CONSTRAINTS ON SUBJECTS

AN OPTIMALITY THEORETIC ANALYSIS

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ABSTRACT OF THE DISSERTATION

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Dissertation Director:

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This dissertation argues for an Optimality Theoretic analysis of null subjecthood, subject inversion, agreement and structural case assignment. It does so on the basis of the hypothesis that an analysis in terms of the interaction of violable, conflicting constraints adds to the deductive structure of linguistic explanations while simplifying the definition of the relevant syntactic modules.

Among the most relevant results is a unified analysis of the crosslinguistic and language-internal distribution of null and inverted subjects. An initial investigation shows that subjects are null when referring to antecedents with topic status, and inverted when focused, a result formalized through the constraints DROPTOPIC and ALIGNFOCUS. The interaction between these constraints and the constraints SUBJECT and PARSE, favoring subjects in preverbal subject position, determines the distribution of null subjects language-internally and crosslinguistically, eliminating the need for an independent pro-drop parameter (Grimshaw & Samek-Lodovici 1995).

A second result concerns expletives, whose language specific inventories are shown to follow to a high degree from the interaction between the above constraints and FULL-INT, a constraint requiring that all constituents be interpreted. This shows that expletive inventories can be derived by way of grammar, with no recourse to lexical stipulation (Prince & Smolensky 1993, Grimshaw 1995, Grimshaw & Samek-Lodovici 1995). The analysis also predicts the universal ban on overt expletives in null subject languages.

A similar result is pursued with respect to agreement, which is derived by means of three general agreement constraint-schemata.

Finally, the position of subjects and their case assignment configuration in Italian declaratives, gerundives and subjunctives are derived from the interaction between CASEGOV, a constraint requiring case assignment under proper government, and the other constraints of UG. Once reranked, the same constraints derive declaratives in Arabic and infinitivals with overt subjects in English and Portuguese, with no appeal to a parametric account of abstract case assignment.

Crucially, the analysis of crosslinguistic variation consistently turns out to be closely tied with the analysis of language-internal variation, as predicted by an Optimality Theoretic approach to Syntax.

To Alessandro, Lorenzo, Marco, Emanuela, Pinuccia ed Emilio

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(NB: Due to reformatting, page numbers in this copy of the dissertation
do not match those of the official manuscript filed at Rutgers University).

Introduction

What follows is a brief description of the content of each chapter. A more informative presentation can be found at the beginning of each chapter.

Chapter 1 provides a brief introduction to OT and lays out the main assumptions underlying the OT model of syntax presented in this dissertation.

Chapter 2 begins examining the distribution of null subjects in a variety of languages, showing that null subjects must be licensed by a discourse antecedent with topic status. On the basis of this observation, I develop an OT analysis of the distribution of null subjects in Italian and English. The analysis is then shown to predict aspects of the distribution of expletives in the two languages. The last part of the chapter compares the OT analysis with other relevant analyses of null subjecthood.

Chapter 3 begins examining the distribution of inverted subjects in Italian, claiming that they are instances of a more general phenomenon of structural focus, requiring contrastively focused constituents to occur in VP-adjoined position. On the basis of this observation, I develop an OT analysis of subject inversion in Italian and English involving to a great extent the same constraints used in the analysis of null subjects. The analysis is then extended to structural focus in Chadic languages, and in Kanakuru in particular, which is brought forth as evidence for the universal status of UG constraints.

Chapter 4 begins with an analysis of agreement in a variety of null subject languages, observing that agreement under a c-command configuration is never richer in agreement features than agreement with subjects under a spec-head configuration. An OT analysis of agreement under c--command deriving the above generalization is then developed.

Chapter 5 develops an OT analysis of case assignment, arguing that variation in case-assignment configuration within and across languages follows from the interaction between a constraint requiring that case be assigned under proper-government and the other constraints of UG, including those presented in previous chapters. The chapters analyzes variation in case-assignment configuration within Italian, examining declaratives, aux-to-comp gerundives, and complementizer alternations in conditional subjunctives. It then contrasts Italian declaratives to Standard Arabic declaratives, showing how the latter follow directly from constraint reranking. Finally, constraint

reranking is also shown to derive the contrast between Italian, Portuguese and English in the analysis of infinitivals with overt subjects.

Chapter 6 recapitulates the main results of this dissertation, discussing how they support an OT perspective on syntax, and making the relevant comparisons with the Principles and Parameters and Minimalism frameworks.

1. Basic Assumptions

This chapter lays down the assumptions underlying the OT model of syntax proposed in this dissertation. The motivation and evidence in favor of this model is discussed in detail in the following chapters.

1.1. Basics of Optimality Theory

In the OT framework (Prince and Smolensky 1993), UG is modeled as a finite set of universal constraints of grammaticality. The constraints are violable and potentially in conflict with each other. Grammars are defined as hierarchies of UG constraints. Each hierarchy is a total order on the constraints in UG. The hierarchy determines how to solve conflicts between constraints: in absence of conflicts with other higher constraints, among two conflicting constraints a grammatical structure will always satisfy the highest ranked constraint, and violate the lowest ranked one.

As in minimalism (Chomsky 1993), grammaticality is determined transderivationally. Structural derivations compete with each other for grammaticality. Each competition is in relation to a specific grammar and with respect to an input whose main function is to supply the set of lexical items and the argument relations among them (Grimshaw 1993, 1995). The grammatical candidate with respect to a grammar G_m (i.e. a constraint-hierarchy G_m), and an input i is that candidate which satisfies G_m optimally when assessed in relation to i. All candidates which are suboptimal are ungrammatical (Prince and Smolensky 1993).

The overall schema of the OT model follows the schema below, based on Prince and Smolensky (1993) and McCarthy and Prince (1993).

(1) - GEN(input$_i$) = {cand$_1$, cand$_2$, ...}
     - EVAL({cand$_1$, cand$_2$, ...}, input$_i$, G$_m$) → cand$_k$ (..., cand$_h$,.....).

The function GEN determines the set of competing candidate-structures. Each candidate is an extended projection, as defined in Grimshaw (1991). The function EVAL takes each member in the candidate set and evaluates it with respect to the input and

the specific ranking of UG constraints G_m. EVAL returns the structure or structures which is or are optimal relative to the fed input and grammar.

Different inputs yield different optimal forms, and therefore there is no risk that one sentence be *the* optimal sentence of a language, making all other sentences ungrammatical and reducing the set of grammatical sentences to a singleton (cf. the *ba* argument; Chomsky 1995:380). Conversely, different grammars may select different optimal structures for the same input, providing a source for crosslinguistic variation.

Intuitively, the grammatical structure returned by EVAL is that syntactic realization of a given input which is most in harmony with the constraints of UG under the ranking provided by a given grammar.

Notice that in and of itself violating one or more constraints does not make a structure ungrammatical. Only the existence of a more harmonic structure does. Nevertheless, constraint violation is strictly restricted by the nature of the system. Failing a constraint is fatal whenever there exists another candidate that performs equally well on each higher constraint and satisfies the constraint at issue as well. This entails that a grammatical structure will fail a constraint only in two cases: (i) when satisfaction of the constraint implies the failure of a higher ranked constraint, which would imply a less harmonic status overall; (ii) when satisfying the constraint is actually impossible and therefore when no competitor satisfies it, a situation that occurs rarely and only under specific inputs. Summarizing, we see that constraint violation is not free, but rather it occurs only where necessary.

1.2. GENerating the Set of Competing Candidates

Ideally, the set of competing structures generated by GEN should be invariant across inputs, to avoid encoding in GEN grammatical conditions that should instead follow from the interaction of the constraints of UG. However, as the next section on inputs will clarify, the definition of how candidate structures relate to inputs has the effect of making specific structures illegitimate candidates for specific inputs. To keep separate the input dependent and input independent parts of GEN, I split its definition in two components. The first is the input independent function *Gen$_f$*, which generates the set S of all conceivable phrase structures. The second is a filtering component, further

discussed in the following sections, constituted by a small set of principles, some dependent on the input and some not, which determine the final candidate set by eliminating from S any structure that violate them.

The basic component *Gen_f* is formally characterized as generating the maximal set of extended projections that can be constructed by applying the following five operations zero or more times (cf. Chomsky 1992's computational system).

(i) <u>Project</u>(X): this operation takes a lexical element X and projects it into an X'-theory-abiding projection. For example, a VP headed by the lexical head *run* can be built out of the verbal head *run*. The same operation can also be applied to a functional element: for example, a determiner could be projected into a DP projection.

The maximal projection being built can have one or more XP segments at its top, providing zero or more potential adjunction sites.

(ii) <u>Compose</u>(X,Y): this operation composes projections together. The result must be structure-preserving (Chomsky 1986b, Emonds 1976), i.e. heads can only be head-adjoined, and maximal projections can only be parsed as complements, specifiers or adjuncts. For example, the DP *John* could be parsed into the specifier position of the VP headed by *like*. However, it could also be parsed into the complement position of V, or in VP adjoined position.

The operation Compose also composes together functional and lexical projections. For example, a TP headed by T° could take the VP projected by *run* as its complement. The result is an extended verbal projection in the sense of Grimshaw (1991).

(iii) <u>Move-α</u>(Y): any constituent, whether a maximal projection or a head, can be moved from one position to another, leaving a trace behind. The result must be structure-preserving.

(iv) <u>Case-assign</u>: the above operations may insert in the phrase marker assigners of structural case, such as finite Tense assigning nominative case, or transitive verbs assigning accusative case, and so on. Structural case is discharged to the closest available case-assignee, as defined in section 5.2.1.

(v) <u>Agree</u>: I assume that syntactic heads may contain any combination of person, number and gender features. When present, agreement features are necessarily coindexed with a nominal constituent, and match its agreement specification, i.e. that of its lexical head (the actual coindexation device is further clarified in section 1.5). Among the possible competitors, there will thus be structures with heads that don't host any agreement features and thus do not display agreement; structures with inflectional heads hosting only some agreement features and therefore displaying only limited agreement; and structures with inflectional heads hosting all the features, displaying full agreement.

1.2.1. Structurally Unrealized Null Subjects

An important qualification must be added concerning the availability of phonetically null but structurally present items, such as *pro*, *pro_expl* and *PRO* proposed by Chomsky (1981, 1982) and hence onwards used in most generative linguistic analyses. I take the position that UG lacks such elements. I will maintain that structures that have been analyzed as involving *pro*, *pro_expl* or *PRO* in subject position are actually structures lacking a structurally realized subject. For example, clauses which have been analyzed as having a *pro*, *pro_expl* or *PRO* in specIP position will turn out to have a structure like that in (2) below, lacking an overt structural representation of the specifier of IP.

(2)
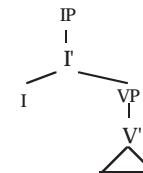
Another conceivable structure with null phonological import is that of a radically empty head. I assume that this kind of head and the implied totally contentless projections, like the XP in the specIP position of (3) below, are not possible.

(3)
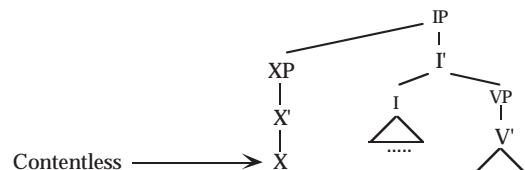
The prohibition is formalized through the following input-independent principle, the first of the filtering component of GEN, which applies to the output of *Gen_f* and filters out structures containing contentless projections.

(4) Obligatory Content: candidate structures may not contain contentless XPs.

The above principle does not rule out a projection with a contentless head when this is part of a contentful extended projection. For example, the XP projection in (5) below, though projected from a contentless empty head X^0, does not fail the principle of Obligatory Content, because, by being part of an extended projection, the XP shares all the features of the extended projection's lexical head, which according to Grimshaw (1991) are available throughout the extended projection. Though not projected from its local head, the XP thus has content, and thus satisfies Obligatory Content.[1]

(5)

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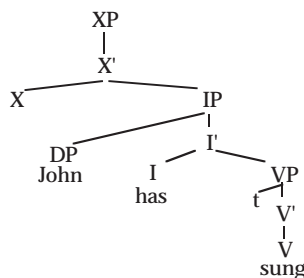
[1] A degenerate case occurs when all the projections of an extended projection are contentless. Then no projection is contentful since there are no heads contributing features to the whole extended projection. In this case, all projections violate Obligatory Content. For example, if the IP and VP in (6) where also contentless they and the top XP would all violate Obligatory Content, and participating in an extended projection would not rescue any of them.

The above discussion raises the issue of whether a contentful specifier is sufficient to grant content to an otherwise contentless projections by having its features percolating into the XP-node of the contentless projection; see (6) below.

(6)
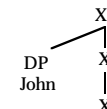
Since features cannot percolate across the boundary of extended projections, such structures fail Obligatory Content and are therefore excluded too.

Obligatory Content diverges from Grimshaw's (1993) constraint Minimal Projection, which is violated by projections making no contribution to their extended projection, and also from Grimshaw's (1993, 1995) constraint ObHd, which is violated by a projection with contentless heads. In fact, Obligatory Content is an inviolable principle rather than a violable constraint. Moreover, as we saw, it still allows for contentless heads if their projections participate to a (contentful) extended projection, whereas Grimshaw's constraints would be violated in such cases (provided the projections were also specifierless). For the same reason, Obligatory Content also differs from the position taken in Bakovic (1995), where ObHd is an inviolable principle ruling out even those empty-headed projections that are licensed by feature-percolation under Obligatory Content.

Notice that Obligatory Content does not rule out a candidate totally devoid of structure such as the null-structure candidate shown in (7). Since no projection is involved, the null structure candidate satisfies Obligatory Content vacuously, and is thus a legitimate candidate.

(7) the null structure candidate: [ ]

Finally, it is worth pointing out that structural non-realization of the specIP node is also proposed in Bresnan (1994), within the LFG framework, which shares with the OT

model proposed here the hypothesis that phrase-structures are associated with an explicit representation of their argument structure (a-structure in LFG, inputs in OT syntax). However, LFG also postulates an additional f-structure component, whose primitives are grammatical relations like subject, object, predicate. This component is absent in the OT model proposed here. Thus, this work can also be seen as an investigation on whether the explicit representation of functional relations is necessary, or whether it is inferable from a sentence's constituent- and argument-structure.

1.2.2. The Role of the Lexicon

Under the definition of *Gen$_f$* just provided, different lexicons give rise to distinct candidate sets languagewise. There is a trivial and a less trivial sense in which this is true. It is true trivially because two lexical items drawn from two distinct lexicons, even when equivalent in their denotation as well as in their syntactic properties, will still differ in their phonological form, and thus trivially differentiate the structures that incorporate them.

Less trivially, the presence in one lexicon and absence in another of items with specific syntactic properties will produce significant differences in the candidate sets of two languages. For example, the presence of ECM verbs in English may provides a case-assigner for the subject of an infinitival complement that is unavailable in other languages.

The question is whether some or all of the non-trivial differences can actually be derived from differences in the grammar (i.e. from distinct rankings of the UG constraints). While not coping with all the distinctions in lexical inventories which have been proposed in the literature to be the sources of different syntactic phenomena, I will pursue the goal of making the lexicon as universal as it can be.

As Prince and Smolensky point out in their analysis of phonological inventories, the presence or absence of an item Ψ in the lexical inventory of a grammar depends on whether there exists an input such that the optimal form for that input in that grammar involves Ψ (Prince and Smolensky, 1993:186). I will make use of this idea in the analysis of expletives and agreement (chapters 2-4).

As for expletives, following a proposal by Grimshaw in her analysis of *do-support* (1993, 1995) as well as developments in Grimshaw and Samek-Lodovici (1995a,b), I assume that there are no elements marked as expletive in the lexicon of any language. Instead, expletives are normal lexical items of the lexicon which are left uninterpreted

(see Rothstein 1995 for a similar proposal). The analysis is developed in further detail in chapter 2.

Analogously, I will assume that the lexicons of different languages are identical when it comes to expressing agreement features, aside for differences in their phonological specification. In other words, I assume that potentially all languages may express overt agreement features, and that whether they do so or not follows from their grammar, and from the optimal forms the latter selects. How this is done is the topic of chapter 4.

1.3. Inputs

Intuitively, inputs contain all the information which is necessary for assessing the grammatical status of each competing extended projection under a given grammar. Inputs provide the lexical items out of which extended projections are built, as well as the argument-relations between them (Grimshaw 1993, 1995; cf. Chomsky's *satisfy* operation 1992:20). In accord with Grimshaw and Samek (1995a,b), inputs are defined as recursive tuples made of the following fields:

(i) A lexical head L and its argument structure, identifying the lexical head heading the associated extended projection and its argument structure.

(ii) A thematic mapping, associating the theta-roles of L with the input-tuples of the corresponding argumental extended projections.

(iii) A marking of the foci, optionally marking the thematic roles of L as contrastively focused.

(iv) Tense, providing tense specification. In particular, this field specifies whether the clause tense is finite or non-finite. This field is missing in inputs of non-verbal extended projections.

These are the basic fields specified throughout the OT derivations of this dissertation. However, in chapter 5, I will examine derivations involving operators and complementizers with their own semantic import, and analyze them as part of the input.

Notice that case-assigners need not be specified. Whether a head assigns case and which case it assigns is determined by that head's lexical specification. The case-assignee is also independently determined in the way discussed in section 1.5.

The following are all examples of well formed inputs. The one in (8a) is the input of a nominal extended projection headed by *John*. The one in (8b) is the input of a verbal extended projection in the present perfect headed by *run* and specifying that the external argument is the optimal extended projection for the input *<John, --, --, --x>*. Input (8c) is analogous to input (8b), but it also specifies that the agent is contrastively focused.

(8a) <John, -- , --, -->   (henceforth simplified by convention to *John* when no

                       ambiguity arises)

(8b) <run(x), x=John, --, T=pres. perf.>

(8c) <run(x), x=John, x=focus, T=pres. perf.>

Following an informal proposal in Grimshaw (1993), the relation between inputs and competing candidates is established through the two input dependent principles of Compatibility and Theta-Consistency, which belong to the filtering component of GEN. Let us first consider the Compatibility principle.

(9) Compatibility: Given an input α with lexical head L, the only legitimate candidate structures for α are those whose head is interpretationally not distinct from L.

Compatibility ensures that a structure headed by *Mary* will never be considered a candidate structure for an input like *<John,-,-,->*.

Compatibility does not exclude the null structure, to which it applies vacuously, since no syntactic head occurs. It also allows for pronominal realizations, since pronominals are represented as intransitive D's freely generated by Gen_f, in accord to a proposal by Rothstein (1995), based on Abney (1987). Since their lexical conceptual structure is restricted to their referential role, pronominals are compatible with inputs headed by referential lexical items with which they agree.

The second principle relating inputs and their realizations is Theta-Consistency, which ensures that candidate structures match the theta-assignment specification in the input.

(10) Theta-Consistency: Given an input α and its lexical head L, for any theta role θ of L, the assignee of θ, if structurally realized, must be the optimal realization of the input β into which θ is mapped in input α.

Consider input (11) below and the two structures in (12) and (13). A priori, nothing rules out structure (13), with the external theta-role of *run* assigned to the DP *Mary*, as a legitimate candidate for input (11). In fact, nothing forces us to consider *Mary* the syntactic analysis of the sub-input *<John,-,-,->*, and thus no appeal to Compatibility can be made.

(11)   <run(x), x=John, --, T=pres. perf.>

(12)   [$_{IP}$ John has [$_{VP}$ run]]

(13)   [$_{IP}$ Mary has [$_{VP}$ run]]

Theta-Consistency permits us to distinguish (13) from (12), because it requires that the external theta-role of (11) be assigned to the optimal realization of its input specification, i.e. to *<John,-,-,->*. This excludes (13) as a candidate structure for the input in (11), because the subject *Mary* is not a legitimate syntactic expression of the input *<John,-,-,->*, given the principle of Compatibility.

More generally, the purpose of Compatibility and Theta-Consistency is to ensure that the optimal realization of the input be consistent with the argument structure of the lexical head. This would not occur if there were no relation between the lexical heads in the input and those of the corresponding structural candidates (cf. the notion of *containment* in Prince and Smolensky 1993 and Prince and McCarthy 1993).

Notice that there are many candidates competing with (12) for the optimal realization of (11) not excluded by the above principles. Among others are the null structure *'[ ]'*, the null subject candidate *'[runs]'*, the inversion candidates *'[runs John]'*, as well as the candidates *'[he runs]'*, *'[it runs John]'*, or even the structure *'[Mary [John [runs Bill]]]'*, provided that neither *Mary* nor *Bill* be the assignee of the external theta-role.

Finally, an interesting hypothesis which I will not adopt here and leave open for future research is that both principles are just additional constraints of UG, rerankable

with the other constraints. The fact that the two constraints are always satisfied could then follow from the fact that they do not conflict with any other constraints of UG.

1.4. Theta-Assignment

Following Higginbotham (1985), Grimshaw (1990), and Williams (1994), and diverging from recent proposals by Kayser and Hale (1993), theta-assignment is taken to occur in terms of theta-saturation. The theta-grid of the theta-assigner is copied from each X bar level to the next and its thematic-roles are saturated one by one, starting from the innermost one, by the theta-assignees. Theta-assignment occurs under sisterhood, and, in accord with Williams (1994), it involves linking the theta-role being assigned to the referential theta-role of the theta-assignee.

Structures lacking a structurally realized argument (examined in section 1.2.1) leave the corresponding theta roles unassigned. For example, while in (14a) the external theta role of the verb is assigned and thus saturated by the subject trace in specVP, in (14b) the external theta-role is left unassigned, since no structurally realized subject is present.[2] As the figure illustrates, I assume that in this case the theta-grid with its unsaturated role simply continues its percolation through the whole extended projection until it reaches the IP node. (The percolating grid is represented as <x>. Theta-role saturation is represented with an asterisk.)

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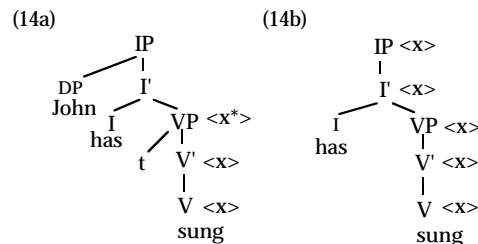
[2] For a theta-role, being unassigned does not imply being uninterpretable. For example, in the system presented in this dissertation, the structure in (14b) is optimal only if the external theta-role has a topic antecedent; its interpretation would then be that of its antecedent.

The extended grid-percolation assumed in (14b) follows naturally from the notion of percolating theta-grids, and from Grimshaw's (1991) notion of extended projection: theta grids can percolate from V to VP because VP is the projection of V, and likewise it can percolate from V to IP because IP is the extended projection of V.

