH n</td>
</tr>
<tr>
<td>snow</td>
<td>li</td>
<td>--</td>
<td>qhwa</td>
<td>L n</td>
</tr>
<tr>
<td>soccer</td>
<td>i</td>
<td>t'i</td>
<td>bholo</td>
<td>HL n</td>
</tr>
<tr>
<td>sock</td>
<td>i</td>
<td>t'i</td>
<td>kawûsî</td>
<td>LHL n</td>
</tr>
<tr>
<td>soft, get —</td>
<td>ku</td>
<td>t'shabha</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>soil; pl: different types of</td>
<td>mu</td>
<td>mî</td>
<td>hlabâ</td>
<td>LH n</td>
</tr>
<tr>
<td>soil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sole, armpit</td>
<td>li</td>
<td>t'emâ</td>
<td>khwaphi</td>
<td>LH n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>lelinyawu</td>
<td>HHLL</td>
</tr>
<tr>
<td>son</td>
<td>mu</td>
<td>eba</td>
<td>ra</td>
<td>H n</td>
</tr>
<tr>
<td>song</td>
<td>i</td>
<td>t'i</td>
<td>bhîna</td>
<td>LH n</td>
</tr>
<tr>
<td>sorghum</td>
<td>li</td>
<td>t'emâ</td>
<td>bele</td>
<td>LH n</td>
</tr>
<tr>
<td>Sotho woven hat</td>
<td>mu</td>
<td>mî</td>
<td>korotlo</td>
<td>HLL n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L-LLL</td>
<td></td>
</tr>
<tr>
<td>Sotho woven hat</td>
<td>mu</td>
<td>mî</td>
<td>lîanyere</td>
<td>HHLL n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L-LLL</td>
<td></td>
</tr>
<tr>
<td>Sotho person</td>
<td>mu</td>
<td>eba</td>
<td>suthu</td>
<td>HH n</td>
</tr>
<tr>
<td>sound</td>
<td>mu</td>
<td>mi</td>
<td>dûmo</td>
<td>LL</td>
</tr>
<tr>
<td>------</td>
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<tr>
<td>sour porridge (<em>lishilishili</em>) either left to stand for two days, or with tartaric added to turn it sour</td>
<td>i</td>
<td>--</td>
<td>nconco</td>
<td>LL</td>
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<tr>
<td>sour, be —</td>
<td></td>
<td></td>
<td>bulîla</td>
<td>LHL</td>
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<tr>
<td>speak</td>
<td>ku</td>
<td></td>
<td>khuluma</td>
<td>H</td>
</tr>
<tr>
<td>speak up on behalf of</td>
<td>ku</td>
<td></td>
<td>khulumella</td>
<td>H</td>
</tr>
<tr>
<td>speaker, spokesman?</td>
<td>si</td>
<td>ti</td>
<td>khulumî</td>
<td>HHL</td>
</tr>
<tr>
<td>speed</td>
<td>li</td>
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<td>belo</td>
<td>LL</td>
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<td>spine</td>
<td>mu</td>
<td>mi</td>
<td>gogodlo</td>
<td>HLL</td>
</tr>
<tr>
<td>spirits (*winds)</td>
<td>--</td>
<td>mi</td>
<td>méya</td>
<td>LH</td>
</tr>
<tr>
<td>spit, saliva</td>
<td>--</td>
<td>ema</td>
<td>tshe</td>
<td>H</td>
</tr>
<tr>
<td>spoon</td>
<td>i</td>
<td>ti</td>
<td>kghaba</td>
<td>LH</td>
</tr>
<tr>
<td>spread out, e.g. bed</td>
<td>ku</td>
<td></td>
<td>dlala</td>
<td>L</td>
</tr>
<tr>
<td>spread, disperse, scatter, sprinkle</td>
<td></td>
<td></td>
<td>kgasa</td>
<td>H</td>
</tr>
<tr>
<td>spring (season) (lit. &quot;start of summer&quot;)</td>
<td>ku</td>
<td></td>
<td>thwasa kwehlabûla</td>
<td>H</td>
</tr>
<tr>
<td>squeeze, wring out (e.g. cloth)</td>
<td>ku</td>
<td></td>
<td>hluta</td>
<td>L</td>
</tr>
<tr>
<td>squeeze, wring out (e.g. cloth); ct. <em>-khama</em></td>
<td>ku</td>
<td></td>
<td>hlutha</td>
<td>L</td>
</tr>
<tr>
<td>squeeze, throttle (e.g. neck, <em>cloth</em>); ct. <em>-hluta</em></td>
<td>ku</td>
<td></td>
<td>khama</td>
<td>H</td>
</tr>
<tr>
<td>stab</td>
<td>ku</td>
<td></td>
<td>hlababa</td>
<td>L</td>
</tr>
<tr>
<td>stab indiscriminately</td>
<td>ku</td>
<td></td>
<td>hlabaga</td>
<td>L</td>
</tr>
<tr>
<td>stabbing gesture at, make —</td>
<td>ku</td>
<td></td>
<td>legisa</td>
<td>H</td>
</tr>
<tr>
<td>stabbing gestures at, make —, lunge towards</td>
<td>ku</td>
<td></td>
<td>ligisa</td>
<td>H</td>
</tr>
<tr>
<td>stabbing gestures at e.o., make —</td>
<td>ku</td>
<td></td>
<td>ligisana</td>
<td>H</td>
</tr>
<tr>
<td>stamp flat</td>
<td>ku</td>
<td></td>
<td>gadza</td>
<td>H</td>
</tr>
<tr>
<td>stamp for e.o.</td>
<td>ku</td>
<td></td>
<td>gadzelana</td>
<td>H</td>
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<td>stamp together with</td>
<td>ku</td>
<td></td>
<td>gadzella</td>
<td>H</td>
</tr>
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<td>stamp, help —</td>
<td>ku</td>
<td></td>
<td>gadzisa</td>
<td>H</td>
</tr>
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<td>stamp, help e.o. —</td>
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<td>gadzisana</td>
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<tr>
<td>stand aside</td>
<td>ku</td>
<td></td>
<td>likela</td>
<td>H</td>
</tr>
<tr>
<td>stand up, rise (in numbers)</td>
<td>ku</td>
<td></td>
<td>phakama</td>
<td>H</td>
</tr>
<tr>
<td>start</td>
<td>ku</td>
<td></td>
<td>qala</td>
<td>H</td>
</tr>
<tr>
<td>start to do sth</td>
<td>ku</td>
<td></td>
<td>qalella</td>
<td>H</td>
</tr>
<tr>
<td>start (sth)</td>
<td>ku</td>
<td></td>
<td>qalisa</td>
<td>H</td>
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<td>English</td>
<td>Xhosa</td>