Percolation of external theta-roles throughout the clause has also been proposed by Williams (1994), to derive various linguistic facts, such as the existence and properties of external arguments and the lack of raising within DPs. Among the theoretical goals of Williams that rely on theta-role percolation is also the suppression of NP-movement. While Williams' theoretical results appear compatible with the claims of this dissertation, they are not essential to them. I will therefore still assume the existence of NP-movement leaving to further research to determine whether the latter should be dispensed of even in the OT model here developed. To simplify the set of relevant competitors under discussion, I will assume that where theta-assignment occurs, it must occur internally to the immediate lexical projection of the theta-assigner. SpecVP is thus the base-generated position for the subject of unergative verbs, as in Koopman and Sportiche (1988, 1991). The assumption is formalized in the input independent principle below, which belongs to the filtering component of GEN and eliminates all candidates with non local theta-assignment.

(15) Local Theta-assignment: if it occurs, theta-assignment occurs within the
      immediate lexical projection of the theta-assigner.

The above principle does not force theta-assignment. For example, while it requires that the overt subject of a transitive verb be theta-assigned within the VP, it also leaves open the possibility of leaving the subject structurally unrealized. In this case, theta-assignment does not occur and the principle is therefore vacuously satisfied. For example, both of the two previous structures in (14), reported here as (16a) and (16b), satisfy the principle, while structure (16c) below violates it because its subject gets theta-assigned outside the VP projection. Therefore (16c) does not qualify as a legitimate candidate.

(16a)   (16b)   *(16c)

```
        IP                      IP <x>                      IP <x*>
       /  \                     |                          /   \
     DP    I'                   I' <x>                    DP     I' <x>
    John  /  \                 /   \                     John   /   \
        I    VP <x*>          I     VP <x>                    I     VP <x>
       has   |               has    |                        has    |
         t   V' <x>                 V' <x>                           V' <x>
             |                      |                                |
             V <x>                  V <x>                            V <x>
            sung                   sung                             sung
```
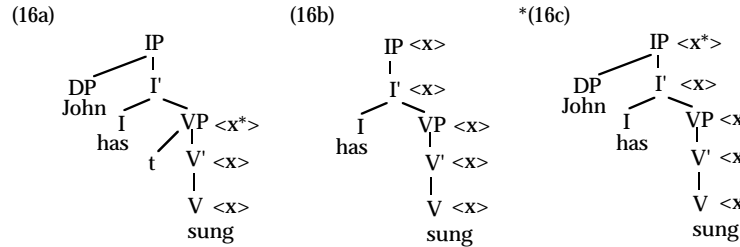
One important distinction between (16a) and (16b) made available by theta-percolation is that the theta role is locally accessible at the IP node in (16b) but not in (16a). This will play a role in the modeling of agreement and case-assignment, as it is explained in the next section.

1.5. Case-assignment and Agreement

Drawing from a similar idea concerning agreement in Williams (1994), I represent case as a relation between a case-assigner, like I⁰ or V⁰, and the referential role intrinsic to nominal heads. Consider the input in (17), where the referential role R of the lexical head is explicitly represented, and the three candidates in (18), represented with their case coindexations.

(17) Input: <sing(x), x=<John(R), --, --, -->, -- , T=pres. perf.>

(18a) Preverbal subject.   (18b) SpecVP subject.   (18c) Null subject.

```
         IP                         IP                      <x>IP
        /  \                        |                       /   \
 <R> DP    I'                       I'                   <x>I'
    John  /  \                     /  \                  /   \
        I    VP <x*>              I     VP <x*>         I    <x>VP
       has   |                   has   /  \            has    |
         t   V <x>                  <R> DP  V <x>           <x>V
            sung                     John  sung              sung
```
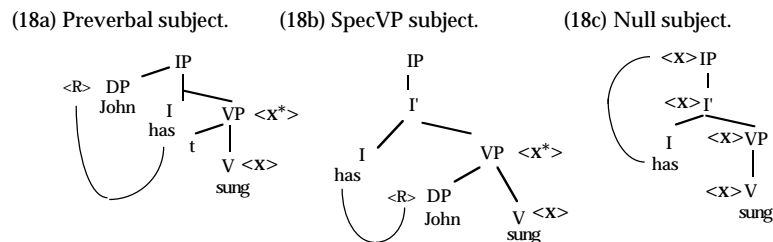
In each structure, case relates the case-assigner T in I⁰ with the referential role intrinsic to the nominal head *John*. In (18a) and (18b) the referential role R is directly accessible at the DP node. In (18c), T case-relates with the displayed external theta-role of the verb *run*, which in turn is mapped to the referential role R of the argument headed by *John* in the input .

What changes in each structure is the configuration under which the case-relation occurs. The configuration is determined by the positions of the case-assigner and of the case-assignee. Thus, in (18a), the referential role of the subject in specIP is accessible under a spec-head configuration. In (18b), case-assignment occurs under a configuration of local proper government. In (18c), since the nominal argument is syntactically unrealized, the assignment configuration is determined by the position of the mediating external theta-role. Being unassigned, the theta-role percolates up until the IP node. Thus, the case-assignment configuration is between I⁰ and IP. As it will be explained in section 4.4.2 for the analogous agreement configurations, this qualifies as a spec-head configuration.

Case-assignment to expletives is analyzed in the same way. Though left uninterpreted, the referential role of the expletive is directly accessible on the top node of the expletive projection. Casewise, an expletive is thus identical to an overtly realized nominal argument. For example, the expletive *it* in the structure below is assigned nominative case by T under a spec-head configuration.

(19)

```
             IP
            /  \
   <R> DP    |
       it   I    VP
          seems  |
                 V' <-,x*>
                /   \
          V <-,xs>   CP
             t        /\
                    that...
```
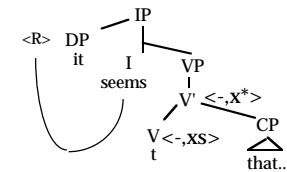
The well-known locality and directionality conditions on case-assignment will follow from the interaction between the constraint **C**ASE**G**OV, a constraint introduced later and requiring that the case-assignee be proper governed by the case-assigner, and the other constraints of UG. The structural relations between case-assigner and case-assignee is also responsible for determining which case-assigner case marks which case-assignee, as will be explained in chapter 5. For now, it is sufficient to notice that this information is not encoded in the input.

In order to capture the obligatoriness of case-assignment, I assume that the filtering component of GEN includes an inviolable case-filter. This filter requires any *potential nominal constituent* to be obligatorily case-assigned, where *potential nominal constituent* is intended to include overt nominal constituents, whether expletive or not, as well as structurally unrealized nominal arguments. In other words, any element contributing a nominal referential role R is a potential nominal constituent. Only the structures that satisfy the Case Filter are legitimate candidates.

(20) Case Filter: coindex the referential role R of a potential nominal constituent with a case-assigner H.

Agreement is modeled in strict parallel with case-assignment. Agreement ϕ-features are generates freely by *Gen_f*, hence for every candidate showing agreement on feature ϕ there is always a candidate lacking it because *Gen_f* did not generate any ϕ-feature in the first place.

In analogy with the representation of case, agreement is represented as a coindexation between the *Gen_f*-supplied ϕ-features of an inflectional head and the referential role of a potential nominal constituent, which includes, as stated before, the referential role of expletives, realized nominal arguments, or structurally unrealized nominal arguments accessed through the mediation of the thematic role associated with them in input. As case-assignment, agreement too is governed by universal constraints encoding requirements on the configuration under which the agreement coindexation should occur and introduced later in this chapter.

1.6. A Sample of Candidates Generated by GEN and their Status

Let me synthesize the model developed so far by listing a sample from the infinite set of structures generated by GEN. I will mark with an asterisk those candidates generated by *Gen_f* but excluded from the candidate set fed to EVAL by the filtering component of GEN, i.e. by virtue of one of the principles introduced in the preceeding sections. The potential candidate structures are evaluated in relation to the input in (21) below.

(21) <see(x,y), (x=John, y=Mary), -- , T=pres. perf.>

Where not otherwise indicated, T assigns case to the thematic subject and V^o to the thematic object (see section 5.2.1). Likewise, agreement occurs with the nominative marked DP (see section 4.2.1). The structures follow below:

• Structures involving empty heads: (22b) is excluded by Obligatory Content.

(22a) / *(22b)
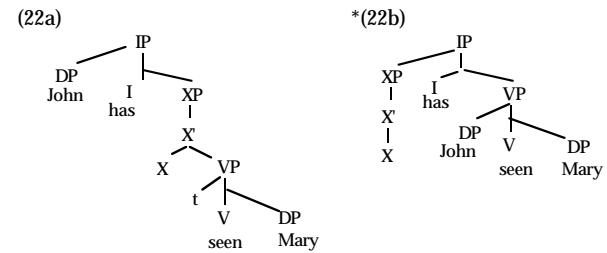
• Structures involving a constituent in different positions: if the external theta role is assigned, structure (23b) violates Theta-Locality, because the external role is assigned outside VP, and structure (23c) violates Theta-Consistency with respect to input (21), because theta-assignment provides an interpretation in contrast with the mapping-specifications in input (21). However, if the external theta role is left unassigned, and the DP in specIP position are treated as uninterpreted expletives, then (23b) and (23c) are legitimate candidates.

(23a) / *(23b) / *(23c)
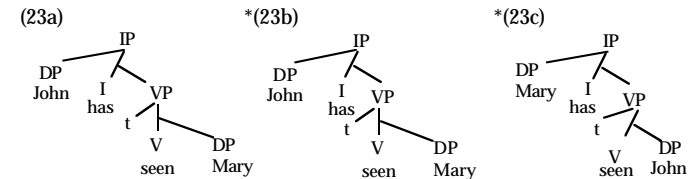
• Structures involving the same constituents in different positions, including structures not realizing the specIP position:

(24a) / (24b) / (24c)
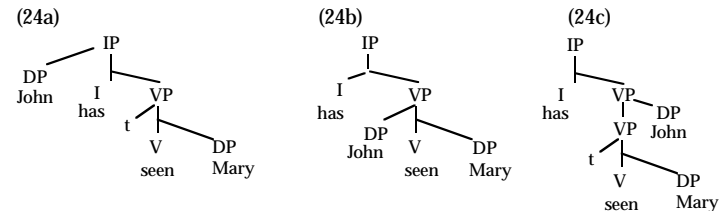
• The null structure: [ ]

• Structures that leave an argument structurally unrealized.

(25a)

IP
I — VP
has
V — DP
seen   Mary

(25b)

IP
I — VP
has
DP   V
John seen
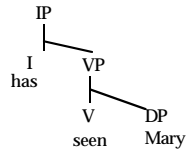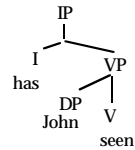
• Structures involving constituents that are not assigned a thematic role, i.e. expletives. They are represented in a box. In (26c) the external theta-role is left unassigned.

(26a)

IP
[DP it] I — VP
has
DP   V   DP
John seen Mary

(26b)

IP
DP_i I — VP
John has
VP   [DP Paul]
t_i V   DP
seen Mary

(26c)

IP
[DP it] I — VP
has
V   DP
seen Mary
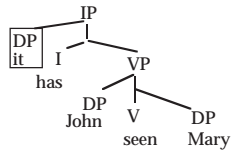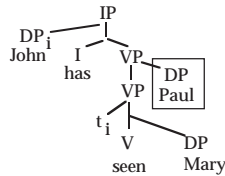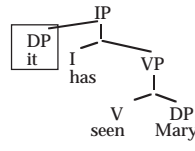
• Structures involving case-assignment to constituents in distinct positions.

(27a)

IP
DP   I — VP
John has
nom   t   V   DP
seen Mary
acc

(27b)

IP
I — VP
has DP   V   DP
nom John seen Mary
acc
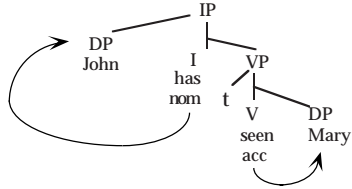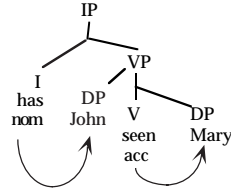
• Structures without agreement features, or with agreement features coindexed to constituents in distinct positions.

(28a)

IP
DP   I — VP
John have t
<no agr> V   DP
seen Mary

(28b)

IP
DP   I — VP
John has t
V   DP
seen Mary
agreem.

(28c)

IP
VP
I   DP   V   DP
has John seen Mary
agreem.
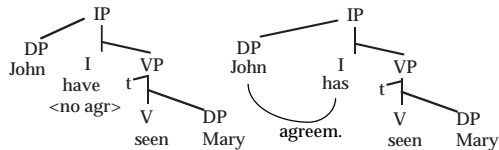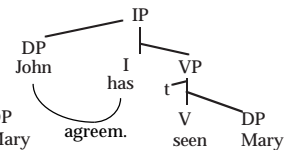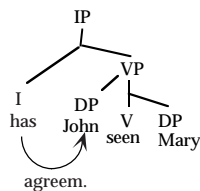
1.7. Universal Constraints of UG

The following is a brief summary of the main constraints argued for by this dissertation and further discussed in the following chapters. Other constraints assumed in the discussion of specific issues are not included here. The constraints will be always assessed with respect to legitimate candidates, i.e. to candidates that satisfy all the principles of the filtering component of GEN.

•Phrase-structure constraints: the constraints **S**UBJECT and **O**BH**D** have first been proposed in Grimshaw (1993, 1995).

The constraint **S**UBJECT requires that the highest A-position of a clause be realized, where A-position is here defined operationally as any position which can host the antecedent of a reflexive or reciprocal, as in Bittner and Hale (1996). The constraint **S**UBJECT is reminiscent of the second clause of the Extended Projection Principle (Chomsky 1982:10), and for the arguments presented in this work it is sufficient to conceive **S**UBJECT as requiring that the specIP position be structurally realized.[3] This entails the presence of an overt element in specIP position, since lexical null elements and contentless extended projections have been ruled out in section 1.2.1. **S**UBJECT is violated whenever the specIP position is left structurally unrealized. For example, null subject structures as well as structures placing the subject in inverted position both fail **S**UBJECT.

- **S**UBJECT: The highest A-specifier of a clause must be structurally realized.
  Failed when the highest A-specifier of a clause is left structurally unrealized.

The next constraint is **O**BH**D**, also proposed by Grimshaw (1993, 1995). **O**BH**D** is failed whenever a syntactic head is left empty. The definition given here diverges from Grimshaw (1995) in that it refers to empty heads rather than to headless projections, and is thus consistent with the definition of GEN previously provided. The role that this

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[3]The definition of **S**UBJECT as a condition relativized to the highest A-specifier is due to Grimshaw (1993, 1995), who analyzes English declaratives like *John loves Mary* as involving a subject in specVP. In her work, the highest A-specifier available in the extended projection is specIP in Italian declaratives, but specVP in English present and past-tense declaratives. See also section 3.5 in Grimshaw (1995) for further discussion of the issue.

constraint plays in this work is nevertheless entirely consistent with its role in Grimshaw's work.

- **O**BB**H**D: Avoid empty heads.
  Failed by contentless heads.

 •Constraints related to case and agreement: the case and agreement constraints are sensitive to the configuration under which case is assigned and agreement occurs.

The constraint **C**ASE**G**OV requires case-assignment to occur under local proper government. The definition follows below.

- **C**ASE**G**OV: A case-assignee is locally proper-governed by its case-assigner.
  Failed if the case-assignee is not locally properly governed by its case-assigner.

Local proper government is here intended in the sense of Rizzi (1990), and entails that the case-assignee is the sister of the case-assigner or the specifier of the latter. For example, the case-assigner X^0 satisfies **C**ASE**G**OV only when case-assigning YP or ZP, while it violates it when case-assigning UP, WP, VP, or a percolated theta-role in XP.

(29) Case-assignment configurations:
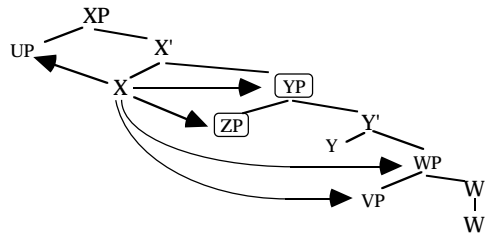
Let us turn to the agreement constraints. The first of the three agreement constraints, **N**O Φ-**F**TS, is satisfied by those structures that do not host any agreement feature. If **N**O Φ-**F**TS were the only agreement constraint, agreement would never occur. Notice that **N**O Φ-**F**TS is like the constraint **F**ULL **I**NTERPRETATION, introduced below, in that it

penalizes input-external material provided by GEN which is not required by any higher ranked constraints.

- **N**O Φ-**F**TS: Avoid agreement-features.
  Failed once by each agreement feature.

The remaining agreement constraints require agreement to occur. It should thus be kept in mind that both constraints are violated whenever an agreement relation fails to occur. The constraints differ in the assessment of the configuration under which agreement occurs. The constraint, **L**OOSE**A**GR, is satisfied by any clause bound agreement coindexation. The constraint **A**GR requires agreement to occur under a spec-head configuration.

The definitions below should be interpreted as constraint-schemata, identifying a family of related constraints, with one constraint for each value of φ and H provided; see chapter 4 for details (cf. the *alignment* constraint family in McCarthy and Prince 1993; see also Prince and Smolensky 1993). Since agreement must involve overt agreement features, the constraints can also be viewed in terms of feature-licensing.

- **L**OOSE**A**GR$_{\phi,H}$: A head H should host clause-bound agreement between an agreement feature φ and the referential role of a potential nominal constituent.
  Failed when no clause-bound agreement occurs on H relative to φ.

- **A**GR$_{\phi,H}$: A head H should host spec-head agreement between an agreement feature φ and the referential role of a potential nominal constituent.
  Failed when no spec-head agreement occurs on H relative to φ.

For example, referring back to figure (29), assume that X hosts some agreement features. Then, UP, ZP, WP and VP would all satisfy **L**OOSE**A**GR as targets of the agreement relation, provided they are associated to a referential role. However, only UP would satisfy **A**GR. As already pointed out, agreement may also occur with the theta-role in XP associated (see section 4.4.2).

 •Faithfulness constraints: maximal faithfulness to the input is achieved when A candidate parses all the elements in inputs (i.e. the lexical elements and the tense specification), and avoids any additional material freely supplied by GEN.

The **P**ARSE constraint, first proposed by Prince and Smolensky (1993), and adopted in Grimshaw (1993,1995), requires that the items of the input be parsed, i.e. that they be first *projected* and then *composed* together, so that they are structurally realized in the extended projection they help to form. The constraint is failed once for each item left unrealized. For example, the structure *[runs]* fails **P**ARSE once when assessed in relation to the input *<run(x), x=John, --, T=pres>* because it does not parse the lexical item *John.* Parse requires the parsing of all the input items, including the tense specification.

- **P**ARSE: Structurally realize input items into phrase-structure.
   Failed by unrealized input items.

Any overt projection compatible with an input lexical head counts as parsing that head. Therefore, the thematic subject of the input *<run(x), x=John, --, T=pres>* can be parsed as the DP *John* but also as the pronominal DP *he*, as in *he runs*, without violating **P**ARSE (see 1.3 for the definition of *compatible*).

PARSE applies only to the elements in input, and therefore has no say on the material freely added by GEN. This is the domain of the **F**ULL **I**NTERPRETATION constraint (**F**ULL-**I**NT), proposed by Grimshaw (1993, 1995) and also used in Grimshaw and Samek-Lodovici (1995a,b), which penalizes any candidate involving uninterpretable overt projections, i.e. projections which have not been theta-assigned.

Following Grimshaw's analysis of *do support* (1993, 1995), **F**ULL-**I**NT is conceived as a gradient constraint whose violation is proportionate to the complexity of the lexical conceptual structure (LCS) associated with the uninterpreted projection (for the definition of gradient constraint, see also Prince and Smolensky 1993).

- **F**ULL **I**NTERPRETATION: Lexical conceptual structure is parsed.
   Failed by uninterpreted lexical material.

FULL-**I**NT plays an important role in the analysis of expletives, which I analyze as being the overt projections that violate **F**ULL-**I**NT the least, by virtue of their minimal LCS, as in Grimshaw (1993, 1995). Whenever the satisfaction of higher ranked constraints forces a violation of **F**ULL-**I**NT, the optimal structure will involve expletive pronominals rather than, say, expletive proper names, because expletive pronominals

violate **F**ULL-**I**NT minimally. Thus, *'[it is possible that ..]'* is grammatical while *'[Mary is possible that ...]'* is not because *Mary* involves a greater violation of **F**ULL-**I**NT. Ideally, even among pronominals, the ones used as expletive will be those with the minimal LCS (a similar proposal in non-OT terms is found in Rothstein 1995; see chapter 2 for a comparison).

The general goal is to predict the distribution of expletive items across languages from the interaction of **F**ULL-**I**NT with the other constraints of UG (see also Grimshaw 1995, Grimshaw and Samek-Lodovici 1995b).

Finally, the constraint **S**TAY, proposed in Grimshaw (1993, 1995), penalizes movement and is violated once by each trace left by constituent movement (cf. Chomsky's *shortest movement* (1993)).

- **S**TAY (Grimshaw 1993, 1995): Traces are not allowed.
   Failed by traces.

•Constraints related to topic and focus: the last group of constraints governs the realization of constituents which are contrastively focused or have as their antecedent a constituent with topic status (the notion of topic constituent is discussed at length in chapter 2).

The first constraint, **D**ROP**T**OPIC, requires that arguments with a topic antecedent be left unrealized.

The status of a referent as topic or non-topic is a dynamic property related to the referent's status in the ongoing discourse as well as to the syntactic means chosen for its expression (see work by Strawson 1964; Stalnaker 1978; Reinhart 1981; Vallduví 1992; Erteschik-Shir 1993; Portner and Yabushita 1994). The property of having an antecedent with topic status is not assigned in the input, but rather pertains to the discourse status of the antecedent (henceforth *topic antecedent* means antecedent with topic status).

Technically, **D**ROP**T**OPIC can be implemented as follows: assume Williams's (1994) proposal that the actual elements participating in binding and coreference relations are not the assignees of theta-roles but the theta-roles themselves, where the DP to which a theta-role is assigned only specifies conditions on the reference of the theta-role (chap. 6, Williams (1994)). Antecedence is then a coindexation between theta-roles. The

constraint **D**ROP**T**OPIC checks the status of the antecedent of a theta-role θ. If the antecedent is a topic and θ is nevertheless assigned to a realized constituent, then **D**ROP**T**OPIC is violated. If θ is left unassigned, **D**ROP**T**OPIC is satisfied. If instead the antecedent is not a topic, then **D**ROP**T**OPIC is vacuously satisfied in either case.

- **D**ROP**T**OPIC: Do not realize arguments which have topic antecedents.
  Failed by structurally realized arguments coindexed with antecedents with topic status.

(A gradient version of **D**ROP**T**OPIC requiring topic-referring arguments to be structurally minimal, and inspired by Cardinaletti and Starke's (1994) Structural Deficiency Hypothesis and by comments by Grimshaw and Kayne on topic-related alternations in English, is explored in section 2.2.7.2.)

Safir (p.c.) points out that under this definition, **D**ROP**T**OPIC is unlike any other of the constraints defined here, whose assessment never requires to go beyond checking a candidate structure and its input. Conceivably, **D**ROP**T**OPIC could be made as 'local' as the other constraints by marking theta-roles as *topic-referring* in input (this is the solution adopted in Grimshaw and Samek-Lodovici 1995a,b). However, in such cases some independent component of grammar would have to ensure that only arguments with topic antecedents will be marked as topic-referring.

The last constraint, **A**LIGN**F**OCUS, also proposed in Grimshaw and Samek-Lodovici (1995a,b) and based on the theory of generalized alignment of McCarthy and Prince (1993), requires contrastively focused constituents to occur peripherally, and adjoined to a maximal projection. The constraint is failed whenever a focused-marked constituent occurs elsewhere in the structure.

- **A**LIGN**F**OCUS (XP, Left, YP, Right): Align the left edge of the focused constituent XP with the right edge of a verbal YP in the clausal extended projection.
  Failed by non-alligned focused constituents.

The constraint incorporates the hypothesis that focus may occur structurally, originally made by Kiss (1986) for Hungarian, and later extended in a number of studies to other languages, including English, Italian, Hebrew, Catalan, and Chadic languages

(see work by Antinucci and Cinque 1977, Schuh 1982, Calabrese 1985, 1990, Shlonsky 1987, Rochemont and Culicover 1990, Bonet 1990, Tuller 1992, Saccon 1993, Samek-Lodovici 1993, 1994, Belletti and Shlonsky 1994). As pointed out in Grimshaw and Samek-Lodovici (1995a,b), while the above constraint affects only contrastive foci, the interesting hypothesis arises that **A**LIGN**F**OCUS characterizes a family of constraints requiring structural-alignment for different kind of foci and in different positions (cf. left alignment in Hungarian vs. right alignment in Italian). **A**LIGN**F**OCUS would then constitute a syntactic analogue of the family of alignment constraints studied in Phonology by McCarthy and Prince (1993).

1.8. Selection of the Optimal Candidate

Given a hierarchy of constraints H=C1..Cn by decreasing rank, and a candidate set CS, the optimal candidate(s) relative to H is that candidate S (or candidates S1..Sm) in CS such that for any constraint C_k in H on which S (or S1..Sm) does worse than another candidate S', there is a higher ranked constraint C_i in H, i<k, on which S (or S1..Sm) does better than S'.

The optimal candidate(s) relative to a constraint hierarchy H=C1..Cn can be computed according to the procedure below, which terminates leaving in CS all and only the optimal candidates:

(30) For C=C_1 to C_n, do the following:
1. Assess the status of each candidate in CS relative to C.
2. If at least one candidate satisfies C, eliminate from CS all the candidates that violate C.
3. If all candidates violate C, erase one C-violation from each candidate and repeat from step 1 (without passing through step 4).
4. Let C be the next lower constraint and repeat from step 1.

Whenever a finite number of candidates can be proven to collectively outperform all other members of the candidate set, the above procedure can be used to find the optimal form within this finite set. This will in turn be the optimal form of the whole candidate set (see Prince and Smolensky 1993).

1.9. Notation and Terminology

Tableaus are interpreted as in Prince and Smolensky (1993):

-The constraints are displayed left to right by decreasing rank.

-The optimal candidate is marked with the symbol '☞'. Candidate (a) is thus the optimal candidate in the tableau below.

-Violations are marked by stars. Fatal violations are followed by an exclamation mark.

-Shading expresses the irrelevance of a candidate's performance on the shaded constraints. For example, candidate (b) fails the highest ranked constraint C1, and is thus suboptimal relative to the remaining candidates (a) and (c), independently of its status on the lower constraints.

T1. Input: <.....>	C1	C2	C3	C4
a. ☞ candidate A		*		*
b. candidate B	*!			
c. candidate C		*	*!	
d. candidate D		*	*!	*
e. candidate E		*		* *!

When candidates tie on higher constraints, lower constraints become relevant. For example, candidates (a) and (c) tie on C_1 and C_2. However, candidate (c) is suboptimal because it fails the lower constraint C3, which (a) satisfies. Likewise, candidate (e) is suboptimal because it has one more violation of C4 than (a).

The optimal candidate depends on the ranking of the constraints. If C4 dominated C3, (a) would lose to (c), which would be the optimal candidate.

Finally, notice that candidate (d) collects the same violations as (a) plus the additional violation of C3. It follows that (d) is suboptimal under any reranking of the constraints, because the violation of C3 will always make (d) worse than (a). This state of affairs is expressed by saying that (d) is *harmonically bound* by (a) (Prince and Smolensky 1993).

2. Topic-referring Subjects

This chapter argues for an Optimality Theoretic view of syntax by showing how the complementary distribution of null and overt subjects within and across languages as well as aspects of the crosslinguistic distribution of overt expletives all follow from the interaction of a fixed set of conflicting constraints.

Fundamental to the following analysis is the empirical generalization in section 2.1 stating that null subjects must be licensed by topic antecedents (where *topic* is intended in Strawson's (1964) sense, see section 2.1). This generalization, which is established on the base of Italian, Greek, Hebrew and Chinese data, also supports the correlation between null subjecthood and topichood proposed among others by Givón (1983), Huang (1984), and more indirectly also by Calabrese (1985), Di Eugenio (1990, 1995) and Dimitriadis (1995).

The generalization just introduced motivates the proposal in section 2.2 of the constraint **D**ROP**T**OPIC, which requires that arguments with topic antecedents be left structurally unrealized. The inherent conflict between **D**ROP**T**OPIC and the constraints **P**ARSE and **S**UBJECT is then shown to determine the complementary distribution of null and overt subjects within null subject languages as well as crosslinguistically. Furthermore, the interaction of the above constraints with the constraint **F**ULL-**I**NT will derive aspects of the crosslinguistic distribution of expletives, such as the universal ban on overt expletives in null subject languages.

The remaining two sections explore the connections between the analysis of null subjects presented here and other analyses. In particular, section 2.3 argues for a classification of null subjects at the bottom of Cardinaletti and Starke (1994)'s Structural Deficiency Hierarchy, as elements devoid of any phrase structure. Section 2.4 examines analyses which relate to the analysis given here, such as the analysis of Calabrese (1985), Di Eugenio (1993, 1995, Dimitriadis (1995), Huang (1984), and Montalbetti (1984). A discussion of some problematic issues involving deictic topic antecedents concludes the chapter.

2.1. The Topic-referring Function of Null Subjects

The goal of this section is to show that a key factor of the distribution of null subjects is the status of their antecedent in discourse: null subjects always have antecedents with topic status, where topichood, which will be further examined below, refers to the discourse status of the antecedent and does not coincide with "previously mentioned". The generalization in (1) below holds for the data from Italian, Greek, Hebrew and Chinese examined in this chapter.

(1) Null subjects must be licensed by topic antecedents.

The above generalization describes a distribution not covered by the standard literature on pro-drop, which analyzes null subjects as optional null counterparts of overt pronominals (among others Chomsky 1981, 1982, Rizzi 1982, 1986, Safir 1985, Burzio 1986, Jaeggli and Safir 1989). Without further qualification, this view would lead us to expect free variation in subject position between null and overt pronominal subjects, against generalization (1).

Important exceptions are the works of Givón (1983), relating zero anaphora to maximal topic-accessibility, Huang (1984), allowing for the licensing of null constituents through *zero topics*, Calabrese (1985), arguing that null subjects are licensed by antecedents which are themselves subjects, Montalbetti (1984), banning operator-bound overt pronominal subjects wherever null subjects are possible, Cardinaletti and Starke's (1994) analysis of Italian null subjects as structurally deficient pronouns and Di Eugenio's (1990, 1995) and Dimitriadis' (1995) analyses within the framework of centering theory. I come back to these analyses in sections 2.3 and 2.4.

2.1.1. Topichood

Intuitively, topics are what sentences are about (Strawson 1964, Gundel 1974, 1985, Kuno 1972, Chafe 1976, Chomsky 1977, Reinhart 1981, Prince 1981, Givón 1983, Davison 1984, Vallduví 1992, Erteschik-Shir 1993). This is the distinction between topic and non-topic constituents introduced by Strawson (1964) in his work on truth-value gaps. Strawson shows that the interpretation of a constituent depends on its syntactic position. He illustrates this point by using a referenceless expression such as *the king of France*. When this expression is in subject position, as in (2a) below, the associated presupposition-failure makes the sentence uninterpretable. However, when the

expression is introduced as a *by*-phrase of a passive, the sentence is likely to be deemed simply false, rather than uninterpretable.

(2a)   The king of France visited the exhibition.   ---> uninterpretable.

(2b)   The exhibition was visited by the king of France.   ---> false.

According to Strawson, the expression *the king of France* is a topic in (2a), where it is the subject of the sentence, but not in (2b), whose topic is the subject *the exhibition* (for the topic-status of subjects in canonical positions see also Li 1976, Givon 1986, 1983, Davison 1984, Gundel 1985, Prince 1981, Reinhart 1981). Since each sentence is interpreted in relation to its topic, (2a) is uninterpretable, because its topic, *the king of France*, is referenceless. Sentence (2b) instead is interpretable, because its topic, *the exhibition,* has reference. The truth-value of (2b) can then be established by checking the list of people who visited the exhibition in search of an individual who could be referred to as *the king of France*. Since none is found, (2b) is deemed false. Analogously, the sentence *John spent the morning at the local swimming pool* can be interpreted as false if in John's town there is no swimming-pool, while the sentence *The local swimming pool was visited by John* is uninterpretable under the same context (Strawson 1964:89).

A more formal rendition of the notion of topic is given in Reinhart (1981) who, following Stalnaker (1978), represents the discourse-context as the set of propositions on which the discourse participants agree, and such that any new proposition consistent with it, and not rejected by any participant on the base of their private knowledge, is added to it. Topics are assumed to organize the discourse-context by grouping together sets of propositions under the referents they denote. Topics thus function as indexing entries, as explained by Reinhart in the following terms (1981: 80):

> Sentence topics, within this view, are one of the means available in language to organize, or classify the information exchanged in linguistic communication - they are signals for how to construct the context set, or under which entries to classify a new proposition.

Thus, in a sentence like *The exhibition was visited by the king of France,* the topic constituent *the exhibition* instructs the hearer to list the associated proposition under the entry-referent it denotes, giving us the intuition that the sentence is about *the exhibition*. The existence of a referent for the topic is crucial, because otherwise the topic could not

perform its indexing function. This in turn explains the semantic distinctions observed by Strawson.

2.1.2. Evidence from Topic and Non-topic Antecedents in Passives

Strawson's argument provides a first test for the generalization proposed in (1) above. If the generalization is correct, the *by*-phrase of a passive, which Strawson independently showed to be a non-topic, should not license a null subject. This should be true even if the *by*-phrase constitutes the only possible antecedent available. As the following data from Italian, Greek, Hebrew and Chinese show, the prediction is correct.[1] (The Italian data involve both the weak form *egli* as well as the strong form *lui*. For a typology of pronominal forms in Italian see Cardinaletti and Starke 1994. The judgments below are given under a non-focused interpretation, where the pronoun is not contrastively focused in relation to other individuals.)

(3) Italian.

a.   Questa mattina, la mostra é stata visitata da **Gianni$_i$**.
This morning, the exhibition was visited by John.
This morning the exhibition was visited by John.

b.   Piú tardi, ***e$_i$** / **egli$_i$** / **lui$_i$** ha visitato l'universitá.
More late, (he) / he / he has visited the university.
Later on, he visited the university.

(4) Greek.

a.   Stis 3 Iouliou afto to simvoleo ipograftike apo **ton proedro$_i$**.
In-the 3 July-gen this the contract was-signed by the president.
The 3rd of July this contract was signed by the president.

b.   Tin epomeni mera, **$^{??}$e$_i$** / **aftos$_i$** ipograpse ena kenuorgio simvoleo.
The next day, (he) / he signed a new contract.
The next day he signed a new contract.

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[1] These and the subsequent data were kindly provided by the informants Arhonto Terzi, Yael Sharvit, Eric Bakovic, Ann Kuo and Hong Feng.

(5) Hebrew.

a. Ha-xoze ha-ze nextam al-yedey **ha-nasi**$_i$ ba-sˁe ˁbe Yuli.
    The-contract the-this was-signed by the-president the third of July.
    This contract was signed by the president the third of July.

b. Lemoxorat *e_i / **hu**$_i$ xatam al xoze xadas .
    The next day (he) ⁄ he signed on contract new.
    The next day he signed a new contract.

(6) Chinese:

a. Zuotian na yizhi beizi bei **Lisi**$_i$ dapo le.
    Yesterday that one cup by Lisi break ASP.
    Yesterday, that cup was broken by Lisi.

b. Jintian *e_i / **ta**$_i$ dapo le linwai yizhi.
    Today (he) ⁄ he break ASP another one.
    Today he broke another one.

   Conversely, when the antecedent is the topic of the sentence, it should always license a null-subject. The prediction is borne out. In the following sentences, the antecedent is the subject of the declarative in (a), which has topic status, as Strawson's original alternation showed. While Hebrew and Chinese also allow for an overt subject, the null subject is always grammatical, as predicted. (As before, the following data must be assessed in relation to a non-focused interpretation of the overt pronouns.)

(7) Italian.

a. Questa mattina, **Gianni**$_i$ ha visitato la mostra.
    This morning, John has visited the exhibition.
    This morning, John visited the exhibition.

b. Piú tardi, e_i / $^?$**egli**$_i$ / $^{??}$**lui** ha visitato l'universitá.
    More late, (he) ⁄ he ⁄ he has visited the university.
    Later, he visited the university.

(8) Greek.

a   Stis 3 Iouliou **o proedros**$_i$ ipograpse afto to simvoleo.
    In-the 3 July-gen the president signed this the contract.
    The third of July the president signed this contract.

b. Tin epomeni mera, e_i / $^{??}$**aftos**$_i$ ipograpse ena kenuorgio simvoleo.
    The next day, (he) ⁄ he signed a new contract.
    The next day he signed a new contract.

(9) Hebrew.

a. Ba-slosˁa be Juli **ha-nasi** xatam al ha-xoze ha-ze.
    In-three in July the-president signed on the-contract the-this.
    The third of July, the president's brother signed this contract.

b. Lemoxorat e_i / **hu**$_i$ xatam al xoze xadas .
    The next day (he) ⁄ he signed on contract new.
    The next day he signed a new contract.

(10) Chinese[2]:

a. Zuotian, **Lisi**$_i$ dapo le yizhi beizi.
    Yesterday, Lisi break ASP one cup.
    Yesterday, Lisi broke a cup.

b. Jintian e_i / **ta**$_i$ dapo le linwai yizhi.
    Today (he)⁄he break ASP another one.
    Today he broke another one.

   As noted, in Hebrew and Chinese, the null subject is slightly dispreferred in these sentences, yet the informants find it grammatical (in Hebrew, increased speech speed neutralizes this slight dispreference).

   Summing up, the null subject is grammatical when the antecedent is a topic, as in (7)-(10), while it is ungrammatical when the antecedent has non-topic status, as in (3)-(6), confirming the generalization that null subjects must be licensed by topic antecedents.

2.1.3. Evidence from Possessive Expressions

   This section proposes a second source of non-topic antecedents, and show how they too are illegitimate null subject antecedents, confirming the generalization under discussion.

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[2] Some speakers of Mainland Mandarin Chinese find the null subject of the (b) sentence rather marginal. More generally, these speakers seem to prefer overt pronominals across the board, and appear to be speaking a non pro-drop version of Chinese. Even these speakers however find the null subject in (10b) clearly more acceptable than the null subject of (6b).

The possessor DP of a noun phrase is never a topic, even when the noun phrase itself is. This can be easily seen by applying Strawson intuitive definition of topichood. For example, in (11) below, while the sentence can be said to be about *John's brother*, it certainly is not about John.[3]

(11)   John's brother visited the exhibition.

Once again we have a non-topic with which to test generalization (1). As the following data show, the non-topic antecedent X in the expression *brother of X* cannot license a null subject in the following sentence, confirming the generalization.

(12) Italian.

a.   Questa mattina [il fratello di **Gianni$_i$**] ha visitato la mostra.
       This morning the brother of Gianni has visited the exhibition.
       This morning John's brother visited the exhibition.

b.   Nel pomeriggio *e_i / $^{??}$**egli** / **lui$_i$** ha visitato l'universitá.
       In the afternoon (he) ∕ he ∕ he has visited the university.
       In the afternoon he visited the university.

(13) Greek.

a.   Stis 3 Iouliou, [o adelfos **tou proedrou$_i$**] ipograpse afto to simvoleo.
       In-the 3 July-gen, the brother of the-gen president-gen signed this the contract.
       The third of July, the president 's brother signed this contract.

b.   Tin epomeni mera, *e_i / **aftos$_i$** ipograpse ena kenuorgio simvoleo.
       The next day, (he) ∕ he signed a new contract.
       The next day, he signed a new contract.

(14) Hebrew.

a.   Ba-ʃoʃ a be Juli [ha-aχ e**ha-nasi$_i$**] xatam al ha-xoze ha-ze.
       In-three in July the brother of the-president signed on the-contract the-this.
       The third of July, the president's brother signed this contract.

b.   Lemoxorat *e_i / **hu$_i$** xatam al xoze xadaʃ
       The next day (he) ∕ he signed on contract new.
       The next day he signed a new contract.

(15) Chinese.

a.   Zuoitian, [**Lisi$_i$** de didi] dapo le yizhi beizi.
       Yesterday, Lisi 's younger-brother break ASP one cup.
       Yesterday, Lisi broke a cup.

b.   Jintian *e_i / **ta$_i$** dapo le linwai yizhi.
       Today (he)∕he break ASP another one.
       Today he broke another one.

When the antecedent is the subject of the first sentence, null subjects are once again licensed, as shown in (16)-(19) below. Each of following data form a minimal pair with the correspondent data in (12)-(15). The only change involves the antecedent of the second sentence subject, which is now a topic. (The missing glosses are identical to those of examples (12)-(15).)

(16) Italian.

a.   Questa mattina **[il fratello di Gianni]$_i$** ha visitato la mostra.
       This morning, the brother of John has visited the exhibition.

b.   Nel pomeriggio e_i / $^?$**egli$_i$** ∕ *lui$_i$** ha visitato l'universitá.
       In the afternoon, he visited the university.

(17) Greek.

a.   Stis 3 Iouliou, **[o adelfos tou proedrou]$_i$** ipograpse afto to simvoleo.
       The third of July, the president's brother signed this contract.

b.   Tin epomeni mera, e_i / $^{??}$**aftos$_i$** ipograpse ena kenuorgio simvoleo.
       The next day he signed a new contract.

---

[3] The possibility of lacking reference without disrupting interpretation is a sufficient condition for non-topichood, but not a necessary one. Being part of the topic, a possessor contributes to the identification of the topic's reference, and therefore it cannot lack reference the way the non-topic by-phrase of the passive did in Strawson's example.

(18) Hebrew.

a.   Ba-ʃoʃ   a be Jul**ha-ax** ʃ **el ha-nası̦**ᵢ xatam al ha-xoze ha-ze.
The third of July, the president's brother signed this contract.

b.   Lemoxorat **eᵢ** / **huᵢ** xatam al xoze xadaʃ.
The next day he signed a new contract.

(19) Chinese.

a.   Zuoitian, **[Lisi de didi]ᵢ** dapo le yizhi beizi.
Yesterday, Lisi broke a cup.

b.   Jintian **eᵢ** / **taᵢ** dapo le linwai yizhi.
Today he broke another one.

Once again, we observe that a topic subject can be the antecedent of a null subject, while a non-topic cannot, forcing an overt pronominal subject.

2.1.4. Evidence from Interrogatives

In the above cases the distinction between topic and non-topic antecedents overlapped with the distinction between subject and non-subjects antecedents, because the topic was also the subject of the sentence. To distinguish the two we need cases where the topic is not the subject of the sentence. To this end, I will use question answer pairs (QA-pairs), assuming that the non-wh constituent of the questions that we will examine are topics. That this is the case, can be shown by examining the interrogative counterpart to Strawson's original passive example, as in (20) below.

(20)   Q: What exhibition was visited by the king of France?

The *by*-phrase in (20) is the only non-wh constituent of the question, and under our assumption it should be a topic.

To test the generalization at issue we must now check whether the topic by-phrases of interrogatives can license null subjects in the corresponding answers. This is indeed the case, as the following example from Italian shows (the pronoun *lui* is grammatical under a contrastive focus interpretation which is here irrelevant).

(21a) Q: Quali mostre sono state visitate da-**[l padre di Gianni]ᵢ** ?
Which exhibitions are been visited by-the father of John?
Which exhibitions were visited by John's father?

(21b) A: Recentemente **eᵢ** / ?? **egliᵢ** / * **luiᵢ** ha visitato la mostra di Klee e di Miró.
Recently, (he) ⁄ he ⁄ he has visited the exhibition of Klee and Miró.
Recently, (he) / he has visited Klee's and Miro's exhibitions.

The above data are particularly telling when compared with the data in (3) about passives. In fact, we see that the shift in the status of the *by*-phrase from non-topic to topic is matched by a shift in its ability to function as an antecedent for the following null subject. This points strongly in the direction of topichood as the licenser of null subjecthood. Furthermore, and contra Calabrese (1985), it shows that subjecthood is not the correct licensing-factor, since the *by*-phrase is not a subject.

The role of topichood is further illustrated by the following data, where the same QA-pair of (21) is tested again. This time however, the antecedent is the non topic *Gianni.* Accordingly, the null subject is now unlicensed, confirming the generalization at issue.

(22a) Q: Quali mostre sono state visitate da-**[l padre di Gianniₖ]ᵢ** ?
Which exhibitions are been visited by-the father of John?
Which exhibitions were visited by John's father?

(22b) A: Nessuna, perché * **eₖ** / * **egliₖ** / **luiₖ** gliᵢ impedisce di uscire.
None, because (he) ⁄ he ⁄ he to-him prevent of to-go-out.
None, because he prevents him from going out.

Non-passive QA-pairs also support the previous findings. The complex subject *John's father* is the topic of the question. A null subject is possible when licensed by the subject, but ungrammatical when licensed by the non-topic *John*, in parallel with the evidence presented so far.

(23) Q: E' partito **[il padre di Gianniₖ]ᵢ** ?
Is left [the father of John]?
Did John's father leave?

(24a) A: Si', e_i / $^*egli_i$ / $^*lui_i$ é partito poco fa'.
     Yes, (he)／ he ／ he is left little ago.
     Yes, he just left.

(24b) A: No, $^*e_k$ / $^*egli_k$ / lui_k l_i'ha trattenuto a cena.
     No, (he)／ he ／ he him-has kept at dinner.
     No, he kept him for dinner.