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<tr>
<td>stuck tight, become</td>
<td>ku</td>
<td>u-manganga</td>
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<td></td>
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<tr>
<td>stubbornness</td>
<td>--</td>
<td>ema nganga</td>
<td></td>
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<tr>
<td>stuck together (lit. &quot;suck together&quot;), be</td>
<td>ku</td>
<td>mumana</td>
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<tr>
<td>stuck to e.o.</td>
<td>ku</td>
<td>ncamathelana</td>
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<td></td>
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<tr>
<td>stick for punishing smn (?animals)</td>
<td>li</td>
<td>ema swayë</td>
<td></td>
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<tr>
<td>stick to e.o., (cause to stick to e.o.)</td>
<td>ku</td>
<td>ncamathelisana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stock farmer</td>
<td>mu</td>
<td>eba fuyî</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop treading</td>
<td>ku</td>
<td>nyatshulluka</td>
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<tr>
<td>stone (dim), small —</td>
<td>li</td>
<td>ema jwenyana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stone, rock</td>
<td>li</td>
<td>ema jwe</td>
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<td></td>
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<tr>
<td>stir (e.g. coffee)</td>
<td>ku</td>
<td>tamisa</td>
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<td></td>
</tr>
<tr>
<td>stir (e.g. coffee, papa)</td>
<td>li</td>
<td>ema phini</td>
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<td>stirring stick (for beer, papa)</td>
<td>li</td>
<td>ema phini</td>
<td></td>
<td></td>
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<tr>
<td>still, just</td>
<td>i</td>
<td>ti thûbha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stir</td>
<td>ku</td>
<td>fûlûwa</td>
<td></td>
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<tr>
<td>stock with smn, ask smn to store</td>
<td>ku</td>
<td>gcinisa</td>
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<td></td>
</tr>
<tr>
<td>storm</td>
<td>si</td>
<td>-- fifo</td>
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<tr>
<td>straighten, unbend</td>
<td>ku</td>
<td>gobulla</td>
<td></td>
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<td>stretch out straight (e.g. legs)</td>
<td>ku</td>
<td>naba</td>
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<tr>
<td>stretch out very straight (e.g. legs)</td>
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<td>nabisisa</td>
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<td>stretch to reach sth</td>
<td>ku</td>
<td>nanabetsa</td>
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<tr>
<td>stretch out</td>
<td>ku</td>
<td>wotlulla</td>
<td></td>
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<tr>
<td>strong, be —, be tight</td>
<td>ku</td>
<td>qina</td>
<td></td>
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<tr>
<td>stubbornness</td>
<td>--</td>
<td>ema nganga</td>
<td></td>
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<tr>
<td>stick</td>
<td>i</td>
<td>ti thûbha</td>
<td></td>
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<tr>
<td>stick to sth</td>
<td>ku</td>
<td>manamela</td>
<td></td>
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</tr>
<tr>
<td>stick sth to sth</td>
<td>ku</td>
<td>manamisa</td>
<td></td>
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</tr>
<tr>
<td>stick to *[tsh]</td>
<td>ku</td>
<td>ncamathela</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stick for fighting, sceptre of king/ruler</td>
<td>i</td>
<td>ti qalo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>storm</td>
<td>si</td>
<td>-- fifo</td>
<td>begisava &quot;I was just tasting&quot; ?T</td>
<td></td>
</tr>
<tr>
<td>stop, stand</td>
<td>ku</td>
<td>yema</td>
<td></td>
<td></td>
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<tr>
<td>start, beginning</td>
<td>i</td>
<td>ti</td>
<td>qalo</td>
<td></td>
</tr>
<tr>
<td>HH</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nLH</td>
<td>fifo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>still, just -sa-</td>
<td>H</td>
<td>t/a pref</td>
<td></td>
<td></td>
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<tr>
<td>stir</td>
<td>ku</td>
<td>fûlûwa</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>stir (e.g. coffee)</td>
<td>ku</td>
<td>tamisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stirring stick (for beer, papa)</td>
<td>li</td>
<td>ema phini</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>stock farmer</td>
<td>mu</td>
<td>eba fuyî</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>stomach work, make a child's —</td>
<td>ku</td>
<td>chata (&lt; Xh)</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stomach fat</td>
<td>mu</td>
<td>hlehlo</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>stomach</td>
<td>si</td>
<td>ti su</td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>stone (dim), small —</td>
<td>li</td>
<td>ema jwenyana</td>
<td>LLL</td>
<td>n</td>
</tr>
<tr>
<td>stone, rock</td>
<td>li</td>
<td>ema jwe</td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>stop treading</td>
<td>ku</td>
<td>nyatshulluka</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stop, stand</td>
<td>ku</td>
<td>yema</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>store with smn, ask smn to store</td>
<td>ku</td>
<td>gcinisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>storm</td>
<td>si</td>
<td>-- fifo</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>straighten, unbend</td>
<td>ku</td>
<td>gobulla</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stretch out straight (e.g. legs)</td>
<td>ku</td>
<td>naba</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stretch out very straight (e.g. legs)</td>
<td>ku</td>
<td>nabisisa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stretch to reach sth</td>
<td>ku</td>
<td>nanabetsa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>stretch out</td>
<td>ku</td>
<td>wotlulla</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>strong, be —, be tight</td>
<td>ku</td>
<td>qina</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>stubbornness</td>
<td>--</td>
<td>ema nganga</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>HH LH &quot;he is stubborn&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stuck tight, become</td>
<td>ku</td>
<td>hhaka</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>stuck together (lit. &quot;suck together&quot;), be</td>
<td>ku</td>
<td>mumana</td>
<td>H</td>
<td>v</td>
</tr>
</tbody>
</table>

1152
<p>| <strong>student</strong> | <strong>mu i eba</strong> | <strong>rûdwana</strong> | <strong>HLL</strong> | <strong>n</strong> |
| <strong>student, one being taught</strong> | <strong>mu i eba</strong> | <strong>rûdûwa</strong> | <strong>HLL</strong> | <strong>n</strong> |
| <strong>study, teach</strong> | <strong>ku</strong> | <strong>rûda</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>succeed</strong> | <strong>ku</strong> | <strong>adleka</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>succeed, come out on</strong> | <strong>ku</strong> | <strong>phumella</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>suck</strong> | <strong>ku</strong> | <strong>muma</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>suck (e.g. sweets)</strong> | <strong>ku</strong> | <strong>mumuna</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>suck to, give —, cause to suck(le)</strong> | <strong>ku</strong> | <strong>nyanyisa</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>suck, suckle on (mother's breast; sweets)</strong> | <strong>ku</strong> | <strong>nyanya</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>suddenness, suddenly</strong> | <strong>i</strong> | <strong>tshuhanyetsu</strong> | <strong>HHLL</strong> | <strong>n, adv</strong> |
| <strong>suffer injuries</strong> | <strong>ku</strong> | <strong>sinyeka</strong> | <strong>H</strong> | <strong>v</strong> |
| *<em>suffer, experience (pleasure, pain, happiness, <em>sadness)</em></em> | <strong>ku</strong> | <strong>viswa</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>summer</strong> | <strong>li</strong> | <strong>hlobo</strong> | <strong>LL</strong> | <strong>n</strong> |
| <strong>sun, day (24 hours); pl: days</strong> | <strong>li</strong> | <strong>ema</strong> | <strong>laga</strong> | <strong>LL</strong> | <strong>n</strong> |
| <strong>sun; pl: days</strong> | <strong>li</strong> | <strong>ema</strong> | <strong>laga</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>Sunday, on Sunday</strong> | <strong>ge</strong> | <strong>Cawe</strong> | <strong>HL</strong> | <strong>n, adv</strong> |
| <strong>sunlight, ray of —</strong> | <strong>li</strong> | <strong>hlaselî</strong> | <strong>HHL</strong> | <strong>n</strong> |
| <strong>swallow</strong> | <strong>ku</strong> | <strong>gwinya</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>sweat</strong> | <strong>ku</strong> | <strong>fûfûnelwa</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>sweep</strong> | <strong>ku</strong> | <strong>tshanyela</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>sweep for e.o.</strong> | <strong>ku</strong> | <strong>tshanyellana</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>swim</strong> | <strong>ku</strong> | <strong>dola</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>swing</strong> | <strong>ku</strong> | <strong>leketla</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>sword</strong> | <strong>i ti sabule</strong> | <strong>HLL</strong> | <strong>n</strong> |