A final piece of evidence supporting generalization (1), and further arguing for the non-centrality of subjecthood in null subject licensing, comes from left-dislocation structures. Reinhart (1981) and Vallduví (1992) have claimed that left-dislocated phrases are always a topic for their own sentences. According to the generalization in (1), a left-dislocated phrase should then be a grammatical antecedent for a null subject. The prediction is borne out, as shown in (25a).[4]

(25a)
 $[Il\ padre_i\ di\ Gianni]_{i,,}$ conosco il motivo per cui e_i / $^{??}egli_i$ / $^*lui_i$ é scappato.
The father of John,, (I) know the reason for which (he) ／he ／ he ran away.
John's father, I know the reason why he ran away.

The complementary prediction is that the null subject cannot be licensed by the non-topic antecedent *John,* forcing overt pronominal subjects. This is indeed the case, as shown in (25b).

(25b) $[Il\ padre\ di\ Gianni_k\ ]_{i,,}$ conosco il motivo per cui $^*e_k$ /$^{??}egli_k$ / lui_k l_i' ha criticato.
     The father of John,, (I) know the reason for which *(he) ／ he ／he him has criticized.
     John's father, I know the reason why he criticized him.

In summary, we saw how a passive *by*-phrase turns from non-licenser to licenser of null subjects as it acquires topic status. More generally, paradigms of null subject licensing from QA-pairs and left-dislocation structures were shown to support the claim that the topic status of the antecedent is a necessary condition for the licensing of null subjects.

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[4] In his dissertation, Hui-chuan Lu discusses similar cases in Spanish and Chinese (Lu,1994, section 3.2).

2.2. Null Subjects Crosslinguistically: the OT Analysis

In the OT model developed here the distribution of null subjects is captured by the interaction of the universal constraint DROPTOPIC (Grimshaw and Samek-Lodovici 1995a,b) and the other constraints of UG. DROPTOPIC requires that topic-referring arguments be left structurally unrealized, and is violated every time a topic-referring argument is parsed.

- DROPTOPIC: Do not realize arguments which have topic antecedents.
   Failed by structurally realized arguments coindexed with antecedents with   topic status.

Notice that DROPTOPIC is a weaker condition than the one that would arise by turning generalization (1) into a constraint. In fact, while the generalization states that null subjects *must* be licensed by a topic constituent, DROPTOPIC only asserts that they *can* be licensed by a topic constituent. The fact that non-topic antecedents license only overt pronominal subjects, covered in the generalization, is not covered by DROPTOPIC, and must be derived from the interaction of DROPTOPIC with the other constraints of UG. In particular, overt pronominal subjects will occur on pressure of the constraints PARSE, requiring input arguments to be structurally parsed, and SUBJECT, which for the examples examined here is equivalent to requiring that specIP be structurally realized.

- PARSE: Structurally realize input items into phrase-structure.
   Failed by unrealized input items.

- SUBJECT: The highest A-specifier of a clause must be structurally realized.
   Failed when the highest A-specifier of a clause is left structurally unrealized.

Besides deriving the alternation between null and overt subjects within a language, the interaction of DROPTOPIC, SUBJECT and PARSE determines the crosslinguistic distribution of null subjects, present in some languages and absent in others: in fact, only languages ranking DROPTOPIC sufficiently high will allow for referential null subjects.

2.2.1. Availability of Null Subjects

Let me start from the latter goal and show that null subjects are possible if and only if DROPTOPIC dominates SUBJECT and PARSE. Only in this case, a topic-referring pronominal subject will necessarily be left unrealized.[5]

First, let me show that under this ranking a topic-referring subject is indeed left unrealized. Examine tableau T1 below, which includes the relevant candidates (the full exhaustion of the candidate set is discussed later).

All candidates satisfy the leftmost and highest ranked constraint FULL-INT because none contains an expletive. The next lower constraint, DROPTOPIC, eliminates the candidates in (a) and (b), because they structurally realize the subject. The competition between the surviving structures (c) and (d) is settled by the next lower constraint PARSE, which is violated only once by candidate (c), but three times by the null structure in (d), which fail to parse even the verb and the tense specification. Candidate (c) is thus optimal and therefore grammatical. (Remember that an overt pronominal constitutes a legitimate parsing of an argument. The subscript *top* is only a reminder for the reader of the topic status of the antecedent, not part of the input, see section 1.7.)

T1. Italian topic-referring subjects: DROPTOPIC >> PARSE >> SUBJECT

<cantare(x), x=Gianni$_{top}$, -- , T=pres. perf.>	F.I.	DR.TOP	PARSE	SUBJ.
a. preverbal subj: [lui ha cantato] *he has sung*		*!		
b. postverbal subj: [-- ha cantato lui]		*!		*
c. ☞ null subj: [-- ha cantato]			*	*
d. null struct:			* *! *	

Let me now show that the optimal status of (c) crucially rests on the higher rank of DROPTOPIC relative to PARSE and SUBJECT. If PARSE dominated DROPTOPIC, (c) would

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[5] While this is the correct generalization for Italian and Greek, it is not for Hebrew and Chinese, which in this case seem to allow for null as well as non null subjects. I do not have an analysis to offer at this time. My assumption will be that null subjects in Hebrew and Chinese are derived the same way as in Greek and Italian. I hypothesize that the clauses showing overt subjects with topic-referring antecedents are the optimal realization of a different input, possibly involving some further functional specification not yet captured by the topic vs. non-topic distinction. Like DROPTOPIC, a constraint X may require that arguments carrying this functional specification F be dropped. The ranking of X with PARSE and DROPTOPIC would create the split between Greek and Italian, on the one side, and Hebrew and Chinese on the other. Relative to F, Hebrew and Chinese would behave as English does relative to topichood.

lose to (a), which satisfies PARSE, and would therefore be suboptimal and ungrammatical. The same would be true if SUBJECT dominated DROPTOPIC, which (c) fails but (a) satisfies.

The tableau provides evidence also for the subranking PARSE>>SUBJECT. In fact, under the reverse ranking, candidate (c) would be eliminated when assessing SUBJECT, in favor of candidate (d) which does not fail it. The fact that (d) fails PARSE would be rendered irrelevant by PARSE's low ranking.

The above argument thus shows that null subjects are possible only under the following ranking:

(26) Null subject languages: DROPTOPIC >> PARSE >> SUBJECT

Any subversion of the order in (26) provides a language without null subjects. For example, in English, the optimal realization of a pronominal subject with a topic antecedent requires an overt pronoun. This is precisely the selected optimal candidate once PARSE is ranked above DROPTOPIC. As the tableau below shows, under this ranking (c) and (d) fatally violate PARSE, restricting the competition to (a) and (b). These structures tie on DROPTOPIC and FULL-INT, but not on SUBJECT, which is failed by (b), leaving (a) as the optimal candidate.

If DROPTOPIC outranked PARSE, (a) would lose to (d), showing that its grammatical status crucially depends on having PARSE ranked higher than DROPTOPIC.

T2. English topic-referring subjects: PARSE >> DROPTOPIC

<sing(x), x=John$_{top}$, --, T=pres. perf.>	PARSE	DR.TOP.	SUBJ.	F.I.
a. ☞ preverbal subj: [he has sung]		*		
b. postverbal subj: [-- has sung he]		*	*!	
c. null subj: [-- has sung]	*!		*	
d. null struct:	*! * *			

Overall, the relative ranking of DROPTOPIC with respect to SUBJECT and PARSE has been shown to govern the availability of null subjects across languages for inputs involving topic-referring arguments.

2.2.2. Obligatory Overt Subjects

The impossibility of having null subjects with non-topic antecedents in any language, also follows from the interaction of DROPTOPIC with PARSE and SUBJECT. In fact, when the underlying subject has a non-topic antecedent, DROPTOPIC, which only affects arguments with topic antecedents, is vacuously satisfied by all candidates. The selection of the optimal candidate is then determined by the remaining constraints, which, independently of their ranking relative to DROPTOPIC, always select the candidate with a realized subject as optimal.

For example, in Italian DROPTOPIC outranks PARSE and SUBJECT, but the optimal candidate for a non-topic-referring argument is necessarily overt. In fact, the candidate with an overt preverbal subject, in (a) below, does not violate any constraint: it parses all input's heads (PARSE), it realizes the specIP position (SUBJECT), it does not realize a topic-referring argument (DROPTOPIC), and it does not have uninterpreted constituents (FULL-INT). Since no candidate can do better than that, (a) is necessarily optimal. The null subject structure in (c) instead fails PARSE and SUBJECT and is therefore suboptimal and ungrammatical. Subjects with non-topic antecedents are thus always overtly realized.

T3. Italian non topic-referring subjects.

<cantare(x), x=Gianni, --, T=pres.perf.>	F.I.	DR.TOP.	PARSE	SUBJ.
a. ☞ preverbal subj: [lui ha cantato] *he has sung*				
b. postverbal subj: [-- ha cantato lui]				*!
c. null subj: [-- ha cantato]			*!	*
d. null struct:			*!**	

More precisely, since the optimal status of (a) is independent of constraint reranking, (a) is predicted to be the optimal realization of non-topic-referring subjects across languages (caveat the effect of other constraints determining the position of subjects). That the violation-free candidate in (a) is also the optimal candidate in English-like languages is thus expected, as shown in tableau T4 below.

T4. English non-topic-referring subjects.

<sing(x), x=John, --, T=pres. perf.>	PARSE	DR.TOP.	SUBJ.	F.I.
a. ☞ preverbal subj: [he has sung]				
b. postverbal subj: [-- has sung he]			*!	
c. null subj: [-- has sung]	*!		*	
d. null struct:	*!**			

Summing up, a first argument for an optimality analysis has been given by showing how the interaction between DROPTOPIC and the constraints SUBJECT and PARSE predicts both the proper crosslinguistic alternation in the syntactic expression of topic-referring subjects in null-subject languages, and the crosslinguistic convergence on overt subjects as the syntactic expression of non topic-referring subjects

2.2.3. Expletive Subjects

A candidate which was not included in the above discussion is the expletive candidate. This candidate, shown below, realizes the specIP node with an overt DP, here represented as *expl* which is left uninterpreted.

(27) The expletive candidate: [expl. aux V]

Expletives always fail FULL-INT, therefore we expect them to be grammatical only when their presence makes it possible to satisfy higher ranked constraints which would otherwise be violated. The OT model thus predicts that expletives are possible only where necessary (Grimshaw & Samek-Lodovici 1995b, see also the analysis of *do*-support in Grimshaw's (1995)).

Under this perspective, English expletives occur under pressure of SUBJECT, which in English must be ranked higher than FULL-INT. As tableau T5 shows, the expletive in (b) makes it possible to satisfy the higher ranked constraint SUBJECT, and therefore (b) performs better than the null subject candidate in (a), which satisfy FULL-INT at the expense of SUBJECT.

T5. English expletives: SUBJECT >> FULL-INT

<seem(-,x), x=<...>--, T=pres.>	PARSE	DR.TOP.	SUBJ.	F.I.
a. null subject: [-- seems [that...]]			*!	
b. ☞ expletive subj: [it seems [that...]]				*

In principle, expletives could also provide a way to avoid the realization of a topic-referring subject, by satisfying **D**ROP**T**OPIC while simultaneously satisfying **S**UBJECT. Such a candidate violates **P**ARSE. But **P**ARSE was shown to outrank **D**ROP**T**OPIC in English, therefore the OT analysis makes the correct prediction that in English this candidate is less optimal than the preverbal subject candidate, which violates only **D**ROP**T**OPIC. The analysis is summarized in tableau T6.

T6. English topic-referring subjects: **P**ARSE>>**D**ROP**T**OPIC

<sing(x), x=John$_{top}$, --, T=pres.perf.>	**P**ARSE	**D**R.**T**OP.	**S**UBJ.	**F.I.**
a. ☞ preverbal subj: [he has sung]		*		
b. expletive subj: [expl. has sung]	*!			*

If the constraint ranking characterizing English restricts the contexts in which expletive candidates turn out optimal, the ranking identifying Italian makes them always suboptimal, leaving the impression that expletives are absent from the lexicon of the language. This is in fact the effect of having **F**ULL-**I**NT ranked higher than **S**UBJECT. As T7 shows, under this ranking the null subject candidate in (a) wins over the expletive candidate in (b), because it violates the lower one of the two conflicting constraints.

T7. Italian expletives: **F**ULL-**I**NT >> **S**UBJECT

<sembrare(-,x),x=<...>, --,T=pres.>	**F.I.**	**D**R.**T**OP.	**P**ARSE	**S**UBJ.
a. ☞ null subj: [-- sembra [che ...]]				*
b. explet. subj: [expl. sembra [che ...]]	*!			

The above ranking is confirmed by the analysis of topic-referring subjects. As T8 shows, the conflict between **F**ULL-**I**NT and **S**UBJECT arises also in this case, and once again it is consistently solved in favor of the null subject candidate in (a), and against the expletive candidate in (b), because violating **F**ULL-**I**NT constitutes a worse violation than violating **S**UBJECT.

T8. Italian topic-referring subjects: **F**ULL-**I**NT >> **S**UBJECT

<cantare(x), x=Gianni$_{top}$, -, T=pres.perf.>	**F.I.**	**D**R.**T**OP	**P**ARSE	**S**UBJ.
a. ☞ null subj: [-- ha cantato]			*	*
b. expletive subj: [expl. ha cantato]	*!		*	

This and the previous sections show how the OT interaction of a few simple universal constraints properly predicts the language-internal and crosslinguistic distribution of null subjects in relation to topic-referring and non-topic-referring antecedents, and its correlation with the availability of overt expletives. The identified rankings follow below:

(28) Rankings for Italian and English:

<u>Italian</u>   <u>English</u>

DROP**T**OPIC **F**ULL-**I**NT   **S**UBJECT   **P**ARSE

↓   ↓   ↓

PARSE   **F**ULL-**I**NT   **D**ROP**T**OPIC

↓
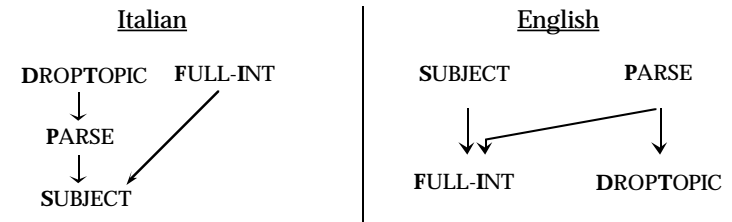
SUBJECT

The above discussion also showed that reranking is not an unconstrained operation that can derive any conceivable pattern. This fact was best illustrated by the derivation of the universal lack of null subjects for non topic-referring antecedents, and by the correlation between the availability of referential null subjects and the lack of overt expletives, further explored in the next subsection.

2.2.4. The Crosslinguistic Distribution of Expletives

The lack of overt expletives in Italian is an instance of a well known universal about null subject languages stating that languages with referential null subjects lack overt expletives, that is, there is no language where sentences like *sings*, meaning 'she sings', and *it seems that ...* are both grammatical[6] (Safir 1985:265, Rizzi 1986:541, Travis 1984:228, Cardinaletti 1992:74).

This universal follows as a theorem of the analysis, and more precisely from the fact that referential null subjects and overt expletives are possible only under constraint

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[6] An apparent exception, which I leave open to further research, is Galician, a null-subject Portuguese dialect. Galician shows no overt expletive in the unmarked case, but optionally allows for an overt expletive in a limited set of structures. See Raposo and Uriagereka, (1990:513).

rankings which are inconsistent with each other. This is shown in the following two steps demonstration.

Step 1. Let us examine what ranking is required to have an overt expletive. Consider the case of a verb lacking an external argument and the three candidates in T9 below: the null subject candidate, which leaves the specIP node structurally unrealized, the expletive candidate, which realizes it through an uninterpreted pronominal, and the null structure. Each candidate fails one constraint among PARSE, SUBJECT and FULL-INT. The optimal candidate is the one which fails the least ranked constraint. The expletive candidate is thus optimal only if FULL-INT is ranked lowest.

T9. Expletives: {PARSE, SUBJECT}>>FULL-INT

<seem(-,x), x=<...> , --, T=Pres>	DR.TOP.	PARSE	SUBJ.	F.I.
a. null subj: [-- seems [that ...]]			*!	
b. ☞ expletive subj: [expl seems [that ...]]]				*
c. null structure:		*! *		

Therefore the ranking of any language with overt expletives requires that SUBJECT and PARSE dominate FULL-INT.

Step 2. Let us now turn to referential null subjects. We know from the discussion of Italian in the previous section that they are possible only under the ranking DROPTOPIC>>PARSE>>SUBJECT. If referential null subjects were compatible with overt expletives, we should be able to merge this ranking with that established in step 1 and still get referential null subjects and overt expletives as the optimal structures for the relevant inputs. This is not the case. In fact, the resulting ranking, DROPTOPIC>>PARSE>>SUBJECT>>FULL-INT, is incompatible with referential null subjects. In particular, the expletive candidates, in (b), wins over the null subject candidate, in (a), because it satisfies SUBJECT, which (a) does not satisfy.

T10. Expletives with topic-referring subjects: SUBJECT>>FULL-INT

<V(x), x=N$_{top}$,--, T=pres. perf.>	DR.TOP.	PARSE	SUBJ.	F.I.
a. null subj: [-- aux V]		*	*!	
b. ☞ expletive subj: [expl. aux V]		*		*

For the null subject candidate to succeed in the above competition, FULL-INT must dominate SUBJECT, but this contradicts the ranking established in step 1.

The universal ban on languages with referential pro-drop and overt expletive subjects thus follows from the impossibility of satisfying FULL-INT at the expense of SUBJECT on inputs with referential subjects, while satisfying SUBJECT at the expense of FULL-INT on input with argumentless verbs.

The analysis does not over-predict: nothing prevents the existence of languages with overt referential subjects for topic antecedents but lacking expletives, that is languages where *she sings* and *seems [that ...]* are both grammatical. As we know from the discussion of tableau T9, repeated below, selecting the null subject candidate for a verb like *seem* requires the ranking {PARSE, FULL-INT}>>SUBJECT.

T9. Expletives: {PARSE, SUBJECT}>>FULL-INT

<seem(-,x), x=<...> , --, T=Pres>	DR.TOP.	PARSE	SUBJ.	F.I.
a. null subj: [-- seems [that ...]]			*!	
b. ☞ expletive subj: [expl seems [that ...]]]				*
c. null structure:		*! *		

The availability of overt referential subjects for topic-antecedents instead, requires that PARSE dominate DROPTOPIC (as in English, see tableau T2). Hence, all rankings compatible with these two rankings are compatible with the language being sought.

Consider for example the ranking PARSE>>FULL-INT>>SUBJECT>>DROP-TOPIC in the tableu below (the verbal and nominal heads are represented by their category. The expletive candidate has been added in (e)). The input in T12 marks the external argument as topic-referring. The optimal candidate is the one with the overt subject in (a) because, unlike all other candidates, it satisfies the higher constraints PARSE, FULL-INT, and SUBJECT.

T12. Overt referential subjects: **P**ARSE >> **D**ROP**T**OPIC

$<V(x), x=N_{top},--, T=\text{pres. perf.}>$	**P**ARSE	F.I.	**S**UBJ.	**D**R.**T**OP.
a. ☞ preverbal subj: [DP aux V]				*
b. postverbal subj: [-- aux V DP]			*!	*
c. null subj: [-- aux V]	*!		*	
d. null struct:	*!**			
e. expletive subj: [expl. aux V]	*!	*		

Under the same ranking, a verb like *seem* would surface with a null subject, because this candidate satisfies both **F**ULL-**I**NT and **P**ARSE while all other candidates fail one or the other. This is shown in tableau T13 below. (The preverbal subject candidate is omitted because the input lacks a thematic subject)

T13. Overt expletives: {**S**UBJECT, **P**ARSE} >> **F**ULL-**I**NT

$<V(), -- ,--, T=\text{pres. perf.}>$	**P**ARSE	F.I.	**S**UBJ.	**D**R.**T**OP.
b. postverbal subj: [-- aux V expl.]		*!	*	
c. ☞ null subj: [-- aux V]			*	
d. null struct:	*!*			
e. expletive subj: [expl. aux V]		*!		

To sum up, we have seen how the interaction of **F**ULL-**I**NT with the other constraints of UG determines aspects of the crosslinguistic distribution of expletives, including the universal ban on overt expletives in languages with null referential subjects.[7] While a complete analysis of the distribution of expletives will probably have to take into consideration other factors, as for example the correlation with verb movement studied by Vikner (1995), the analysis just provided is important because it shows that the presence of overt expletives in a language need not necessarily be lexically stipulated, and it can be determined by grammar, by the same constraints that govern the pro-drop alternation (see also Grimshaw and Samek-Lodovici 1995a,b).

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[7] In this model null subjects are always viewed as structurally unrealized, and therefore so called "null expletives" have no status in the analysis. See section 5.6.

2.2.5. Expletives as Uninterpreted Pronouns

The constraint **F**ULL-**I**NT is also responsible for selecting pronominals rather than other DP's as expletives. The explanation hinges on the definition of **F**ULL-**I**NT and is parallel to Grimshaw's (1993, 1995) analysis of *do*-support.

We may conceive **F**ULL-**I**NT as a gradient constraint violated more the more complex the lexical conceptual structure of the uninterpreted DP is. Following Rothstein (1995:512), who proposes a strikingly similar analysis, we can represent pronominals as intransitive DPs (as in Abney 1987), lacking internal structures and semantically contributing only a referential index. Thanks to their minimal conceptual structure, pronominals violate **F**ULL-**I**NT the least, and therefore they, and not other more complex DPs, constitute the optimal expletive elements.

While Grimshaw and Rothstein seem to have developed essentially the same idea, their implementation involve important differences, which have conceptual consequences. In the OT model, when the evaluation function EVAL selects a structure with an expletive as optimal, it will also select as optimal the structure with the expletive DP that violates **F**ULL-**I**NT the least, i.e. a structure with a pronominal expletive. In this analysis, there is no need to differentiate an expletive pronoun from a non-expletive one. The fact that a pronoun is not interpreted when functioning as an expletive does not make it less a pronoun than its interpreted counterpart. The pronoun is always the same element.

The same is not true in Rothstein's model, which lacks constraint violability. Like Grimshaw, Rothstein conceives expletives not as a particular type of syntactic elements but as those elements that violate the principle of full interpretation the least. However, she is forced to "postulat[e] a null or uninformative element that has no properties and will be the denotation of the minimal pronoun in its pleonastic use" (Rothstein 1995:508). The null denotation at issue is forced by the principle of Full Interpretation, which, in a non-OT framework, cannot be violated when interpreting expletives. The problem goes beyond the need to stipulate a dummy denotation: the very association of the dummy with pronominals is now stipulative too, because nothing prevents the dummy denotation from been associated with other more complex DPs. For example, it could be associated with the proper name *John*. Moreover, we now have two elements, normal pronominals and the same pronominals associated with the null denotation, making the latter a particular class of syntactic elements, against the original goal.

Overall, it appears that the insight on the fundamental nature of expletives as uninterpreted pronouns non-distinct from pronouns themselves is jeopardized by inviolable status of the Full Interpretation principle in Rothstein's analysis.