| <strong>table</strong> | <strong>i ti</strong> | <strong>tafule</strong> | <strong>HLL</strong> | <strong>n</strong> |
| <strong>tail</strong> | <strong>mu</strong> | <strong>lîtsî</strong> | <strong>LH</strong> | <strong>n</strong> |
| <strong>take off blanket</strong> | <strong>ku</strong> | <strong>bhatshulla</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>take off clothes</strong> | <strong>ku</strong> | <strong>bhoshula</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>take skin off</strong> | <strong>ku</strong> | <strong>bûwa</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>take off clothes</strong> | <strong>ku</strong> | <strong>dzinulla</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>take out; cause</strong> | <strong>ku</strong> | <strong>khokha</strong> | <strong>L</strong> | <strong>v</strong> |
| <strong>take off</strong> | <strong>ku</strong> | <strong>khulla</strong> | <strong>H</strong> | <strong>v</strong> |
| <strong>take off (sheet), unroll</strong> | <strong>ku</strong> | <strong>kûpûlla</strong> | <strong>L</strong> | <strong>v</strong> |</p>
<table>
<thead>
<tr>
<th>English</th>
<th>Setswana</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>take off sheet (off body, bed), lid</td>
<td>ku</td>
<td>kwayulla</td>
<td>L  v</td>
</tr>
<tr>
<td>take down and put inside (e.g. clothes); put sheep (etc) into kraal, roll up</td>
<td>ku</td>
<td>photsha</td>
<td>L  v</td>
</tr>
<tr>
<td>take off fire if ready, dish up</td>
<td>ku</td>
<td>phula</td>
<td>L  v</td>
</tr>
<tr>
<td>tartar(ic), added to <em>lesheleshele</em> (Sotho) to turn it sour</td>
<td>i  ti</td>
<td>thatarîkî</td>
<td>LLLL  n</td>
</tr>
<tr>
<td>tax</td>
<td>i  ?</td>
<td>teks</td>
<td>H  n</td>
</tr>
<tr>
<td>tea (pl: different types)</td>
<td>i  ti</td>
<td>tiye</td>
<td>HL  n</td>
</tr>
<tr>
<td>teach (person or subject)</td>
<td>ku</td>
<td>rûdîsa</td>
<td>H  v</td>
</tr>
<tr>
<td>teach e.o.</td>
<td>ku</td>
<td>rûdîsana</td>
<td>H  v</td>
</tr>
<tr>
<td>teach</td>
<td>ku</td>
<td>thûda</td>
<td>H  v</td>
</tr>
<tr>
<td>teacher</td>
<td>mu  eba</td>
<td>rûdî</td>
<td>HL  n</td>
</tr>
<tr>
<td>teacher</td>
<td>mu  eba</td>
<td>sûwë</td>
<td>HL  n</td>
</tr>
<tr>
<td>teaching</td>
<td>i  ti</td>
<td>titjhere</td>
<td>HLL  n</td>
</tr>
<tr>
<td>teaching</td>
<td>i  ti</td>
<td>rûdo</td>
<td>LH  n</td>
</tr>
<tr>
<td>tear (of crying)</td>
<td>i  ti</td>
<td>nyebhetî</td>
<td>LLL  n</td>
</tr>
<tr>
<td>tell (smn about sth)</td>
<td>ku</td>
<td>jeta</td>
<td>H  v</td>
</tr>
<tr>
<td>tell e.o.</td>
<td>ku</td>
<td>jetana</td>
<td>H  v</td>
</tr>
<tr>
<td>tell intensely</td>
<td>ku</td>
<td>jetisisa</td>
<td>H  v</td>
</tr>
<tr>
<td>tell (cf. -jeta)</td>
<td>ku</td>
<td>jweta</td>
<td>H  v</td>
</tr>
<tr>
<td>tell</td>
<td>ku</td>
<td>tlalehela</td>
<td>H  v</td>
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<tr>
<td>temple</td>
<td>i  ti</td>
<td>tempeli</td>
<td>HHLL  n</td>
</tr>
<tr>
<td>temptation, attempt</td>
<td>mu  mi</td>
<td>ligo</td>
<td>LH  n</td>
</tr>
<tr>
<td>ten times</td>
<td>ka</td>
<td>lishume</td>
<td>LHH  adv</td>
</tr>
<tr>
<td>ten (cardinal numeral)</td>
<td>li  ema</td>
<td>shume</td>
<td>HH  adj</td>
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<td>testicle</td>
<td>li  ema</td>
<td>sedze</td>
<td>LL  n</td>
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<tr>
<td>thank</td>
<td>ku</td>
<td>lebuka</td>
<td>L  v</td>
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<tr>
<td>thank</td>
<td>ku</td>
<td>tangkisa</td>
<td>L  v</td>
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<td>that</td>
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<td>kutshi</td>
<td>HL  conj</td>
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<tr>
<td>thatch a roof</td>
<td>ku</td>
<td>fulela</td>
<td>H  v</td>
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<tr>
<td>English Description</td>
<td>Zulu</td>
<td>Meaning</td>
<td>Part of Speech</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>thatching grass, thinner sp of —</td>
<td>mu</td>
<td>hluma</td>
<td>HH n</td>
</tr>
<tr>
<td>thatching material (plaited)</td>
<td>i</td>
<td>kgadi</td>
<td>LH n</td>
</tr>
<tr>
<td>thatching grass, a thicker sp of — (specimens from Sgx)</td>
<td>i</td>
<td>qokwa</td>
<td>LH n</td>
</tr>
<tr>
<td>then (?...)</td>
<td>ka</td>
<td>loku</td>
<td>HL adv</td>
</tr>
<tr>
<td>then, and then</td>
<td></td>
<td>ibitiê</td>
<td>? conj</td>
</tr>
<tr>
<td>there a little, be —, be just a few</td>
<td></td>
<td>konanyana</td>
<td>LLLL rel, dem cop</td>
</tr>
<tr>
<td>there (dem: 2nd pos)</td>
<td></td>
<td>lhakho</td>
<td>HL adv</td>
</tr>
<tr>
<td>there, over —</td>
<td></td>
<td>galhe</td>
<td>HH adv</td>
</tr>
<tr>
<td>there, be —, be present</td>
<td></td>
<td>kona</td>
<td>LL rel, dem cop</td>
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<tr>
<td>there, over — (dem: 3rd position)</td>
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<td>lhakhaya</td>
<td>LHF adv</td>
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<tr>
<td>thigh</td>
<td>si</td>
<td>ti</td>
<td>rubhi</td>
</tr>
<tr>
<td>thin, become —</td>
<td>ku</td>
<td>wodza</td>
<td>H v</td>
</tr>
<tr>
<td>thing</td>
<td>i</td>
<td>ti</td>
<td>tfo</td>
</tr>
<tr>
<td>thing, the main —</td>
<td>i</td>
<td>ti</td>
<td>dzabadzaba</td>
</tr>
<tr>
<td>think</td>
<td>ku</td>
<td>ciga</td>
<td>L v</td>
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<tr>
<td>think clearly</td>
<td>ku</td>
<td>cigisisa</td>
<td>L v</td>
</tr>
<tr>
<td>think (+COP = ...that it is)</td>
<td></td>
<td>gabha</td>
<td>HL ideo</td>
</tr>
<tr>
<td>think</td>
<td>ku</td>
<td>nahana</td>
<td>L v</td>
</tr>
<tr>
<td>think</td>
<td>ku</td>
<td>nakana</td>
<td>L v</td>
</tr>
<tr>
<td>think deeply, meditate, be pensive</td>
<td>ku</td>
<td>towûta</td>
<td>H v</td>
</tr>
<tr>
<td>thirsty, become —</td>
<td>ku</td>
<td>nyorwa</td>
<td>H v</td>
</tr>
<tr>
<td>thought</td>
<td>mu</td>
<td>mi</td>
<td>khubhulo</td>
</tr>
<tr>
<td>thousand (1000)</td>
<td>si</td>
<td>ti</td>
<td>kiti</td>
</tr>
<tr>
<td>three days ago (i.e. day before day before yesterday)</td>
<td></td>
<td>malubeni</td>
<td>LLHL adv</td>
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<td>three</td>
<td></td>
<td>tshatfu</td>
<td>HH adv</td>
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<td>English</td>
<td>Zulu</td>
<td>Part of Speech</td>
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<td>---------</td>
<td>------</td>
<td>----------------</td>
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<tr>
<td>three times</td>
<td>ka</td>
<td>tshatfu</td>
<td>HL adj</td>
</tr>
<tr>
<td>throat</td>
<td>mu</td>
<td>mito</td>
<td>LL n</td>
</tr>
<tr>
<td>throne</td>
<td>i</td>
<td>tironi</td>
<td>LHL n</td>
</tr>
<tr>
<td>throw (eg. stone)</td>
<td>ku</td>
<td>betsa</td>
<td>L v</td>
</tr>
<tr>
<td>throw (all at once) into</td>
<td>ku</td>
<td>betsela</td>
<td>L v</td>
</tr>
<tr>
<td>throw away, miss</td>
<td>ku</td>
<td>lahla</td>
<td>H v</td>
</tr>
<tr>
<td>throw at (person/thing being thrown at is unaware)</td>
<td>ku</td>
<td>tjukutjela</td>
<td>L v</td>
</tr>
<tr>
<td>throw at (person/thing being thrown at is aware/expecting it, e.g. throwing a ball to one another)</td>
<td>ku</td>
<td>tjukutjella</td>
<td>L v</td>
</tr>
<tr>
<td>throw at e.o.</td>
<td>ku</td>
<td>tjukutjellana</td>
<td>L v</td>
</tr>
<tr>
<td>throw at, cause e.o. to —</td>
<td>ku</td>
<td>tjukutjellanisa</td>
<td>L v</td>
</tr>
<tr>
<td>thunder</td>
<td>ku</td>
<td>dûdûma</td>
<td>L v</td>
</tr>
<tr>
<td>thunder</td>
<td>ku</td>
<td>dûma</td>
<td>L v</td>
</tr>
<tr>
<td>Thursday, on Thursday</td>
<td>ga</td>
<td>Lebune</td>
<td>HHL n, adv</td>
</tr>
<tr>
<td>tie up</td>
<td>ku</td>
<td>fasa</td>
<td>H v</td>
</tr>
<tr>
<td>tie up tightly</td>
<td>ku</td>
<td>fasella</td>
<td>H v</td>
</tr>
<tr>
<td>tie up, e.g. with rope</td>
<td>ku</td>
<td>harela</td>
<td>L v</td>
</tr>
<tr>
<td>tie e.o. up, curl (e.g. hair)</td>
<td>ku</td>
<td>harelana</td>
<td>L v</td>
</tr>
<tr>
<td>tie up (e.g. horse, cow)</td>
<td>ku</td>
<td>kghata</td>
<td>H v</td>
</tr>
<tr>
<td>tie up, tie around</td>
<td>ku</td>
<td>tantela</td>
<td>H v</td>
</tr>
<tr>
<td>tie up</td>
<td>ku</td>
<td>tlama</td>
<td>H v</td>
</tr>
<tr>
<td>time</td>
<td>i</td>
<td>nako</td>
<td>LL n</td>
</tr>
<tr>
<td>time, turn, chance, go</td>
<td>li</td>
<td>ema</td>
<td>LL n</td>
</tr>
<tr>
<td>tin, little — of sth (e.g. beer, coke)</td>
<td>mu</td>
<td>tintolo</td>
<td>HHHL n</td>
</tr>
<tr>
<td>tired, become —</td>
<td>ku</td>
<td>khatshala</td>
<td>H v</td>
</tr>
<tr>
<td>tiredness (pl = of many people)</td>
<td>mu</td>
<td>khatshala</td>
<td>HLH n</td>
</tr>
<tr>
<td>to wish for e.o., cause e.o. —</td>
<td>ku</td>
<td>lagatelisana</td>
<td>H v</td>
</tr>
<tr>
<td>today</td>
<td>namhlajhë</td>
<td>HHLH adv</td>
<td></td>
</tr>
<tr>
<td>together (with: lha-)</td>
<td>kunye</td>
<td>LL adv</td>
<td></td>
</tr>
<tr>
<td>together (with: lha-)</td>
<td>moho</td>
<td>HH adv</td>
<td></td>
</tr>
<tr>
<td>tomorrow</td>
<td>gemuso</td>
<td>LHH adv</td>
<td></td>
</tr>
<tr>
<td>tomorrow</td>
<td>kusasa</td>
<td>LHH adv</td>
<td></td>
</tr>
<tr>
<td>tomorrow, day after —</td>
<td>gemusweni</td>
<td>LHHL</td>
<td>adv</td>
</tr>
<tr>
<td>-----------------------</td>
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</tr>
<tr>
<td>tongue</td>
<td>li</td>
<td>ema</td>
<td>limi</td>
</tr>
<tr>
<td>tooth</td>
<td>li</td>
<td>ema</td>
<td>tînyo</td>
</tr>
<tr>
<td>top of, on —</td>
<td>tûlû kwa-</td>
<td>LL</td>
<td>H</td>
</tr>
<tr>
<td>top layer of sth</td>
<td>wabhi</td>
<td>LL</td>
<td>n</td>
</tr>
<tr>
<td>traditional doctor (man)</td>
<td>li</td>
<td>ema</td>
<td>gqikga</td>
</tr>
<tr>
<td>traditional beer; pl:</td>