In conclusion, besides deriving the distribution of null subjects and overt expletives, the proposed OT model permits us to capture in a less stipulative manner the identification of expletives with pronominals proposed by Grimshaw and Rothstein.

2.2.6. Candidate-set Exhaustion and Crosslinguistic Typology

The purpose of this section is to complete the analysis presented thus far by demonstrating that all competing candidates have been taken into account; that is, that no extra candidate exists which does better than the optimal candidates discussed so far. In turn, this will permits us to examine the crosslinguistic typology being predicted.

Consider the input schema in (29) below, with a topic-referring thematic subject, and the four familiar candidates listed in (30).

(29)   Input: $<V(x), x=N_{top}, -- , T=present perfect>$.

(30)   *Candidate:*   *Structure:*   *Violates:*
   a. null subject: [-- aux V]   SUBJECT, PARSE.
   b. preverbal subject: [DP aux V]   DROPTOPIC.
   c. expletive and no subject: [expl aux V]   FULL-INT, PARSE.
   d. null structure: [   ]   PARSE (three times).

These candidates are all independent of one another, as one can see by checking the constraints they violate. To prove that these candidates exhaust the set of potential optima across all rerankings, I will show that for any possible ranking, any other GEN-generated candidate is less optimal than one of the candidates above. In the proof I will make crucial use of the notion of *harmonic binding,* henceforth 'h-binding' (Prince & Smolensky 1993, sections 1.9 and 9.1.1. As seen in section 1.9, a candidate *Cand* h-binds another candidate *Cand'* when all the violations of *Cand* are matched by correspondent violations by *Cand'*, but some violations of *Cand'* are not matched by any violation by *Cand. Cand'* is then h-bound by *Cand* because the unmatched violations make it less harmonic than *Cand* under any constraint ranking).

Proof: let us assume that there exists a candidate *Cand* which is also a potential optima, i.e. that is not h-bound by any of the four candidates in (30a) above. This leads to a contradiction, as shown in 1 through 7 below:

1. *Cand* cannot be the candidate satisfying all constraints, because if it satisfies DROPTOPIC leaving the subject unrealized it fails PARSE, and vice versa.

2. *Cand* could be as good as candidate (b), failing DROPTOPIC only. This is possible only if *Cand is* (b), in fact the available structurally distinct candidates are all h-bound by (b): parsing the subject argument outside specIP would lead to additional violations of SUBJECT; realizing specIP through an expletive violates FULL-INT; and parsing the subject in specIP would make *Cand* indistinguishable from (b).

3. Since step 2 showed that failing DROPTOPIC alone is not possible, it follows that *Cand* cannot fail DROPTOPIC. Hence the subject must be left unrealized. Thus *Cand* must violate at least PARSE.

4. The unrealized subject opens the problem of what to do with specIP: If *Cand* leaves it unfilled, it collects the violation of SUBJECT. Added to the PARSE violation, this violation makes *Cand* fare like the null subject candidate in (a). But *Cand* cannot be distinct from (a) unless it includes additional expletive material, in which case it fails FULL-INT, and becomes h-bound by (a) itself.

5. If instead *Cand* fills specIP with an expletive, then it adds to its PARSE violation a violation of FULL-INT, and fares as the expletive candidate in (c). To distinguish itself from (c), *Cand* could only add expletive material, adding violations of FULL-INT, and ending up h-bound by (c) itself.

6. Finally, if *Cand* could avoid parsing the verb and the tense specification, thus dissolving the problem by not creating a specIP position. Doing so costs additional violations of PARSE, and makes *Cand* indistinguishable from the null structure in (d), contrary to the original hypothesis. Parsing only the subject into a DP violates PARSE only once, but fails Compatibility, because the lexical head of the input is a verb, not a noun.

7. GEN does not supply any other structural option. It follows that *Cand* cannot be a potential optima, in contradiction with the initial hypothesis.

A corollary of this proof is that candidates (a) through (d) are the only potential optima available, and that the 4!=24 rerankings of the four constraints here examined converge around these four optima. These can be reduced to three if we exclude the null-analysis on the basis of its non-learnability, given that identification of the optimal form is a crucial assumption of current theories of language acquisition in OT systems, such as for example Tesar and Smolensky's (1993). Since the null-structure cannot be identified, being ambiguous with silence, it cannot be learnt. Other constraints notwithstanding, the analysis thus predicts a crosslinguistic typology where topic-referring pronominal subjects are expressed either overtly, or non-overtly, or finally non-overtly but with an expletive in subject position. The first two possibilities are instantiated by English and Italian respectively. The latter option is further examined here below.

2.2.7. Potential Developments

I would like to discuss in this section a few potential developments of the model here proposed.

2.2.7.1. "Expletive pro-drop"

The first concerns the above prediction of languages involving non-realization of a topic-referring subject, but with an overt expletive in subject position (let us call it *expletive pro-drop)*[8]. In a language like this, it should be possible to interpret a sentence like *it sings* as "she sings". More precisely, the sought language could have independent overt pronominal forms for argument with non-topic antecedents, but use an expletive form for topic-referring arguments.

Notice that expletive pro-drop is predicted by the proposed model due to the assumption on optional theta-assignment. For example, it is this assumption that makes possible for the external role of *run* in (31) to leave the pronoun in subject position unassigned, and therefore uninterpreted, thus functioning as expletive.

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[8] For example, such a language would arise from the ranking below:
   DROPTOPIC >> SUBJECT >> PARSE >> FULL-INT

(31)
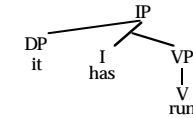
Conversely, we could assume that theta-assignment occurs obligatorily as soon as a theta-role finds a potential assignee. In this case, the external theta-role in (31) above would necessarily be assigned to the DP in subject position which would then cease to function as expletive. The structure would then be analyzed as involving an interpreted pronoun, and no "expletive pro-drop" language would be predicted to exist, dissolving the issue.

Hence, the non existence of expletive pro-drop would not per se destroy the main results of the OT analysis. Nevertheless, it would have serious consequences for the derivation of the universal ban on null subject languages with overt expletives, since the second step of the proof in section 2.2.4 crucially relies on the existence of the 'expletive candidate', which would no longer exists if theta-assignment would be obligatory whenever possible. It is thus worth examining in detail whether expletive pro-drop is really absent from the world languages or not.

Expletive pro-drop is compatible with two possible pronominal systems.

In the first and clearer case, the expletive pro-drop language would show distinct pronominal forms wherever the subject is obligatorily realized, i.e. whenever the subject refers to a non-topic. The sought language would however use its expletive pronoun both for expletive constructions involving raising verbs like *seem* as well as for the expression of topic-referring subjects, whereas English in this latter case uses all its pronominal forms, and Italian shows no pronominal subject.

(32)	Subj. referring to a non-topic:	Topic-referring subj.:	Expletive subj.:
Italian:	Lui / lei / esso canta. *He / she / it sings.*	Canta. *(he/ she/ it) sings.*	Sembra che ... *(it) seems that...*
English:	He/she/it sings.	He/she/it sings.	It seems that...
Sought L.:	Pron1 / Pron2 sings.	Pron2 sings.	Pron2 seems that...

A language with such a pattern would offer clear evidence for the language typology predicted by the OT analysis presented before. I have no such example to offer yet.

There is a second less self-evident pattern which arises when the sought language, much like Chinese, does not have distinct pronominal forms for subjects referring to a non-topic. In this case, the Pron1 and Pron2 distinguished in (32) above, coincide. Its pattern would look like English except that its pronouns have been collapsed into one unique form, as shown in (33).

(33)	Subj. referring to a non-topic:	Topic-referring subj.:	Expletive subj.:
English:	He/she/it sings.	He/she/it sings.	It seems that...
Sought L.:	Pron sings.	Pron sings.	Pron seems that...

A language displaying this pattern exists, and is Colloquial Finnish, which descriptively is a non pro-drop version of Standard Finnish. According to Holmberg and Nikanne (1994:12), in Colloquial Finnish the expletive *se* occurs as the subject of weather and *seem* clauses, as in (34a,b), but it can also occur as the subject of sentences with thematic subjects, and be interpreted referentially as meaning *he* or *she,* see (35).

(34a) Se sataa.
    Expl. rains.
    It rains.

(34b) Se vaikuttaa siltä, että rupeaa satamaan.
    Expl seems expl+ABL, that begins rain+INFINITIVE+ILLATIVE.
    It seems that it will rain.

(35) Se väsyy helposti.
    Expl. tire easily
    He/She gets easily tire.

This pronominal pattern is ambiguous. It could belong both to a language with the constraint ranking of English, but lacking distinctions in its pronominal inventory, as well as to a language with the ranking responsible for expletive pro-drop. We thus

cannot know yet whether Colloquial Finnish is or is not the sought language. However, this conclusion makes it premature to assert that the class of languages with expletive pro-drop is empty until we determine the status of Colloquial Finnish.[9]

2.2.7.2. English Stressed and Unstressed Pronouns

A second development concerns the syntactic role of topic antecedents in English. Grimshaw and Rosen (1990:201) argue that an unstressed English third person pronominal is fully natural only if it has a linguistically prominent discourse antecedent. Among the following two sentences, only the pronoun in (a) is grammatical even if unstressed, while that in sentence (b) requires stress.

(36) a. Mary went swimming with John.   She dived in.
      b. John went swimming with Mary.   *She dived in.

The question is whether this and similar effects are due to the topic vs. non-topic status of the antecedent. Under this hypothesis, the pronoun in (a) can stay unstressed because its antecedent is a topic. In other words "stress-drop" would mimic "subject-drop". If correct, this hypothesis would strengthen the claim that the topic status of antecedents plays an important syntactic function.

The OT model proposed here does not yet cover these cases, since **D**ROP**T**OPIC makes only a binary distinction between realization and non-realization of an argument.

If the difference between stressed and unstressed pronouns reflected the presence of additional projections on the part of stressed pronouns, then the English cases could be analyzed through a relativized version of **D**ROP**T**OPIC requiring topic-referring arguments to be as much devoid of structure as possible. This constraint, call it **D**ROP**T**OPIC$_{rel}$, would be reminiscent of Cardinaletti and Starke (1994)'s *economy of representation* principle, also requiring structure to be always minimal and also distinguishing pronominal classes by the amount of structures used in their realization.

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[9] Although Vainikka (1989:188) maintains that *se* is the only pronominal form for the third person of Colloquial Finnish, it would be worth testing whether the topic vs. non-topic status of the subject antecedent determines an alternation in the syntactic expression of the subject. If we were to find that Colloquial Finnish could resort to the pronouns *hän* (she/he) of Standard Finnish in focusing contexts or for subject with non-topic antecedents, then Colloquial Finnish would actually be an instance of expletive prodrop languages.

The constraint **D**ROP**T**OPIC$_{rel}$ could be a gradient constraint violated once for each immediate projection used in the extended projection that realizes the pronominal argument structurally. **D**ROP**T**OPIC$_{rel}$ would then be satisfied only when the argument is left structurally unrealized. However, whenever other higher ranked constraints impose that an argument be structurally realized, **D**ROP**T**OPIC$_{rel}$ would militate for structurally minimal realizations .

- **D**ROP**T**OPIC$_{rel}$ Realize arguments with topic antecedents minimally.
  Failed once by each immediate projection of the extended projection that realizes a
  topic-referring argument.

The additional projection supposedly required by stressed pronouns would be penalized wherever it is unneeded. Even when ranked lower than **P**ARSE, **D**ROP**T**OPIC$_{rel}$ would favor unstressed pronouns over stressed pronouns. The derivation of English unstressed topic-referring subjects would look like T14 below: the null subject candidate in (c) satisfies **D**ROP**T**OPIC$_{rel}$, but is suboptimal because it violates the higher ranked **P**ARSE. The stressed-pronominal and the unstressed-pronominal candidates perform identically under all constraints, but the candidate with the unstressed-pronominal performs better on **D**ROP**T**OPIC$_{rel}$ and therefore wins (the actual number of marks under **D**ROP**T**OPIC$_{rel}$ would depend on the full analysis given to stressed and unstressed pronominals).

T14. English topic-referring subjects: **P**ARSE >> **D**ROP**T**OPIC$_{rel}$

<sing(x), x=John$_{top}$,--,T=pres.perf.>	**P**ARSE	**D**R.**T**.$_{rel}$	**S**UBJ.	**F.I.**
a. ☞ unstressed pron: [he has sung]		*		
b. stressed pron: [HE has sung]		*! *		
c. null subj: [-- has sung]	*!		*	

The derivation of null subjects in Italian-type languages instead would still follow from the ranking **D**ROP**T**OPIC$_{rel}$>>**P**ARSE>>**S**UBJECT, which would still favor null subjects over structurally realized subjects. One problem of this analysis arises with subjects which are non topic-referring, in which case the stressed and unstressed pronominals come out both optimal, incorrectly. I leave this proposal open to further analysis.

2.2.7.3. Licensing Through Agreement
The analysis of null subjects proposed here opens the issue of the role of agreement in the licensing of null subjects. The relevance of agreement is nicely shown by the alternation between Italian and Portuguese infinitivals with overt subjects. Under specific configurations, the agreementless Italian infinitivals can assign case to an overt subject in specIP but it cannot license a referential null subject (Rizzi 1982). In contrast, the agreementfull Portuguese infinitival can license a null referential subject (Raposo 1987). Moreover, if null constituents must be licensed through agreement, the absence of null internal arguments in Italian could be derived from the absence of object oriented agreement morphology on V°, as proposed in Rizzi (1986).

Let us assume that this licensing requirement is a constraint **A**GR-**L**ICENSE which requires referential subjects to be identified through agreement, along Rizzi's argumentation (1986). The constraint **A**GR-**L**ICENSE and **D**ROP**T**OPIC are different. **D**ROP**T**OPIC specifies under which conditions null subjects are necessary, and under these conditions is violated by structurally realized subjects. **A**GR-**L**ICENSE specifies a licensing condition for referential null subjects, and is never violated by structurally realized subjects.

The interaction of **D**ROP**T**OPIC and **A**GR-**L**ICENSE give rise to an interesting language typology which may account for why referential null subjects must be licensed by agreement in null subjects languages with "rich" agreement such as Italian and Portuguese but are also available in languages lacking agreement completely, as Chinese (on this apparent paradox see also the solutions developed in Huang 1984, Rizzi 1986, Jaeggli & Safir 1989). The typology distinguishes between languages with and without agreement, a partition independently determined by the ranking of the agreement constraints, as explained in chapter 3. The typology follows below:

(i) among languages with agreement, two cases are given: the first group is formed by languages with **A**GR-**L**ICENSE higher than **D**ROP**T**OPIC, and **D**ROP**T**OPIC in turn higher than **S**UBJECT and **P**ARSE, like Italian and Portuguese. These languages must satisfy **A**GR-**L**ICENSE and therefore will display null subjects only in concomitance with agreement. This accounts for the alternation between agreementless Italian and agreementfull Portuguese infinitivals, which depends on the ranking of -**T**/-**A**GR and is examined in chapter 5. Since in this group of languages null subjects must be licensed

through agreement, the agreementless infinitivals of Italian cannot license referential null subjects, which is instead preserved by the Portuguese agreement full infinitivals.

The second group is constituted by languages with **D**ROP**T**OPIC lower than either **S**UBJECT or **P**ARSE. These languages disallow null subjects because **D**ROP**T**OPIC is too low in the hierarchy, independently of the ranking of **A**GR-**L**ICENSE and in spite of the presence of agreement. A language in this group would have "rich" agreement and still lack null subjects. This could be the case of French.

(ii) languages lacking agreement can still have null subjects. This is the case for all those languages ranking **D**ROP**T**OPIC higher than **A**GR-**L**ICENSE. **A**GR-**L**ICENSE would be violated whenever necessary to satisfy **D**ROP**T**OPIC. Those languages where **D**ROP**T**OPIC is also higher than **S**UBJECT and **P**ARSE would then allow null subjects despite the violation of **A**GR-**L**ICENSE. This could be the case of Chinese.

2.2.8. Summary

This section provided an OT analysis of the pro-drop alternation language-internally and across languages. The analysis crucially relies on the existence of the universal constraint **D**ROP**T**OPIC, requiring that topic-referring constituents be not realized structurally. Evidence in this direction was already provided in section 2.1, where it was shown how null subjects are licensed only by topic-referring antecedents. In this section, I showed how the interaction between **D**ROP**T**OPIC and the universal constraints **S**UBJECT, **P**ARSE and **F**ULL-**I**NT provides a principled explanation for the empirical distribution of pronominal subjects in pro-drop and non-pro-drop languages. In particular, I showed how the availability of null subjects is tied to the ranking of **D**ROP**T**OPIC relative to the constraint **S**UBJECT and **P**ARSE.

The analysis also predicted the crosslinguistic convergence in the analysis of subjects referring to non-topics, which are always overtly realized. Furthermore, it predicted the ban against overt expletives in null subject languages, and derived the presence or absence of overt expletives from grammar rather than through lexical stipulation.

2.3. Representing Null Subjects

Contrary to standard assumptions, in the preceding analysis null subjects were left structurally unrealized. Is there independent evidence for this representational choice? And how does it compare with analyses of pro-drop that use *pro*?

The main motivation for representing null subjects as structurally unrealized is the ensuing possibility of deriving the crosslinguistic distribution of null and overt subjects from the interaction of **P**ARSE and **S**UBJECT with **D**ROP**T**OPIC. If null subjects were structurally represented as *pro*, the optimal structure would have *pro*-subjects when the antecedent is a topic, and overt subjects when the antecedent is not a topic. Since *pro* is silent but syntactically realized, these two structures both satisfy **S**UBJECT and **P**ARSE, and no conflict with **D**ROP**T**OPIC could ever arise. The pro-drop alternation would then have to be derived by different means. Notice however, that the syntactic requirements expressed through the constraints **D**ROP**T**OPIC, **S**UBJECT and **P**ARSE exist independently of Optimality Theory, and would have to be maintained anyway, in one form or another. What is being lost is thus only the possibility of deriving the pro-drop alternation directly from the OT based interaction of the above constraints, with no advantage in exchange.

Not surprisingly, the impossibility of exploiting the potential interaction between the extended projection principle (corresponding to **S**UBJECT) and the requirement that subject with topic antecedents be null (i.e. **D**ROP**T**OPIC) characterizes current analyses of the pro-drop alternation, which do assume an overtly realized silent *pro.*.

Research on pro-drop has concentrated on establishing the syntactic conditions making null-arguments possible, without considering the nature of their antecedents (Taraldsen 1978, Rizzi 1982, Chomsky 1981, 1982, Safir 1985, Burzio 1986, Jaeggli and Safir 1989). In these works, null subjecthood is analyzed as a property related to a parametric difference in the lexicon. For example, in Rizzi (1982), languages with a [+pronominal] I⁰ acquire the potential for licensing null subjects. Since this specification of I⁰ must coexists with the opposite specification of I⁰, else null subjects would be obligatory across structures, this and the other analogous analyses incorrectly predict free variation between null and overt subjects.

It is not difficult to amend these analyses so that they capture the correct distribution. A principle requiring *pro* to have a topic antecedent would properly predict the language-internal distribution of null subjects in pro-drop languages[10]. However, it would not predict their crosslinguistic distribution, which would still be tied to a parametric difference. The language-internal and the crosslinguistic distribution of null

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[10] A revised version of Chomsky's Avoid Pronoun principle would also work. (Chomsky 1981).

subjects would be accounted for independently from each other. In contrast, by assuming that null subjects are structurally unrealized, the OT analysis derives both distributions from the interaction of the independently needed **D**ROP**T**OPIC, **S**UBJECT and **P**ARSE.

A second argument for the structural realization of null subjects comes from Safir (p.c.) and is implicitly present in Jaeggli & Safir (1989). It is based on the ungrammaticality of infinitival sentences lacking thematic subjects, like (37a) below, which according to Jaeggli & Safir, has the structure in (37b), with an expletive PRO as subject of the subordinate clause.

(37a) *Es ist möglich, getanzt zu werden.
        It is possible danced to be.
(37b) *Es ist möglich, PRO$_{expl}$ getanzt zu werden.

According to Jaeggli and Safir, it is precisely the PRO$_{expl}$ element that makes the sentence ungrammatical, because empty expletives must be governed in accord to the *Emex Condition*. According to Safir (p.c.), (37) is also an argument for the overt realization of the null subject PRO$_{expl}$, since if PRO$_{expl}$ were not represented it would not be possible to refer to it in order to rule out (37).

It is not obvious that a condition on null expletives such as the *Emex Condition* could not be reformulated as a condition on the input of infinitival clauses lacking thematic subjects and thus be compatible with the view that null subjects are structurally unrealized. However, what I will dispute here is the generalization that sentences with PRO$_{expl}$ subjects —with the term *PRO$_{expl}$* used only descriptively— are universally ungrammatical. Notice that if they are not ungrammatical, then the ungrammatical status of (37) is not due to PRO$_{expl}$, and consequentely there is no related need to represent it structurally in order to refer to it in the *Emex Condition*.

In particular, Italian and French allow for PRO$_{expl}$ subject under specific contexts. Consider for example the contrast between the Italian grammatical sentence in (38) and the ungrammatical (39) listed below. The PRO$_{expl}$ subject of the subordinate clause of (38) is in ungoverned position, and should therefore make (38) ungrammatical under the *Emex Condition*. Nor is a hidden aux-to-comp taking place, so that PRO$_{expl}$ is governed and case-assigned from the verb raised into C⁰ position. In fact, if this were

the case, the overt subject in sentence (39) should be licensed, and the sentence be grammatical, rather than unacceptable as it is.

(38) In fondo, [PRO$_{expl}$ risultare [che non siete ancora sposati]] puó solo
        avvantaggiarci.
        In end, [to-turn out [that (you) not are yet married] can only favour-us].
        After all, to turn out that you are not married yet can only favor us.

(39) *In fondo [risultare Marco [aver mentito] puó solo avvantaggiarci].
        In end, to-turn out Mark [to have lied] can only favour-us.
        After all, to turn out for Mark to have lied can only favor us.

Additional evidence comes from French, where aux-to-comp is not possible, and therefore a non-issue. Half of the native speakers I tested find the analogous of Italian (38) shown in (40) only slightly marginal; see (40) below.

(40) ?Au fond, [PRO$_{expl}$ paraitre [que vous n'etes pas encore marie's]] ne peut
        que vous aider.
        In end, to-seem [that you not are yet married] not can that favour-you.
        After all, to seem that you are not married yet, can only favour you.

The same speakers find the infinitival lacking a thematic subject in (41) below acceptable, and yet find the parallel sentence involving a raising overt subject in (42) unacceptable. The ungrammatical status of (42) shows that (41) cannot be analyzed as involving aux-to-comp movement.

(41) ?PRO$_{expl}$ avoir semble' que tu aies menti pourrait te faire perdre la cause.
        To-have seemed that you have lied could you make lose the lawsuit.
        Having seemed that you lied could make you lose the lawsuit.