<td>jwala</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>different pots of beer</td>
<td>khwëtha</td>
<td>LH</td>
<td>n</td>
</tr>
<tr>
<td>traditional doctor (woman)</td>
<td>i</td>
<td>ti</td>
<td>khabho</td>
</tr>
<tr>
<td>travel(s)</td>
<td>mu</td>
<td>mi</td>
<td>khabho</td>
</tr>
<tr>
<td>traveller</td>
<td>mu</td>
<td>eba</td>
<td>yedzî</td>
</tr>
<tr>
<td>tread</td>
<td>ku</td>
<td>nyatshela</td>
<td>L</td>
</tr>
<tr>
<td>treading on, stop —</td>
<td>kgatuka</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>tree</td>
<td>si</td>
<td>ti</td>
<td>phadze</td>
</tr>
<tr>
<td>trespass, sin</td>
<td>sidzela</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>tribe</td>
<td>si</td>
<td>tjhaba</td>
<td>LL</td>
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<tr>
<td>trickery</td>
<td>nkgani</td>
<td>LHL</td>
<td>n</td>
</tr>
<tr>
<td>trousers (pl: pairs of trousers)</td>
<td>lûkgwe</td>
<td>HL</td>
<td>n</td>
</tr>
<tr>
<td>trust e.o.</td>
<td>tshebhana</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>trustworthiness, honesty</td>
<td>tshebhakalo</td>
<td>L</td>
<td>n</td>
</tr>
<tr>
<td>trustworthy, be —, honest</td>
<td>tshebhakala</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>try, tempt</td>
<td>liga</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>try out for [also ?aux vb: &quot;continue&quot; + inf *Sgx]</td>
<td>ligela</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>Tuesday, on Tuesday</td>
<td>Lebûnûni</td>
<td>HHLH</td>
<td>n, adv</td>
</tr>
<tr>
<td>turn inside out</td>
<td>hlanukela</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>turn aside, err</td>
<td>kgheluka</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>turn</td>
<td>pöta</td>
<td>H</td>
<td>v</td>
</tr>
<tr>
<td>turn</td>
<td>thînya</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>twice</td>
<td>bînî</td>
<td>LH</td>
<td>adv</td>
</tr>
<tr>
<td>twin</td>
<td>phahla</td>
<td>HH</td>
<td>n</td>
</tr>
<tr>
<td>twitch</td>
<td>teketsa</td>
<td>L</td>
<td>v</td>
</tr>
<tr>
<td>English</td>
<td>Setswana</td>
<td>Part of Speech</td>
<td>Notes</td>
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<tr>
<td>two</td>
<td>bînî</td>
<td>LH adj</td>
<td></td>
</tr>
<tr>
<td>umbrella</td>
<td>s'hî</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>uncle, maternal —</td>
<td>ol'o'</td>
<td>LHH n</td>
<td></td>
</tr>
<tr>
<td>uncle, paternal —</td>
<td>ol'o'</td>
<td>LHLH n</td>
<td></td>
</tr>
<tr>
<td>underpants</td>
<td>u'tî</td>
<td>HLHL n</td>
<td></td>
</tr>
<tr>
<td>understand</td>
<td>ku'ti</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>undo, unpick, unravel</td>
<td>ku'yetulla</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>(e.g. Sotho straw hat)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>unroll</td>
<td>ku'minulla</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>unroll for e.o.</td>
<td>ku'minullelana</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>unroll</td>
<td>ku'phutshulla</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>unroll</td>
<td>ku'rhólulla</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>unroll for</td>
<td>ku'rhólullela</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>unroll for e.o.</td>
<td>ku'rhólullelana</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>unroll, take out from under</td>
<td>ku'kûpûlla</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>unrolled, become —, come off</td>
<td>ku'kûpûlluka</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>unroller, one who unrolls</td>
<td>mu'kûpûllî</td>
<td>HHLL n</td>
<td></td>
</tr>
<tr>
<td>untie (eg. shoelace)</td>
<td>ku'fasulla</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>untie (eg. shoelace)</td>
<td>ku'tlamulla</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>us, we [for emphasis]</td>
<td></td>
<td>LH abs pro</td>
<td>Cf. Chapter 2 §2.2.2.1</td>
</tr>
<tr>
<td>use</td>
<td>ku'sebetisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>used to, be —</td>
<td>ku'qhêla</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>used to, be —</td>
<td>ku'tlwayela</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>vagina</td>
<td>i'nywana</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>valley</td>
<td>i'kgholo</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>valley</td>
<td>i'phûla</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>valley</td>
<td>mu'sîma</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>vegetable</td>
<td>mu'fîno</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>very, a lot</td>
<td>ka'kgulu</td>
<td>HH adv</td>
<td></td>
</tr>
<tr>
<td>vetkoek, fried dough</td>
<td>li'gwinya</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>village, homestead</td>
<td>mu'tî</td>
<td>L n</td>
<td></td>
</tr>
<tr>
<td>visible be —, be clearly seen</td>
<td>ku'bonakala</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>visible, make —, make clearly</td>
<td>ku'bonakalisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>seen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visible, be —, be clearly seen</td>
<td>i'ti'bonakalo</td>
<td>HHLL n</td>
<td></td>
</tr>
<tr>
<td>visit</td>
<td>ku'khabhella</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>voice</td>
<td>li'vi</td>
<td>H n</td>
<td></td>
</tr>
<tr>
<td>vomit</td>
<td>ku'hïlata</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>vulture</td>
<td>li'dlaga</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>Xhosa</td>
<td>Pedi</td>
<td>Shona</td>
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<td>------------------</td>
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<tr>
<td>waist</td>
<td>li ema thega</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>wake up suddenly</td>
<td>ku phaphama</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>wake up (vi)</td>
<td>ku vuka</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>wake up</td>
<td>ku vusa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>walk, go</td>
<td>ku khabha</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>walk, just take a —, go (for oneself) [with -ti-rfx]</td>
<td>ku khabhela</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>walk, teach to —; cause to go to toilet (eg. of laxatives)</td>
<td>ku khabhisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>walking stick</td>
<td>li ema gogodlelo</td>
<td>LHLL n</td>
<td></td>
</tr>
<tr>
<td>wall</td>
<td>li ema budza</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>want</td>
<td>ku funa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>want / search frantically</td>
<td>ku funaga</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>want (...very much to do sth)</td>
<td>ku kghala</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>want sth badly</td>
<td>ku kghalla</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>warm up</td>
<td>ku futhumeta</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>wash whole body (vs. -hleta: cd be just a part)</td>
<td>ku dula</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>wash</td>
<td>ku hlata</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>wash hands</td>
<td>ku ngcola</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>wasp</td>
<td>bu nyovu</td>
<td>HL n</td>
<td></td>
</tr>
<tr>
<td>waste, destroy</td>
<td>ku sinya</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>watch out for e.o., flee e.o.</td>
<td>ku balekana</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>watch</td>
<td>ku libhella</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>watch out for, keep watch over</td>
<td>ku lidza</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>watch out for</td>
<td>ku limkela</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>watching, e.g. watching smn hide sth</td>
<td>i ti vello</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>-- em ati</td>
<td>LH n</td>
<td></td>
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<tr>
<td>weak, become — with hunger, bad news</td>
<td>ku sarela</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>wedding</td>
<td>i ti teko</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>Wednesday, on Wednesday</td>
<td>ga Lebutshatu</td>
<td>HLHH n, adv</td>
<td></td>
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<tr>
<td>weeds</td>
<td>li ema khula</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>weeds; pl: different types of weeds</td>
<td>li ema khula</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>week</td>
<td>i ti cawe</td>
<td>HL n</td>
<td></td>
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<tr>
<td>English</td>
<td>Xhosa</td>
<td>Xhosa</td>
<td>Xhosa</td>
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<tr>
<td>welcome e.o.</td>
<td>ku</td>
<td>yamukelana</td>
<td>L</td>
</tr>
<tr>
<td>well, nicely</td>
<td>kaku</td>
<td>hle</td>
<td>H</td>
</tr>
<tr>
<td>well, get —, better</td>
<td>ku</td>
<td>phola</td>
<td>H</td>
</tr>
<tr>
<td>welt (from being beaten)</td>
<td>mu</td>
<td>dvwa</td>
<td>H</td>
</tr>
<tr>
<td>west</td>
<td>bu</td>
<td>phîrîma</td>
<td>HLL</td>
</tr>
<tr>
<td>wet (cf. water)</td>
<td></td>
<td>mhati</td>
<td>HL</td>
</tr>
<tr>
<td>what kind of...? [cf -ni]</td>
<td></td>
<td>mni</td>
<td>LH</td>
</tr>
<tr>
<td>what kind of...?</td>
<td></td>
<td>ni</td>
<td>H</td>
</tr>
<tr>
<td>what's-his-name</td>
<td>bo</td>
<td>nyewu</td>
<td>HL</td>
</tr>
<tr>
<td>when</td>
<td></td>
<td>lha</td>
<td>H</td>
</tr>
<tr>
<td>whenever</td>
<td></td>
<td>lhanini (tejhe)</td>
<td>LHH</td>
</tr>
<tr>
<td>wherever</td>
<td></td>
<td>lhakekhi</td>
<td>LHH</td>
</tr>
<tr>
<td>which side? / which place? / where?</td>
<td></td>
<td>nxa yikhî</td>
<td>v</td>
</tr>
<tr>
<td>which?</td>