(42) *PRO$_{expl}$ avoir Jean semble' mentir pourrait te faire perdre le cause.
        To-have seemed John to lie could you make lose the lawsuit.
        Having seemed that John lied could make you lose the lawsuit.

The above discussion indicates that the ungrammaticality of the German sentence in (37) is not related only to the presence of a PRO$_{expl}$ subject, since analogous subjects are

possible in Romance. Since this was the crucial assumption underlying the argumentation in favour of structurally realized null subjects, the argumentation itself does no longer apply.

There are also some empirical arguments against the analysis of null subjects as *structurally realized*. These are examined in the next subsections (see also chapter 5).

2.3.1. The Null Subjects vs. Overt Clitics Split

The analyses advocating an overt representation of null subjects usually classify them with overt clitics, either as structurally realized null clitics (Safir 1985, Burzio 1986), or as *pro* DPs licensed by a pronominal and clitic-like I^o (Rizzi 1982, Chomsky 1982). If these analyses were correct, null subjects and clitics should show a similar distribution. We would thus expect the distribution of overt clitics to match that of null subjects.

Instead, we observe an unexpected split between null subjects and overt clitics. Like null subjects, overt clitics may refer to topic-antecedents, as in the answers to (43) below, but unlike null subjects, clitics can also have non-topic antecedents, as in (44).

(43)   Q: E' partita [la madre di Gianni$_k$]$_i$?
            Did John's mother leave?
     A: Non ancora, perché **l$_i$**'abbiamo invitata a cena.
           Not yet, because (we) her-invited to dinner.
           Not yet, because we invited her to dinner.
     A: No. **Le$_i$** daró un passaggio io piú tardi.
           No. To-her give-FUT a ride I more late.
           No, I will giver her a ride later on.

(44) Q: E' partita [la madre di Gianni$_k$]$_i$?
          Did John's mother leave?
     A: Non ancora. Prima ha voluto invitar-**lo$_k$** a cena.
         Not yet. Before (she) has wanted to-invite-him to dinner.
         Not yet. She wanted to invite him to dinner, (before leaving).
     A: No. Ha voluto parlar-**gli$_k$** un poco in privato, e cosí ha perso il treno!
         No. (She) has wanted to-speak-him$_{DAT}$ a little in private, and so (she)
           lost the train!
         No. She wanted to speak to him in private, and she lost the train!

A second instance of the split is shown in sentence (45), from Calabrese (1985). Once again, the clitic may take the subject as well as the object of the initial adjunct as antecedent.

(45) Mentre Sandro$_i$ ritraeva Carlo$_k$, Antonio lo$_{i/k}$ fotografava.
     While Sandro was painting a portrait of Carlo, Antonio was taking a picture of him.

This behavior diverges from that of a null subject, which can only refer to the subject of the initial adjunct, which is a topic, and not to its object, a non-topic. See (46).

(46)   Mentre Sandro$_i$ ritraeva Carlo$_k$, e$_i$ / *e$_k$ fumava.
      While Sandro was painting a portrait of Carlo, he was smoking.

The split just examined shows that identifying null subjects with clitics is incorrect.

2.3.2. Unrealized Null Subjects and Pronominal Typology

Cardinaletti and Starke (1994) recently proposed a tripartition of pronominals in strong, weak and clitic. They distinguish clitics from null subjects, which they represent as *pro*, by including the latter in the class of weak pronominals. These classes and the properties associated with them are then derived through a notion of structural deficiency with strong pronouns as the least and clitics as the most structurally deficient pronouns.

One of the properties that Cardinaletti and Starke associate with increased structural deficiency is an increased sensitivity to the status of the antecedent. In particular, Cardinaletti and Starke argue that while strong pronouns can refer to entities not yet introduced in discourse, weak and clitics must refer to "discourse prominent" entities, meaning entities already introduced in discourse, and thus including both topic and non-topic antecedents (see their footnote 12, section 2.4.1). They relate this decrease in referentiality with the independently argued for decrease in structure, which leave weak and clitic pronominal stripped of the nominal functional projection responsible for the property of having an independent reference-range (see their *semantic asymmetry #2* in section 2.5; see also section 5.4).

It is natural to view the proposal that null subjects are structurally unrealized as the extension of Cardinaletti and Starke's correlation between structural deficiency and increased referential independence (Grimshaw p.c.). Under this hypothesis, null subjects are the weakest pronouns, with their structure reduced to none and their referential dependence so increased as to allow for only topic antecedents. Cardinaletti and Starke's hierarchy of pronouns would then look like the following.

(47) (less structure)   null <--- clitics <--- weak <--- strong <------ (more structure)

An obstacle to this extension of Cardinaletti and Starke's hypothesis is their classification of null subjects as weak pronouns, thus structurally richer than clitics themselves. However, this classification seems problematic even according to Cardinaletti and Starke's two main criteria for distinguishing weak pronouns from clitics. The two criteria are presence of word stress (independent from phrasal and contrastive stress), and phrasal status. Weak pronominals can bear lexical word-stress, while clitics cannot, and weak pronominals are maximal projections, while clitics are not. Even assuming that null subjects are *pro's* it's unclear why they should be classified with weak pronouns on the basis of the first criterion. Null subjects are neither like clitics nor weak pronouns. Being phonologically null, they appear located at the lowest end of the prosodic spectrum. This confirms the hypothesis that they constitute a class on their own, more structurally deficient than that of clitics.

The second criterion is uninformative, because it can be argued either way depending on how null subjects are represented. If null subjects are *pro's,* which are assumed to be maximal projections, then they are weak pronominals. If they are structurally null, as assumed in this work, then they are on a class of their own, more deficient than that of clitics.

Cardinaletti and Starke offer two pieces of evidence to support their classification. The first piece of evidence is that null subjects and weak pronouns can both undergo ATB-extraction in conjuncts, as in (48a) and (48b) respectively, while clitics do not, as shown in (48c).

(48a) e$_i$ [ha mangiato della zuppa ed ha bevuto vino].
     (She ⁄ he) has eaten some soup and has drunk wine.
     She / he ate some soup and drank some wine.

(48b) Egli [ha mangiato della zuppa ed ha bevuto vino].
     He$_{weak}$ has eaten some soup and has drunk wine.
     He ate some soup and drank some wine.

(48c) *Marco lo$_i$ [ha chiamato ed ha sgridato].
      Mark him$_{clitic}$ [has called and has reproached].
      Mark called and reproached him.

However, the above paradigm would follow even if null subjects were structurally unrealized. The clitic of (48c) cannot ATB-extract because it needs a head to cliticize onto and in fact extraction is fine if the auxiliary is extracted too, as in the following example.

(49) Marco lo ha chiamato e sgridato.
      Mark him has [called and reproached].
      Mark called and reproached him.

In contrast, unrealized subjects do not need to cliticize, and this is the reason why (48a) is grammatical.

The second piece of evidence of Cardinaletti and Starke shows that in the example below the weak pronoun *egli* can freely alternate with a null subject.

(50) Gianni$_i$ partirá quando **e$_i$** / **egli$_i$** avrá finito il lavoro.
      John will leave when (he) / he finishes the work.

Personally, I find the overt pronoun above marginal and so do the native speakers I tested. In the idiolect spoken by these native speakers, the pronoun *egli* has the same distribution as other overt pronouns: it is not possible when the antecedent is a topic, but it is obligatory when the antecedent is a non-topic.[11] For example, when the antecedent is the *by*-phrase of a passive, a non-topic, no free variation obtains: a null subject is ungrammatical, while the pronoun *egli* is necessary.

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[11] The weak pronoun *egli* is distinguished from the strong pronoun *lui* by focused contexts, where only the latter is possible.

(51) a. La mostra é stata visitata da [-l Presidente della Repubblica]$_i$.
          The exhibition has been visited by the President of the Republic.
      b. *e_i / **egli$_i$** ha quindi proseguito alla volta di Palazzo Chigi.
          (He) / he has then moved on directed to the 'Chigi' palace.

In conclusion, Cardinaletti and Starke's structural deficiency hierarchy is compatible with the hypothesis that null subjects are structurally unrealized, forming the most structurally deficient class at the bottom of the scale. This choice provides a proper classification of null subjects with respect of their referential and phonological properties. Moreover, it strengthens the structural deficiency hypothesis itself, because it places the most structurally, referentially and phonologically deficient element at the bottom of the scale, thus supporting the close correlation among these three dimensions that is at the core of Cardinaletti and Starke's proposal.

2.3.3. Unrealized Subjects in English and Irish

If the subject constraint is violable, we may expect to find it violated also in other languages, including English. In this section, I review some of the works which have argued for an unrealized specIP position.

Instances of empty specIP in English are presented in Bresnan (1994; see also the analysis of quotative inversion in Collins & Branigan, 1995). Drawing from the analyses of Higgins (1973), Emonds (1972), Koster (1978) and Kaisse (1985), Bresnan notices how sentential and (some) propositional preverbal subjects do not occur in specIP. If they did, they would undergo auxiliary inversion in interrogative contexts, but they do not, as shown in (52) and (53).

(52) CP: [That he'll be late] is quite likely.
          * Is [that he'll be late] likely?   (Koster 1978)
          * How likely is [that he'll be late]?   (Higgins 1973)

(53) PP: Among the ruins was found a skeleton.   (Bresnan 1994)
          * Was among the ruins found a skeleton?   (Bresnan 1994)

On the other hand, this behavior is expected if the constituents in (52) and (53) occupy a position higher than C°, leaving the subject position unrealized.

Bresnan brings about additional evidence from Kaisse's (1985) study of the syntax phonology interface. Kaisse claims that auxiliary reduction is sensitive to the subject position. So, while the specIP subject in (54) licenses auxiliary reduction, the CP-adjoined PP in (55) as well as the sentential subject in (56) do not (these judgments are subtle, and some speakers though accepting the contrast in (54) vs. (55), find (56) grammatical).

(54) ANY place in San Jose '/z/ a great place to live.   (Bresnan 1994)
(55) * In San Jose ' /z/ a great restaurant.   (Kaisse 1985)
(56) * [That he'll be late] '/s/ quite likely.

The above data could follow from a resistance on the part of the CPs and PPs in (52) to (56) to occur in the case-assigned position specIP (Stowell, 1981; Grimshaw 1994). Notice that under standard analyses an expletive pro_{expl} is not an option available to English. Nor does it seem possible to license the pro_{expl} in this particular structures by coindexing it with the subject CP or PP: such CHAIN would link together a case-resistant non-nominal element with what is considered a case-transferring nominal element.

The status of specIP is problematic also under the OT analysis proposed here, which would predict specIP to be occupied by an overt expletive, in order to satisfy SUBJECT. A possible analysis involves a change in the assumptions on theta-assignment. If theta-assignment occurs obligatorily as soon as the percolating grid finds an assignee, as in section 2.2.7.1, need not be local to VP, as in Williams 1994, and the subject CP or PP is base-generated in IP-adjoined position, then, the structure with an overt expletive would inevitably "steal" the percolating theta-role meant for the IP-adjoined subject. The structure would not match the thematic relations in input, hence it would violate Theta-Consistency, and be excluded from the competition.

A second argument in favor of unrealized specIP's comes from McCloskey's study of Irish unaccusatives with prepositional subjects, like that in (57) below.

(57) [IP Laghdaigh [PP ar a neart]].   (McCloskey 1994)
Decreased   on his strength.
His strength decreased

McCloskey argues that if the PP in (57) were in specIP, it could only be because of the Extended Projection Principle (EPP), because PPs do not need case. But, this in turn would predict PPs to be able to occur in specIP across structures and in particular in infinitivals. Instead, PPs appear in postverbal position in infinitivals as well, even if infinitivals do otherwise require nominal subjects to occur preverbally; compare (58) and (59).

(58) Nior mhaith liom   [CP [DP iad] imeacht].   (McCloskey 1994)
I-wouldn't like   them   leave[-FIN].
I wouldn't like them to leave.

(59) Caithfidh   éirí [PP leis].
Must   rise   with-it.
It must succeed.

McCloskey falls short from proposing that the EPP is inviolable, and proposes that the subject-related case and agreement features which implement the effects of the EPP within the minimalist program are weak in Irish, and therefore they are checked only in the non-overt syntax. However, McCloskey dismisses the hypothesis of a pro_{expl} filler at S-structure, given its mismatch in category with the argumental PP that would have to substitute it at LF under Chomsky (1986)'s LF expletive replacement. Instead, he argues for an empty specIP at S-structure.

2.3.4. Summary
This section has explored the close connection between representing null subjects as structurally unrealized and accounting for their distribution.

The diminished referential independence, coupled with the prosodic and structural minimality of null subjects, provided strong evidence for Cardinaletti & Starke's (1994) deficiency hierarchy, but only if null subjects are analyzed as the most deficient form of pronominals. This view was shown to be compatible with an analysis of null subjects as structurally unrealized, and less so with an analysis of null subjects as weak pronouns

represented as *pro*. The status of null subjects as structurally unrealized was further supported by the studies of Bresnan and McCloskey on English and Irish constructions with unrealized specIP.

2.4. Topics and Pronouns
In this last section I will review Calabrese and Montalbetti's analysis of null subjects in the light of the role of topichood argued for in section 2.1. The section ends with a discussion of some problematic instances of null subject clauses.

2.4.1. Topichood vs. Subjecthood
In his important work on Italian pronouns, Calabrese (1985) derives the complementary distribution of null and overt pronominal subjects in cases like (60) below through the notion of *expected referent*: null subjects are required whenever their referent is expected.

(60)   Quando Antonio$_i$ ha picchiato Carlo$_k$, e$_i$ /*e$_k$ era ubriaco.
When A.ntonio was beating Carlo, he was drunk.

For our purposes, it is sufficient to say that the notion of *expected referent* states that null subjects must have as antecedent a *theme* within their *T-domain*, where a *theme* is the subject of a primary predication and the *T-domain* of a subject includes its clause, all clauses within its clause and all adjacent clauses in coordination structures, including in some cases the precedent and following sentence (see Calabrese (1985) for details[12]).

Calabrese's proposal is thus centered on the notion of subject, while the proposal presented in this chapter is centered on the notion of topic. The two approaches broadly overlap because of the intrinsic topic character of preverbal subjects (see for example Saccon 1993). However, some of the cases presented in section 2.1 do distinguish among

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[12] Although Calabrese states a principle *requiring* null subjects to have theme antecedents, in part III Calabrese seems to interpret the principle as simply preventing null subjects from having antecedents which are non-themes in their T-domain. So, in the sentence below, from Calabrese, the null subject cannot refer to *Clara*, which is a non-theme in its T-domain, but is nevertheless allowed to refer to the non-theme *Magda*, because the latter is outside the relevant domain.

(1) Carlo$_f$ ha fatto notare a Magda$_i$ che ogni volta che Ugo$_s$ é con Clara$_k$,
e$_{f/i/s/*k}$ si innervosisce.
Carlo pointed out to Magda.that whenever Ugo is with Clara, he/she gets nervous.

the two and show how topichood rather than subjecthood is the notion involved in the licensing of null subjects.

A first case is the QA-pair repeated below, where the antecedent of the answer's null subject is the *by*-phrase of the question. The alternation between the null subject and the overt subject in the answer is unexpected under Calabrese's proposal, which allows only for the following two cases: (i) either the interrogative clause is not in the T-domain of the null subject, and no prediction is possible; (ii) or the interrogative clause is in the T-domain of the null subject, incorrectly predicting an overt pronominal, because the antecedent is not a subject, and therefore not a *theme*. In either case, the obligatoriness of the null pronominal in (61b) is unexpected. It is instead predicted if what's required to license a null subject is only that its antecedent be a topic (for the topic status of the *by*-phrase, see the discussion in section 2.1).

(61a) Q: Quali mostre sono state visitate da **[Gianni]$_i$** ?
Which exhibitions were visited by John'?

(61b) A: Recentemente **e$_i$** / $^{??}$**egli$_i$** / ***lui$_i$** ha visitato la mostra di Klee e di Miró.
Recently, (he) / he / he has visited Klee's and Miro's exhibitions.

A similar case can be made for left dislocation constructions like those in (62) below. Here, the T-domain of the null subject does not extend beyond its clause. Hence, Calabrese's proposal makes no prediction. Yet we observe the familiar alternation showing obligatory null subjects when the antecedent is a topic, as in (62a), and obligatory overt subjects when the antecedent is not the topic, as in (62b).

(62a)
[Il padre di Gianni]$_i$,, Maria conosce il motivo per cui **e$_i$** / $^{??}$**egli$_i$** / ***lui$_i$** é scappato.
The father of John,, Mary knows the reason for which   (he) / he / he   ran away.
John's father, Mary knows the reason why he ran away.

(62b)
[Il padre di Gianni$_k$]$_i$,, Maria conosce il motivo per cui ***e$_k$** / $^{??}$**egli$_k$** / **lui$_k$** l$_i$' ha criticato.
The father of John,, Mary knows the reason for which *(he)/he / he him has criticized.
John's father, Mary knows the reason why he criticized him.

Calabrese does propose in passing a principle calssifying what he calls 'extralinguistic salient referents' as expected referents, and thus possible licensers for a null subject. If topics are discourse-salient, as it seems plausible in the model proposed by Reinhart and sketched in section 2.1, then Calabrese's latter principle is reminiscent of **D**ROP**T**OPIC, in that it also ties null subjects to topic antecedents.[13] Calabrese thus does recognize that in some cases null subjects are licensed by the discourse status of their antecedent, which I here take to mean the antecedent topic vs. non-topic status. The issue, pointed out by Calabrese himself, is then whether this independently needed principle can also account for the other cases discussed in Calabrese (1985), given the intrinsic topic nature of subjects. Calabrese proposes sentence (63) as a case distinguishing between licensing by topic-antecedents and licensing by *themes* in a *T-domain.* In particular, the left dislocated object *Mario* is not a subject, and therefore not a theme, but it is a topic. However, as Calabrese observes, the null subject in (63b) obligatorily takes as antecedent the subject and theme *Sandro*, and not the topic but non-theme *Mario.* It thus appears that subjecthood and not topichood is crucial to the licensing of null subjects.

(63)   a.   Mario$_s$,, Sandro$_i$ l$_s$'ha incontrato per strada ieri.
Mario,, Sandro him-has met in the street yesterday.
As for Mario, Sandro met him in the street yesterday.

       b.   Appena e$_i$ l$_s$ 'ha visto, e$_i$ / *e$_s$ é arrossito.
As-soon-as (he) him-has seen, he blushed.
As soon as he saw him, he blushed.

The argument relies on the hidden assumption that the topic for sentence (63a), *Mario*, is necessarily also the topic of (63b). The assumption is not straightforward, because sentence (63a) introduces the subject *Sandro* between the left dislocation phrase *Mario* and the null subject of (63b) and we know that subjects can have topic status from the study of passives in section 2.1. The question is thus whether *Mario* still counts as the topic after that (63a) has been uttered, and a new potential topic, the subject of (63a),

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[13] I am leaving aside the issue whether all discourse-salient referents are topics.

has been introduced.[14] A more reliable sentence to test whether *theme*-licensing is indeed independent from topic licensing follows in (64) below. As in (63) above, we have two potential antecedents: a non-*theme* topic in the left dislocated phrase *Mario,* and a *theme* in the subject of the adjunct clause *Sandro*. According to Calabrese's analysis, the null subject should take *Sandro* as antecedent, because it must be licensed by an available *theme* in its T-domain, when one exists, and *Sandro* is one. Instead, the null subject can only take as its antecedent *Mario.*

(64) $Mario_s$,, quando $Sandro_i$ l_s'ha incontrato, e_s /$^{??}e_i$ é arrossito.
Mario,, when Sandro him-has met, (he) blushed.
As for Mario,, when Sandro met him, he blushed.

Since (64) could be analyzed as having *Mario* as the SpecIP subject of the sentence, with a parenthetical adjunct in I', the test is repeated with the left-dislocation structure in (65) below, where no such alternative analysis is available.

(65) $Mario_s$,, nessuno sa perché quando $Sandro_i$ l_s'ha incontrato e_s /$^{??}e_i$ é arrossito.
Mario,, nobody knows why when Sandro him-has met, (he) blushed.
As for Mario,, nobody knows why when Sandro met him, he blushed

In (64) and (65) we deal once again with a plurality of topic sources, since both the subject and the dislocated phrase arepossible topic antecedents. The problem for Calabrese's analysis is that it incorrectly predicts that the available theme *Sandro* should be the only possible antecedent, against (64) and (65). On the other hand, if left-dislocated phrases are topics only for the sentence in which they occur, (64) and (65) are predicted. Moreover, if the presence of a matrix subject could take the topic status away from the left-dislocated phrase by the time the next sentence is uttered, (63) is predicted too.

In conclusion, the important results attained by Calabrese in his (1985) study seem more appropriately interpreted when cast in terms of topichood. From Calabrese's argument for the primacy of subject over topics and the comparisons made here, it also

[14] This problem does not affect the passive and QA-pairs data in section 2.1 because the topic antecedent of those examples, whose status was argued on the base of Strawson and Reinhart's tests, was always unambiguously identifiable.

follows a non-stative view of topichood which deserves further research: as (63)-(65) showed, neither left dislocation phrases nor subjects are always necessarily topics.

2.4.2. Centering-based Theories

The analysis of Di Eugenio (1995, 1993), cast within the framework of centering theory, identifies the class of discourse transitions requiring null subjects. Her main claim follows in (66) below.

(66) Typically, a null subject signals a CONTINUE [transition] and a strong pronoun a RETAIN or a SHIFT [transition].

A CONTINUE transition consists of two sentences U_{n-1} and U_n such that the subject of U_n denotes at the same time the entity *most centrally concerned* by U_n and by U_{n-i}. If we take *most centrally concerned by U_n* to mean 'topic of U_n', then the proposal relates null subjects to those sentences U_n whose subject refers to the topic of U_{n-1}.[15] Di Eugenio's proposal is thus based on the same intuition exploited in this work, i.e. the relation between null subjects and the topic status of their antecedents.

The two analyses however are not equivalent. The statement in (66) above specifies conditions for the occurrence of null subjects as well as for the occurrence of strong pronouns. In contrast, the OT analysis only requires that topic be dropped, deriving the distribution of overt subjects from the interaction that this constraint has with the other constraints of UG.

The same point would hold if we changed slightly Di Eugenio's proposal and derived the distribution of overt subjects from that of null subjects by excluding overt subjects *wherever null subjects are possible*. The latter would still be a theoretical statement that in the OT analysis is not needed. More precisely, in the OT analysis the effects of such statements follows from the concept of *optimal analysis relative to a grammar*, which together with constraint reranking permits us to predict the complementary distribution

[15] In the terms of centering theory, a CONTINUE SHIFT occurs when $Cb(U_n)=Cb(U_{n-1})$ and $Cb(U_n)=Cbp(U_n)$, where $Cb(U)$ is defined as that entity, among the discourse salient entities of U, most *centrally concerned* by U, and $Cp(U)$ is the most salient discourse entity in U, which in Western languages coincide with the subject of U. Taken together, these two conditions assert that the subject of U_n, i.e. $Cp(U_n)$, must be the most *centrally concerned* entity of U_n, i.e. $Cb(U_n)$, as well as the most centrally concerned entity of U_{n-1}, i.e. $Cb(U_{n-1})$.

of null and overt subjects both within and across languages. These predictions would not follow from any simple rewriting of (66).

A second point worth mentioning concerning Di Eugenio's analysis is its dependence on a two-sentence domain. This makes it difficult to apply it to single sentences, such as the left dislocation cases already examined in this chapter, and repeated below.

(67a)
[Il padre di Gianni]$_i$,, conosco il motivo per cui   **e$_i$** / $^{??}$**egli$_i$** / ***lui** é scappato.
The father of John,, conosco il motivo per cui   **e$_i$** / $^{??}$**egli$_i$** / ***lui** é scappato.
John's father, I know the reason why he ran away.

(67b)
[Il padre di Gianni$_k$]$_i$,, conosco il motivo per cui ***e$_k$** / $^{??}$**egli$_k$** / **lui$_k$** l$_i$ ' ha criticato.
The father of John,, (I) know the reason for which *(he) ⁄ he ⁄he him has criticized.
John's father, I know the reason why he criticized him.

The same remarks hold for Dimitriadis's (1995) analysis of Greek pro-drop, also cast in centering theory. His analysis is similar to Di Eugenio's. Interestingly, his main proposal defines when overt subjects are possible, and thus makes even more explicit the necessity for these analyses to state a specific condition for the distribution of overt pronominals. His *Overt Pronoun Rule* follows below (for the cases discussed here the Cp of a sentence coincides with its subject):

(68) The Overt Pronoun Rule: An overt pronominal subject in Greek should not be constructed with the Cp of the previous sentence.

Once considered together, the Di Eugenio and Dimitriadis analyses appear to leave undetermined whether the complementary distribution of null and overt subjects in pro-drop languages should be formalized by deriving the distribution of null subjects from that of overt subjects, or vice versa and in fact either possibility is available. This is not the case in the OT analysis, which cannot be reversed into its complement. The hypothetical constraint REALIZE-NONTOPIC, the reverse of DROPTOPIC, is useless in deriving the distribution of null subjects in pro-drop languages, let alone crosslinguistically. In fact, it would leave the syntactic expression of topic-referring

subjects totally unconstrained, allowing for null as well as overt subjects. The OT analysis thus proves to be more constrained theory-internally.

2.4.3. Huang's Zero Topics
The role of topic antecedents in licensing null subjects in Italian shown in section 2.1 poses the interesting question whether Italian should be analyzed along the lines of Huang's analysis of Chinese null objects, that is as a variable bound by a deleted topic operator (Huang 1984).

Left-dislocation sentences like the one below suggests that this cannot be the case. In fact, the null subject is here licensed by the sentence initial left dislocated constituent across a strong NP island, excluding an analysis where the left dislocated constituent has raised into its final position from the position of the null subject.

(68)   **[Il padredi Gianni]$_i$**,, conosco il motivo per cui **e$_i$** / $^{??}$**egli$_i$** / ***lui** é scappato.
The father of John,, (I) know the reason for which   (he) ⁄ he ⁄ he   ran away.
John's father, I know the reason why he ran away.

2.4.4. Montalbetti's Overt Pronoun Constraint
In his dissertation, Montalbetti argued for the "Overt Pronoun Constraint", which states that overt pronouns cannot be directly bound by an operator wherever a null pronominal is possible.

(70) OPC (Montalbetti 1984:94): overt pronouns cannot link to formal variables iff the alternation overt⁄empty obtains.[16]

This principle accounts for the alternation in (71), involving Montalbetti's original representations. While a bound interpretation is excluded for the overt pronominal in (71a), which is directly linked to the operator variable *t*, it is possible for the null pronominal in (71b), and also for the overt pronominal in (71c), where the pronoun is linked to the intermediate null pronominal *pro*.[17]

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[16] Montalbetti defines Binding as the transitive closure of linking operations under c-command. Therefore, by ruling out direct linking between operators and pronouns, Montalbetti excludes the possibility that an operator bind a pronoun in one link, while it allows for binding of a pronoun through a pro- or a PRO-gate. In these latter cases, the pronoun would be linked only to pro, PRO respectively, and not directly to the operator.

[17] A clearer judgement parallel to (71a) is provided by strong quantifiers, as in (1):

(71a) * [Muchos estudiantes]   t   creen   que ellos   son ricos.
          ↑_____/↑_____⌋
     Many students   *believe that they are rich.*

(71b)   [Muchos estudiantes]   t   creen   que *pro*   son ricos.
          ↑_____/↑_____⌋
     Many students   *believe that (they) are rich.*

(71c) [Muchos estudiantes]   t   dijeron que *pro* piensan   que ellos son ricos.
            ↑_____/↑_____/↑_____⌋
     Many students   *said that (they) believe that they are rich.*

    The OT analysis proposed here would maintain that (71a) and (71b) compete for grammaticality with each other and that (71a) is ungrammatical because it is suboptimal (Theta-Consistency excludes (71c) from competing with (71a) and (71b)). If the quantifier phrase counts as topic, the ungrammaticality of (71a) follows from its failing **D**ROP**T**OPIC. Sentence (71b) instead satisfies **D**ROP**T**OPIC, and is selected as optimal and thus grammatical.

    Under this account, (71c) should also lose out to its null subject counterpart. It could be grammatical only if it involved focusing, contrasting the 'many students' of (71c) to other less fortunate students.

    Preliminary evidence for an account of Montalbetti's data along the line just introduced comes from the contrast presented below, provided by an informant which otherwise agrees with Montalbetti's judgments on the previous sentences (71a)-(71c)). In (72a) below, Montalbetti's OPC correctly predicts that the subordinate subject, linked to the wh-variable of the main clause wh-subject, requires a null subject.

(72a) Quien t crees que $\left\{ \begin{array}{c} \mathbf{e} \\ \mathbf{*el} \end{array} \right\}$ es rico ?
       ↑__/↑_____/
    Who   believes that (he)/he is rich?

---

(1) Nadie cree que él es inteligente.
   Nobody believes that he is intelligent.
However, Montalbetti's dissertation lacks the complete paradigm, in particular it lacks the correspondent of (71c), which is a crucial control for the OPC.

However, the OPC predicts that the same contrast should occur when the subordinate subject is linked to the wh-variable left by the indirect object. However, in this case the subordinate subject must be overt. See (72b) below.

(72b) [A quien] dijo Juan t que $\left\{ \begin{array}{c} \mathbf{*e} \\ \mathbf{el} \end{array} \right\}$ es rico ?
    ↑_____/↑_____/
   To whom did John say that (he)/he is rich?

Before accepting (72b) as evidence against the OPC, one could argue that the structure in (72b) is incorrect and that the actual LF-structure is that in (73) below, where the preposition reconstructs and case-marks the wh-variable. In this case the variable does not c-command the subordinate subject and therefore the OPC does not apply.

(73)   [Quien] dijo' Juan [a t] que $\left\{ \begin{array}{c} \mathbf{*e} \\ \mathbf{el} \end{array} \right\}$ es rico ?
    Who said John that (he)/he is rich?

This analysis is in contrast with data like those in (74) below, whose ungrammaticality follows only if coindexing the indirect-object with the subordinate subject violates condition C. This in turn entails that the indirect argument can bind, and thus c-command, the subordinate subject, and in turn that the OPC does apply to (72b).[18] (The Spanish equivalent of (74) is non-informative because it requires clitic-doubling, and the clitic always triggers a condition C violation when coindexed with the subordinate subject.)

(74a) * Mary said to him_i that $John_i$ is rich.
(74b) * Maria ha detto a lui_i che $Gianni_i$ é ricco.
     Mary has told to him that John is rich.

---

[18] Pesetsky (1995:161) provides a second example where the object of the prepositional phrase is able to bind an anaphora outside the PP:

(1) Sue spoke [to these $people_i$] [about each $other_i$'s friends] in Bill's house.

Browning (1987:98), quoting work by Lumsden (1987), suggests that the preposition *to* could be viewed as a case-marker not heading its own maximal projection, finding evidence in the historical cooptation of this preposition as case-marker in the transition to Middle English. (Kurafuji p.c.).

Montalbetti's OPC thus does not account for the contrast between (72a) and (72b).

If instead variables of subject wh-operators had topic-status while variables of indirect object wh-operators didn't, the contrast would follow from the OT analysis pursued in this work. Nevertheless, the issue requires further research in light of the following considerations. The first is that quantified- and wh-expressions do not match typical properties of topic constituents, like the possibility of being left or right-dislocated and therefore it is unclear how the topic/non-topic distinction applies to them. The second concerns the fact that the contrast in (72) does not occur with other types of operators. The data in (75) below show that some quantifiers and wh-operators allow for a coindexed null subject in the subordinate clause.

(75a) Juan dijo a muchos estudiantes que $\left\{\begin{array}{c} \mathbf{e} \\ \mathbf{ellos} \end{array}\right\}$ eran ricos.

   Juan said to many students that (they)/they were rich.

(75b) [A que estudiantes] dijo Juan que $\left\{\begin{array}{c} \mathbf{e} \\ \mathbf{ellos} \end{array}\right\}$ eran ricos?

   To which students did John say that (they)/they were rich?

The contrast between (72b) and (75b) is particularly interesting in light of the distinction between D-linked and non D-linked operators made in Pesetsky (1989), suggesting that D-linked operators could have topic-status independently of their syntactic function, while non-D-linked operators would have it only if subjects. As said, I leave these issues open to further investigation.

2.4.5. Topics for a Theory of Topic

On the basis of the alternations in section 2.1, it was proposed that topic antecedents require null subjects, a requirement later encoded through **D**ROP**T**OPIC. The issue explored in this section is whether all instances of null subjects can be analyzed as licensed by an antecedent with topic status.

Some problematic instances were already examined in the section on Montalbetti's null subjects with variable antecedents. A second problematic class concerns cases

where more than one constituent per clause may act as antecedent of a following null subject. For example, in (76) below, the null subject may refer to the subject but also to the indirect object *Maria*.

(76) Gianni$_i$ ha detto a Maria$_k$ che e$_{i/k}$ non ha passato l'esame.
   John has said to Mary that (he)/(she) not has passed the examination.
   John said to Mary that he/she did not pass the examination.

Sentence (76) contrasts with (77) below, where the indirect object is not a grammatical antecedent for the following null subject.

(77a) Gianni$_i$ ha spiegato a Maria$_k$ perché **e$_i$** / **?lui$_i$** non le$_k$ telefonerá.
   John explained to Mary that (he)/he not her-call-FUT.
   John explained to Mary that he will not call her

(77b) Gianni$_i$ ha spiegato a Maria$_k$ perché *e$_k$ / **lei$_k$** non gli$_i$ telefonerá.
   John explained to Mary that (she)/she not him-call-FUT.
   John explained to Mary that she will not call him.

The choice of the main clause verb thus appears to have some influence in determining which constituents are granted topic status in a clause.

The last class of cases concerns null subjects deictically referring to the speaker or hearer of an utterance:

(78) a. e$_{speaker}$ telefoneró domani.   b. e$_{hearers}$ telefonerete domani.
      (I) call-FUT-1sg tomorrow.   (You) call-FUT-2pl tomorrow.
       I will call tomorrow.   *You will call tomorrow.*

The data in (78) suggest that speaker(s) and hearer(s) act as deictic topics. Some evidence for this hypothesis comes from the fact that like third person overt pronominals, first and second person pronominals are also in complementary distribution with null subjects. Thus, the data in (79) below, which constitute a minimal pair with those in (78), are grammatical only under contrastive focus of the pronominal subject.

(79) a. Io telefoneró domani.   b. Voi telefonerete domani.
          I call-FUT-1sg tomorrow.   You.pl call-FUT-2pl tomorrow.
          I will call tomorrow.   *You will call tomorrow.*

Yet, a difference sets first and second pronominals apart from third person pronominals: their obligatory strong usage. There seems to be no instance of first and second person pronominals with non-topic antecedents, analogous to the unfocused occurrences of *lui* examined in section 2.1, an example of which is repeated below.

(80a) Q: Quali mostre sono state visitate da-**[l padre di Gianni$_k$]$_i$** ?
          Which exhibitions were visited by John's father?

(80b) A: Nessuna, perché *****e$_k$** / *****egli$_k$** / **lui$_k$** gli$_i$ impedisce di uscire.
          None, because he prevents him from going out.

This gap in the paradigm suggests that deictic topics are always available and can never be switched off. Thus, the case where a first and second person pronominal has a non-topic antecedent never arises.

Furthermore, deictic topics seem independent from the discourse topics we have examined thus far. For example, in (81) below, the matrix subject refers to a deictic topic, the speaker, while the subordinate subject is still free of taking the left-dislocated phrase as topic antecedent.

(81) Gianni$_i$,, **e**$_{speaker}$ conosco il motivo per cui **e**$_{Gianni}$ é scappato.
      John,, (I) know-1s the reason for which (he) is.3s fled.
      John, I know the reason why he fled.

The independence of deictic topics from discourse topics leads us to the hypothesis that the constraint **D**ROP**T**OPIC be actually divided into two constraints, one related to deictic topics, **D**ROP**T**OPIC$_{deic}$, and one to discourse topics, **D**ROP**T**OPIC$_{disc}$. If these two constraints are ranked with respect to **S**UBJECT and **P**ARSE independently of one another, they may give rise to the patterns found in mixed null subject languages, where null subjects are possible or impossible depending on the person being assessed. For example, Finnish, which allows for null subjects only in first and second person,

would have **D**ROP**T**OPIC$_{deic}$ ranked higher than **S**UBJECT and **P**ARSE, and at the same time either **S**UBJECT or **P**ARSE ranked higher than **D**ROP**T**OPIC$_{disc}$. I leave open to further research a refinement of the analysis capable of dealing with the full complexity of mixed pro-drop languages.

2.5. Conclusions

In this chapter I showed how the OT-governed interaction of the four universal constraints **P**ARSE, **S**UBJECT, **F**ULL-**I**NT and **D**ROP**T**OPIC directly affects the syntax of subjects, determining the crosslinguistic alternation between pro-drop and non-pro-drop languages, the complementary distribution of null and overt subjects within pro-drop languages, and the impossibility of a grammar with both referential null subjects and overt expletives.

It is the underlying Optimality Theoretic framework that makes a unified analysis of these phenomena possible, and which therefore is supported by the above results. The conditions encoded by the constraints remind well known assumptions and principles of more classic frameworks, such as the projection of phrase structures out of an array of lexical items, the Extended Projection Principle (Chomsky, 1982), the principle of Full Interpretation (Chomsky, 1986), and the topic oriented function of null subjects (among others, Givón 1983). Yet, outside an OT perspective, these classical principles and assumptions cannot determine all of the above results without additional devices such as for example the pro-drop parameter.

Another important component of the analysis is the assumption that null subjects lack structural representation. This assumption was shown to confirm and extend Cardinaletti & Starke's (1994) pronominal typology defined in terms of structural deficiency. Lack of structural representation for null subjects will play an important role also in the following chapters on contrastive focus, agreement and case-assignment.

Other results included the identification of the complementary distribution between null and overt subjects in pro-drop languages in correlation to the topic vs. non-topic status of their antecedent, and the discussion of related analyses.

3. Contrastive Focusing

The first part of this chapter, section 3.1, argues for the existence of a universal constraint ALIGN-FOCUS requiring that contrastively focused constituents be peripherally aligned, adjoining to VP or some higher projection. The evidence that I will present in section 3.1 for Italian adds to the significant evidence in this direction already known; see for example the analyses of Hungarian (Kiss 1981, Brody 1990, Horvath 1986) and Chadic languages (Tuller 1992, Schuh 1982). This section also shows that to speak of pro-drop languages like Italian as languages allowing for *free subject inversion* is improper, and that the focus status of the subject is a crucial factor determining its position in phrase structure (see also Belletti and Shlonsky 1994, Calabrese 1982, 1985, 1992, Brandi and Cordin 1989, Vallduví 1992, Saccon 1993, Samek-Lodovici 1994, Grimshaw and Samek-Lodovici 1995).

Section 3.2 pursues the main goal of this dissertation, showing how the distribution of inverted subjects within and across languages follows in a principled and unified manner from the interaction between ALIGNFOCUS and the other constraints of UG. The analysis also derives the universal absence of focused null subjects, a less obvious result than it seems at first sight, and the convergent realization of unfocused subjects in "canonical subject position", i.e. in the position determined by the constraints on case and agreement (see chapters 4 and 5). In particular, this accounts for the convergent preverbal realization of non-focused subjects in Italian and English.

Finally, section 3.3 examines the issue of parametrization, analyzing the focusing pattern of the Chadic language Kanakuru as involving leftward and rightward focus alignment depending on the syntactic context in which it occurs. Such a mixed pattern, which is problematic under a Principles and Parameters approach, is predicted by the OT analysis developed in section 3.2, lending further support to the OT approach to Syntax proposed in this dissertation.

3.1. Structural Contrastive Focusing in Italian

Any complete account of subject inversion in Romance languages should answer the following questions:

(i) What makes subject inversion possible?

(ii) What triggers subject inversion?

The first question has received most attention, because of its correlation with null subjecthood and its challenge to the Extended Projection Principle; see among others work by Perlmutter (1971), Chomsky & Lasnik (1977), Taraldsen (1979), Jaeggli (1980), Rizzi (1982), Safir (1985), Burzio (1986).

By comparison, investigation of the second issue has been far less systematic (but see work by Calabrese 1982, 1985, 1992; Shlonsky 1987; Diesing 1992; Saccon 1993; Levin and Rappaport 1995). In this first section I will investigate this issue and show that in a substantial and well-defined class of cases, subject-inversion is only an instance of structural contrastive focus in postverbal position. In particular, I will show that in Italian any VP-level constituent, including subjects, can get contrastive focus interpretation by raising into a VP-adjoined A'-position.

The analysis that follows is developed in adherence to the semantics for contrastive focus developed in Rooth (1985) and all the logic expressions being used in the following are compositionally derivable within Rooth's system. Contrastive focusing is here a primitive.

The next section introduces structural contrastive focusing in Italian. Section 3.1.2 distinguishes the focused VP-adjoined position from a linearly equivalent but structurally higher position. Section 3.1.3 discusses the evidence for the focused status of the VP-adjoined position at issue. Section 3.1.4 examines the evidence for its VP-adjoined location and A'-status. A complete derivation for a specific case is given in Appendix A.

3.1.1. Introduction

Contrastive focus contrasts the denotation of a constituent with a set of related denotations. For example, in (1) below emphatic stress on the subject forces a contrastive focus interpretation: it is John who screamed, as opposed to other presupposed or contextually relevant people.

(1)   JOHN screamed, (not Bill, not Mary, ...).

Descriptively, languages vary with respect to the way they express contrastive focus. Some languages use stress, English being one of them (among others, see Chomsky 1971, Selkirk 1984, Culicover and Rochemont 1983, Rochemont and Culicover 1989, Rooth 1985). Other languages express contrastive focus structurally, by raising contrastively focused constituents to a specific syntactic position. Examples of the latter are Hungarian (Horvath 1986, Kiss 1981, Brody 1990, among others), Chadic Languages (Shuh 1982, Tuller 1992), Catalan (Bonet 1990), and in some cases even English (Rochemont and Culicover 1989).

Italian expresses contrastive focus in either way, through stress as well as structurally. For example, when preverbal, subjects are interpreted as contrastively focused only if associated with emphatic stress (in upper case).

(2a) GIANNI ha urlato, Domenica scorsa.
    John has screamed, Sunday past.
    JOHN screamed last Sunday.

However, contrastive focus can also be expressed structurally. For example, in (2b), the postverbal subject is interpreted as contrastively focused even in the absence of emphatic stress.

(2b) Ha urlato Gianni, Domenica scorsa.
    Has screamed John, Sunday past.
    JOHN screamed last Sunday.

In the following, I will argue that the subject in (2b) is focused structurally in VP-adjoined position, as in structure (3) below.

(3)   Ha urlato Gianni.
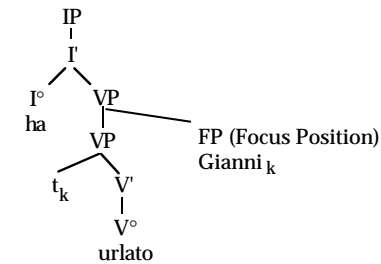
Before moving to the actual analysis, it is worth noting that previous studies have already recognized or hinted at a focus factor involved in the interpretation of inverted subjects in Romance. Among others, see work by Belletti (1988), Delfitto and Pinto (1993), and in particular Bonet (1990), Calabrese (1982, 1985, 1992), Belletti and Shlonsky (1994), and Saccon (1993).

The analysis presented here differentiates itself from these works in that it investigates *contrastive* focus, while Saccon, Calabrese, and Belletti and Shlonsky examine *presentational* focus, where the focused constituent is interpreted as new information. Further distinctions concern the specific properties claimed here for the position of structural focus: the claim that the focus position is VP-adjoined, as in Rizzi (1982, 1991), but inherently A-bar, differentiates this account from Bonet's, and Saccon's analyses, who analyze postverbal subjects as in-situ (rightward specifier of VP in Bonet's work; sister of V or V' depending on the potential unaccusative nature of verb in Saccon's).

Nevertheless, the analysis to follow also strengthens and generalizes the basic claim of these previous accounts by showing that *contrastive* focusing is structurally encoded much like presentational focusing, and that it is available to any VP-level constituent, and not a subject oriented phenomenon (see Belletti and Shlonsky 1994 for a similar claim on presentational focus).

3.1.2. Focusing vs. Right-dislocation

As Calabrese (1992), Bonet (1990), and Saccon (1993) also point out, there are at least two positions for a postverbal subject in Italian: one is a right-dislocated unfocused position c-commanding I°; the other is the focus position, which I will argue to be VP-adjoined and c-commanded by I°.

(4)

```
                    ⋮
                  ┌──────┬────────────────────┐
                 IP      │ Righ- dislocated    │
              ┌───┤      │ constituents        │
            spec  I'      └────────────────────┘
               ┌──┴──┐
              I°    VP
                  ┌──┴──────────┬──────────────┐
                 VP             │ Focus Position │
              ┌───┴───┐          └──────────────┘
            spec     V'
                      │
                     V°
```
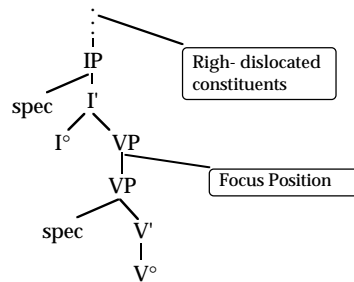
A cluster of properties distinguishes constituents in the two positions (Antinucci and Cinque 1977, Calabrese 1992; Bonet 1990, Saccon 1993, Samek-Lodovici 1993).

(i)   Constituents in the focus position are interpreted as focused, while right-dislocated ones are not.