<td></td>
<td>khi</td>
<td>H</td>
</tr>
<tr>
<td>whip (sjambok)</td>
<td>si</td>
<td>phalî</td>
<td>HL</td>
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<tr>
<td>whistle</td>
<td>i</td>
<td>phala</td>
<td>HH</td>
</tr>
<tr>
<td>who</td>
<td>bo</td>
<td>bani</td>
<td>LH</td>
</tr>
<tr>
<td>whoever</td>
<td></td>
<td>lhabani</td>
<td>LHH</td>
</tr>
<tr>
<td>wind; spirit</td>
<td>m</td>
<td>--</td>
<td>moya</td>
</tr>
<tr>
<td>wing</td>
<td>li</td>
<td>phiko</td>
<td>?</td>
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<tr>
<td>winter</td>
<td>--</td>
<td>riya</td>
<td>HH</td>
</tr>
<tr>
<td>wish sth for smn</td>
<td>ku</td>
<td>lagatella</td>
<td>H</td>
</tr>
<tr>
<td>wish for e.o., eg. Xmas, birthday, health</td>
<td>ku</td>
<td>lagatellana</td>
<td>H</td>
</tr>
<tr>
<td>wish for e.o., cause to —</td>
<td>ku</td>
<td>lagatellilansa</td>
<td>H</td>
</tr>
<tr>
<td>wish, (also: want [to fight with]), envy</td>
<td>ku</td>
<td>lagata</td>
<td>H</td>
</tr>
<tr>
<td>wish, cause to —</td>
<td>ku</td>
<td>lagatellisa</td>
<td>L</td>
</tr>
<tr>
<td>witness</td>
<td>ku</td>
<td>paka</td>
<td>L</td>
</tr>
<tr>
<td>Wolf, Mr Wolf (folk story)</td>
<td></td>
<td>mbolöfö, mbolufo</td>
<td>HLH</td>
</tr>
<tr>
<td>woman, wife</td>
<td>u</td>
<td>eba</td>
<td>fati</td>
</tr>
<tr>
<td>womb</td>
<td>i</td>
<td>tî</td>
<td>pupelo</td>
</tr>
<tr>
<td>wood together for fire, put —; Dal. also = cook on fire (e.g. meat)</td>
<td>ku</td>
<td>basa</td>
<td>L</td>
</tr>
<tr>
<td>Expression</td>
<td>Bantu</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------</td>
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<td></td>
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<tr>
<td>wood (mass noun)</td>
<td>ti, kguni</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>wood, piece of —; pl: (ti-, ema-) pieces of —</td>
<td>li, ema, ti, kguni</td>
<td>HH n</td>
<td></td>
</tr>
<tr>
<td>work</td>
<td>ku, sebeta</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>work for e.o.</td>
<td>ku, sebetellana</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>worker</td>
<td>mu, eba, sebetî</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>wound</td>
<td>li, nqeba</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>wrist</td>
<td>li, ema, nugu</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>write</td>
<td>ku, ngola</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>writer</td>
<td>mu, eba, ngoli</td>
<td>HL n</td>
<td></td>
</tr>
<tr>
<td>wrong, be — [+ obj pref], miss sth</td>
<td>ku, dlayila</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>wrong, be —, be mistaken</td>
<td>ku, fosa</td>
<td>L v</td>
<td></td>
</tr>
<tr>
<td>Xhosa person</td>
<td>mu, eba, goni</td>
<td>LH n</td>
<td></td>
</tr>
<tr>
<td>yawn</td>
<td>ku, tabula</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>yawn, be open</td>
<td>ku, khamisa</td>
<td>H v</td>
<td></td>
</tr>
<tr>
<td>year; spring (season)</td>
<td>si, ti, limo</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>yesterday</td>
<td>i, tolo</td>
<td>LL adv</td>
<td></td>
</tr>
<tr>
<td>yesterday, day before —</td>
<td></td>
<td>LLL adv</td>
<td></td>
</tr>
<tr>
<td>you [for emphasis]</td>
<td>wena</td>
<td>LH abs pro</td>
<td></td>
</tr>
<tr>
<td>young man (offhand, patronising, derogatory)</td>
<td>u, eba, fwana</td>
<td>LL n</td>
<td></td>
</tr>
<tr>
<td>young (offspring) of any animal</td>
<td>li, ema, tinyani</td>
<td>HLL n</td>
<td></td>
</tr>
<tr>
<td>zinc sheeting, piece of —</td>
<td>li, ema, zenke</td>
<td>LHL n</td>
<td></td>
</tr>
<tr>
<td>Zulu person</td>
<td>mu, ema, zulu</td>
<td>LL n</td>
<td></td>
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</tbody>
</table>
Author’s Biography

Simon Donnelly was born in Cape Town, South Africa, on February 21, 1968. He graduated from the University of Cape Town in 1988 with a Bachelor of Arts degree in Linguistics and Xhosa. He gained a BA Honours degree from the same university in 1990. In the same year Donnelly began graduate studies in Champaign, Illinois. In 1992, he completed a Master’s degree in Linguistics at the University of Illinois at Urbana-Champaign. Donnelly spent 1994-1995 in South Africa and Lesotho, gathering field data from Mpapa and Sigxodo villages in Lesotho for his doctoral dissertation. In January 1998, Donnelly successfully defended his Ph.D. at the University of Illinois. He returned to South Africa, to Johannesburg, to lecture in Linguistics at the University of the Witwatersrand. In 2003, Donnelly moved to Rome, Italy, to commence priestly studies in philosophy and theology at the Pontifical Gregorian University. In 2008, he will commence Licentiate studies in Sacred Scripture at the Pontifical Biblical Institute, Rome. He will be ordained deacon, then priest, and will subsequently return to live and work in the Archdiocese of Johannesburg, South Africa.