(ii)   Constituents in the focus position are always inside the intonational phrase of the main sentence, while right-dislocated ones are preceded by an abrupt intonation fall and, optionally, by a pause.

(iii) Internal arguments in the focus position cannot co-occur with a clitic, while right-dislocated internal arguments can.

(vi)   Quantified constituents like *ciascun ragazzo* 'each boy' may occur in the focus position but they cannot be right-dislocated.

(v)   A local neg-marker in I° may license a negative polarity item like *alcuno*, 'anybody' or *nessuno* 'nobody' in the focus position, but not in the right-dislocated position.

Here, I will only consider examples that illustrate properties (i), (ii) and (iii); other relevant examples can be found in Antinucci and Cinque (1977), Calabrese (1992), Bonet (1990), and Samek-Lodovici (1993).

Consider the contrast between (5) and (7), which share the same word order. When the object is in the focus position, as in (5), it lies within the main intonational phrase of the sentence (property (ii)), it is interpreted as focused (property (i)), and it disallows a coindexed clitic, as (6) shows (property (iii)).

(5) Gianni non ha presentato a nessuno Carlo.
    Gianni non ha [$_{vp}$ [$_{vp}$ presentato t_i a nessuno] Carlo$_i$].
    John not has introduced to nobody Carl.
    It is Carl that John did not introduce to anybody.

(6) *Gianni non lo$_i$ ha presentato a nessuno Carlo$_i$.
     John not has him introduced to nobody Carl.

When the object is in right-dislocated position, as in (7), it lies outside the main intonational phrase of the sentence, here represented as a double comma, (property (ii)), it is not interpreted as focused (property (i)), and it allows for an optional coindexed clitic (property (iii)).

(7) Gianni non (lo$_i$) ha presentato a nessuno,, Carlo$_i$.
     Gianni non [$_{I'}$ lo$_i$ ha presentato t_i a nessuno],, Carlo$_i$.
     John didn't introduce him to anybody,, Carl.

Strong evidence for the existence of two postverbal positions was also given in Saccon (1993) analysis of postverbal subjects in Conegliano, where presentationally-focused postverbal subjects do not show clitic agreement, while preverbal and right-dislocated postverbal subjects do.

The contrast carries over also for inverted contrastively focused subjects. As (8) below shows, a postverbal subject overtly marked as contrastively focused by the focusing adverb *only* also lacks agreement, as shown by the absence of the otherwise obligatory feminine subject clitic *la* .

(8)   El a ridest sol che la Maria, al cinema.   (Saccon 1993:217)
      (-agr) has laughed only the Mary, at-the movie.
      Only Mary laughed, at the movies.

Together, these examples show that the right-dislocated and the contrastively focused positions are distinguished semantically, phonologically, and syntactically, making it possible to study each position in isolation.

3.1.3. The Contrastive-Focus Status of the FP Position

Let me move to the core of this first section and discuss the evidence in favor of structural focus for constituents in the VP-adjoined focus position. The evidence will be based on the analysis of question-answer pairs, focusing adverbs and ergatives.

3.1.3.1. Evidence from Question-Answer pairs

The existence of a structural focus position is supported by the analysis of question-answer pairs within Rooth's (1985) semantics for contrastive focus, which I assume throughout this work. In particular, I follow Rooth in assuming that the constituent in the answer corresponding to the wh-phrase in the question is always contrastively focused.

(9) Central assumption: In a question-answer pair, the answer's wh-phrase counterpart is contrastively focused.

Before turning to the data let me briefly explain this assumption. Under Rooth's analysis, which draws from work by Hamblin (1973), Karttunen (1977), Chomsky (1971), and Jackendoff (1972), contrastive focusing of a constituent in a sentence determines a set of propositions which is associated with the sentence as a whole. The relation between this set and the set of propositions denoted by the answer once its wh-counterpart is taken to be focused allows us to predict which question-answer pairs are appropriate and which are not. Roughly speaking, in a good pair, the question and the answer identify the same set of propositions. In a bad pair, on the other hand the set of propositions identified by the question does not match the set identified by the answer. Since focusing of different constituents identifies distinct sets of propositions, a question and an answer identify the same set of propositions only if the focused constituent of the answer is the counterpart of the question wh-phrase.

The result is a powerful diagnostic test. Whenever a question-answer pair is judged grammatical, we can safely assume that the answer counterpart of the wh-phrase is contrastively focused.

Let us now turn to the data. Consider the question-answer paradigm in (10) below. Sentence (10b), with a postverbal subject, forms a good pair with question (10a).[1]

---

[1] The most natural answer to (10a) is the bare NP *Gianni*. Nevertheless, all informants, including myself, find (10b) grammatical.

According to our diagnostic test, it follows that the postverbal subject in (10b) is contrastively focused.

(10a) Q: Chí ha gridato?   *Who screamed?*
(10b) A: Ha gridato Gianni.   *It is John who screamed.*

The postverbal subject of (10b) need not have emphatic stress. Therefore, its contrastive focus interpretation must be determined by its position, i.e. structurally. Contrast (10b) with a preverbal subject lacking emphatic stress, which is unfocused and therefore provides an unacceptable answer, as shown in (10c). To get a contrastive focus interpretation, the preverbal subject must be associated with emphatic stress, as shown by the acceptable answer (10d).

(10c) A: * Gianni ha gridato.   *John screamed.*
(10d) A: GIANNI, ha gridato.   *It is John who screamed.*

Consider now the paradigm in (11) below, where the wh-phrase is the direct object of a ditransitive. If the object is in situ and lacks emphatic stress, as in (11b), the pair is bad, a sign that focusing of the object has failed. However, when the direct object is raised into focus position to the right of the indirect object, as in (11c), focusing occurs and the pair is good. Once again, the object needs no emphatic stress, showing that focusing here is structural.[2]

(11a) Q: Chi non hai presentato a nessuno?
         Who didn't you introduce to anybody?
(11b) A: *Non ho presentato Gianni a nessuno.
         I didn't introduce John to anybody.
(11c) A: Non ho presentato a nessuno Gianni.
         It is John that I didn't introduce to anybody.

---

[2] The postverbal subject in (10b) and the object in (11c) can host the intonational pitch of the sentence. This pitch is clearly distinguished from the emphatic stress associated with focusing-by-stress, which is necessary to turn (10c) and (11b) into a good answer. All native speakers with whom I tested the paradigm had clear and sharp linguistic intuitions about the contrast. Thanks to Hubert Truckenbrodt for pointing out this distinction.

The analysis of question-answer pairs thus shows that argumental constituents can be focused structurally, by raising into a rightward focus position.

3.1.3.2. Evidence from Focusing adverbs

Independent evidence for structural focus in postverbal position comes from the analysis of focus-sensitive adverbs such as *only*. These adverbs are sensitive to any focused constituent within their scope and always require one in order to be interpreted. We may therefore insert the adverb *only* in a sentence and then check whether an object in situ and an object in focus position contrast in their focus status with respect to the focusing adverb. Only the object raised into focus position should qualify as a focused constituent. (The test is informative only if both the object in situ and the object raised into focus position are free of emphatic stress. This will thus be true of all constituents involved in the following tests.)

Consider (12) and (13) below. In (12), the direct object is in situ. As predicted, a contrastive focus interpretation of the object is unavailable (association with *only* is expressed through coindexation).

(12) Ho soltanto presentato Gianni a Maria.
   *Ho soltanto$_i$ [$_{vp}$ presentato Gianni$_i$ a Maria].
   (I) have only introduced John to Mary.
  * $\forall x$ [introduce' (I, x, mary) => x=john][3]
  * *It is John that I introduced to Mary.*

In contrast, contrastive focusing of the object is straightforward in (13), where the object is raised into focus position, to the right of the indirect object.

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[3] The proper logic expression under Rooth's system would be the following:
  $\forall p$ [(p $\wedge$ p=introduce' (I,x,mary)) => p=introduce' (I,john,mary)]
For the sake of readability, I simplify the logic expressions for these simple cases, in accord with Rooth's practice in his work. Where necessary, I will use the full logic expression.

(13) Ho soltanto presentato a Maria Gianni.
  Ho soltanto$_i$ [$_{vp}$ [$_{vp}$ presentato t$_i$ a Maria] Gianni$_i$].
  $\forall x$ [introduce' (I, x, mary) => x=john]
  It is John that I introduced to Mary.

The patterns in (12) and (13) show that the object must raise to the rightward VP-adjoined focus position in order to get contrastively focused.

Although (12) disallows structural focus of the object, it still allows for two other interpretations: one focusing the indirect object, and the other focusing the entire VP. They are both predicted by the availability of postverbal structural focus. The first reading arises when the constituent raising into focus position is the indirect object, as in (12a) below.

(12a) Ho soltanto$_i$ [$_{vp}$ [$_{vp}$ presentato Gianni t$_i$] [a Maria]$_i$].
   $\forall x$ [introduced' (I, john, x) => x=mary]
   It is to Mary that I introduced John.

The second reading arises when the whole VP raises into focus position,[4] so that the VP-denoted event is focused,[5] as in (12b) below.

---

[4] An important question that is not answered here is what requires structurally focused constituents to VP-adjoin. It is possible that what prompts VP-internal constituents to VP-adjoin need not apply to the VP as a whole, which would then not need to self-adjunction. For example, accessibility at the VP-level, which seems the most obvious property gained by VP-adjoined constituents, is already available to the VP as a whole even without self-adjoining.

[5] Kayne (p.c.) points out that in certain cases Italian allows a postverbal focusing adverb to have sentential scope. This is for example the case in (1) below, from Benincá and Salvi (1988:122). Under the relevant reading, (1) means that the only thing that the secretary did was put flowers on a desk.

(1) La segretaria ha messo solo dei fiori sul tuo tavolo.
  The secretary has put only some flowers on your desk.

It is unclear how the adverb acquires sentential scope. Here I will only make two observations. The first is that this use of *solo* is not productive and is not found with other verbs. In the following examples, involving transitive and intransitive verbs, the interpretation at issue is missing under the relevant intonation (under the intonation associated with right-dislocation of the constituents following the adverb, the adverb can again gain sentential scope, but this is unsurprising since its position is no longer constrained).

(2) Gianni ha messo solo dei fiori sul tuo tavolo = Gianni ha solo$_i$ [messo dei fiori sul tuo tavolo]$_i$
  John has put only some flowers on your desk.   *John has only put some flowers on your desk*

(12b) Ho soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_i$] [$_{vp}$ presentato Gianni a Maria]$_i$].

$\forall p$ [(p $\wedge \exists P$ p=P(I) => p=introduce' (I,john,mary)]

The only thing I did was introduce John to Mary.

As for (13), its linear order excludes raising of the indirect object into focus position, predicting that (13), unlike (12), will not admit focusing of the indirect object. The prediction is borne out.

The linear order of (13) is, however, compatible with focusing of the whole VP, which in fact is a possible though marginal interpretation. This case also shows a non-canonical order of the internal arguments. I tentatively analyze it as involving nested focusing. Formally, the direct object VP-adjoins first. Then, the whole VP projection self-VP-adjoins. This yields a structure where the whole VP is focused, and itself contains a focused object. The structure follows in (13a) below.

(13a) Ho soltanto [$_{vp}$ e$_i$ [$_{vp}$ [$_{vp}$ presentato t$_h$ a Maria] Gianni$_h$]$_i$].

Overall, the existence of a postverbal position for structural focus was shown to strongly correlate with the asymmetric sets of interpretations associated with (12) and (13).

Postverbal structural focus also accounts for the set of readings arising when the indirect object is right-dislocated. The object can now raise into the focus position and yet remain to the left of the indirect object. Compare sentence (14) below with (12). In (14), the indirect object is right-dislocated (witness the pause introducing it, and the

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(3) Gianni ha cantato solo ieri.   ≠   Gianni ha solo$_i$ [cantato ieri]$_i$.
John has sung only yesterday.   *John has only sung yesterday.*
(4) Gianni é arrivato solo ieri.   ≠   Gianni é solo$_i$ [arrivato ieri]$_i$.
John has arrived only yesterday.   *John has only arrived yesterday.*
(5) Gianni ha chiamato solo Marco.   ≠   Gianni ha solo$_i$ [chiamato Marco]$_i$.
John has called only Mark.   *John has only called Mark.*
(6) Gianni ha regalato solo un gatto a Maria.   ≠   Gianni ha solo$_i$ [regalato un gatto a Maria]$_i$.
John has given only a cat to Mary.   *John has only given a cat to Mary.*

The lack of sentential scope in (3)-(6) excludes an analysis of (2) based on the presence of the verb trace in the scope of the adverb, because this analysis does not distinguish (2) from (3)-(6). The solution should be looked for in the specific properties of the verb *mettere*. The paradigm in (2)-(6) also suggests a certain caution in using *mettere* as the prototypical member of the class of ditransitive verbs in Italian.

---

presence of the related clitic). As predicted, the object can now be interpreted as contrastively focused.

(14) Le ho soltanto presentato Gianni,, a Maria.

[$_{IP}$ Le$_k$-ho soltanto$_i$ [$_{vp}$ [$_{vp}$ presentato t$_i$ t$_k$] [Gianni]$_i$]] [a Maria]$_k$.

$\forall x$ [introduce' (I, x, mary) => x=john]

As for Mary, it is John that I introduced to her.

Alternatively, the whole VP can raise into focus position. This predicted reading is attested too,[6] as shown in (15).

(15) Le ho soltanto presentato Gianni,, a Maria

[I' Le$_k$-ho soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_i$] [$_{vp}$ presentato Gianni t$_k$]$_i$] [a Maria]$_k$.

$\forall p$ [(p $\wedge \exists R \exists x$ p=R(I, x, mary)) => p=introduce' (I,john,mary)]

As for Mary, the only thing that happened to her was that I INTRODUCED JOHN to her.[7]

Postverbal structural focus also predicts the available interpretations for sentences with non right-dislocated inverted subjects. The simplest case is the one where the subject in postverbal position is contrastively focused, as in (16).

(16) Ha soltanto camminato Gianni.

Has only walked John

The only person who walked is John.

---

[6] The meanings of (14) and (15) can for example be distinguished by continuing (14) and (15) with a sentence like "but I also warned her not to see Bill". Conjunction with (14) does not determine the truth-value of the resulting sentence, in fact it is possible that I introduced to Mary only John, and moreover warned her about Bill. Conjunction with (15) instead yields a false sentence, because if my only action was to introduce Bill, I cannot have also warned Mary about Bill.

[7] The following situation distinguishes the interpretations of (15) and (12b). Assume the only actions that I performed were to introduce John to Mary and to introduce John to Lucy. Then (12b) would be false, because I did more than only introduce John to Mary. However, (15) would be true, because as far as Mary is concerned, the only thing I did was introduce John to her.
To derive the proper denotation for (15) under Rooth's system, I assume that focusing of a complex constituent implies F-marking of its lexically overt leaves while traces of moved constituents are left unmarked. In (15), the lexically overt leaves are the verb and the direct object. The same assumption is needed in (17). This proposal should be taken as a working hypothesis. I leave open for further research what the proper derivation should be for the focusing of constituents which include traces of unfocused constituents.

The structure of (16) is shown in (16a): the subject has raised from its base-generated specVP position to the focus position, where it is assigned a contrastively focused interpretation.

(16a) Ha soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_i$ camminato] Gianni$_i$].
$\quad$ $\forall$x [walked' (x) => x=john]
$\quad$ *Only John walked.*

A more interesting contrast is the one between (17a) and (17b). In (17a), the subject is preverbal. Hence, nothing prevents the whole VP from moving into focus position. Since the VP contains only the verb, the interpretation focuses the verbal predicate alone.

(17a) Gianni ha soltanto camminato.
$\quad$ Gianni$_k$ ha soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_i$] [t$_k$ camminato]$_i$].
$\quad$ $\forall$p [(p $\wedge$ $\exists$P p=P(john)) => p=walked' (john)]
$\quad$ *John only walked.*

In contrast, when the subject is in focus position, *only*, which is sensitive to focused constituents, cannot associate with the lowest VP projection, but must associate with the focused subject. The unavailable structure, with the adverb co-indexed with the lowest VP, is shown in (17b).

(17b) Ha soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_k$ camminato]$_i$] Gianni$_k$].
$\quad$ *$\forall$p [(p $\wedge$ $\exists$P p=P(john)) => p=walked' (john)]
$\quad$ * *John only walked.*

This contrast thus follows naturally from the fact that the postverbal subject is necessarily focused.

Summarizing, the existence of a VP-adjoined focus position accounts for the interpretational symmetries and asymmetries found in sentences containing the focusing adverb *only* and constituents in postverbal position.

3.1.3.3. Evidence from Ergatives

Further support for structural focus in Italian comes from the analysis of ergatives. In her investigation of partitive case, Belletti (1988) identifies a definiteness effect on the in-situ subject of ergatives, as shown in (18). The subject is analyzed as in situ because it precedes a locative argument, which in turn is analyzed as in situ because it is not introduced by the intonational fall associated with right-dislocated constituents.

(18a) * E' entrato l'uomo dalla finestra.
$\quad$ Is come-in the man from-the window.
$\quad$ *A man has come in from the window.*

Belletti observes that the definiteness effect is absent when the subject occurs to the right of the indirect locative argument. The existence of a VP-adjoined position for contrastive focus accounts for this alternation. In fact, unlike the pre-locative subject in object position, a post-locative subject can occur in focus position, and since contrastive focusing may affect definite and indefinite phrases alike, definite phrases cannot be excluded from this position, where they are fully grammatical and interpreted as contrastively focused, as in (19) below.

(19) E' entrato t$_i$ dalla finestra [l'uomo]$_i$, (non la donna)
$\quad$ *It is the man that came in from the window (not the woman).*

The focused interpretation of VP-adjoined subjects can be made visible through the use of focusing adverbs, as with the parallel cases involving nonergative verbs: in (20), the pre-locative subject cannot be interpreted as associated with the adverb *only*, which must associate with either the whole VP or the prepositional phrase, as shown in (21a) and (21b).

(20) E' soltanto entrato un uomo dalla finestra.
$\quad$ Is only entered a man from-the window.

(21a) E' soltanto$_i$ [$_{vp}$ e$_i$ [$_{vp}$ entrato un uomo dalla finestra]$_i$].
$\quad$ *The only event that happened was that a man came in through the window.*

(21b) E' soltanto$_i$ [$_{vp}$ [$_{vp}$ entrato un uomo t$_i$ [$_{pp}$ dalla finestra]$_i$].
   A man entered only through the window.

However, when the subject follows the locative argument and occurs in focus position, it is interpreted as contrastively focused.

(22)   E' soltanto entrato dalla finestra un uomo.
   E' soltanto$_i$ [$_{vp}$ [$_{vp}$ entrato t$_i$ dalla finestra] [un uomo]$_i$].
   Is only entered from-the window a man.
   The only thing that entered through the window was a man.

The analysis of ergatives thus confirms the existence of a postverbal position for structural contrastive focus.

3.1.3.4 Rizzi's Verb Subject Adjacency.

Before concluding this section, it is worth examining again sentences such as (23) below, where a focused postverbal subject follows an in-situ object.

(23)   Q: Chí non ha fatto niente?   *Who did nothing?*
   A: Non ha fatto niente Gianni.   *JOHN did nothing.*
      Not has done nothing John.

According to Rizzi's (1991:19) analysis of postverbal subjects, sentence (23) should be as ungrammatical as (24) below, because the intervening object prevents adjacency between the postverbal subject and the trace of Tense, blocking case-assignment.

(24) *Ha fatto questo Gianni.
   Has done this John.
   Only John did this.

While I do not have a full account for the diverging grammaticality of (23) and (24), we may observe that the difference between them relates to the referential status of the intervening argument, nonreferential in (23), strongly referential in (24). The importance of the referential status is further supported by an observation by Calabrese, who, in the appendix to his 1992 work, notices that an indefinite expression necessarily

occurs between the verb and a presentationally-focused subject. This is true also when the inverted subject is contrastively focused, as shown by the contrast in (25a) and (25b).

(25a) Ha soltanto scritto una lettera Maria.
   Has only written a letter Mary.
   Only Mary wrote a letter.

(25b) *Ha soltanto scritto t$_i$ Maria una lettera$_i$.[8]

Calabrese ties the contrast to the intrinsic new-information nature of the indefinite, which would prevent it from undergoing rightward emargination à la Antinucci and Cinque (1977), because the latter affects only informationally old phrases. Calabrese's insight is strengthened by the examples in (26a)-(26c) below, all with a constituent intervening between the verb and the postverbal subject. In each case, the intervening phrase is inherently unable to express old information because it is nonreferential, either because it is a negative expression, as in (26a), or because it is a generic, as in (26b) and (26c) (in (26b), *casa* has the same sense found in the English expression *going home*.)

(26a) Q: Chí non ha fatto niente?   *Who did nothing?*
   A: Non ha fatto niente Gianni.   *JOHN did nothing.*
      Not has done nothing John.

(26b) Q: Chí é tornato a casa?   *Who went back home?*
   A: E' tornato a casa Gianni.   *JOHN went back home.*
       Is come home John.

(26c) Q: Chi' ha lavorato almeno un poco?   *Who worked at least a little?*
   A: $^?$ Ha fatto qualcosina Gianni.   *JOHN did some work.*
      Has done thing-little John.

---

[8] According to my judgement, the indefinite object can be right-dislocated, but only when coindexed with an object clitic, as in (1) below. I owe this interesting observation to Eric Bakovic.

(1) L$_i$'ha soltanto scritta t$_i$ Maria,, una lettera$_i$.
   it has only written Mary,, a letter.

The above data call for a refined analysis of Rizzi's data, possibly along the guidelines offered by Calabrese. For the goal of this chapter, it was sufficient to show that focusing of the subject does not always require obligatory emargination of the internal arguments separating the subject from the verb.

Summarizing the entire section, we have seen that the analyses of focusing adverbs, question-answer pairs and ergatives all converge on the conclusion that constituents can acquire a contrastively focused interpretation structurally, by raising into a rightward focus position.

3.1.4. Syntactic Properties of the Focus Position

This section examines the syntactic properties of the focus position, i.e. its location and its A vs. A' status. I will claim that the focus position is an A'-position located between I⁰ and the lowest VP projection.

3.1.4.1. Location

Let us first look at the location of the focus position. We already saw in the previous section that in order to get focused, the subject of an ergative must raise from its base-generated position to a position to the right of the indirect object. This suggests that the focus position is higher than the VP-complex.

The identical behavior of objects with respect to VP-level adjuncts confirms this hypothesis. In order to be contrastively focused, the object of (27) must shift to the right of the VP-adjoined locative, and thus occur higher than the VP-complex.

(27) Ho cucinato in giardino le salsicce, (non la zuppa).
   Ho [$_{vp}$ [$_{vp}$ [$_{vp}$ cucinato t$_i$] in giardino] [le salsicce]$_i$]].
   (I) have cooked in the garden the sausages.
   It is the sausages that I cooked in the garden, (not the soup).

Notice that reversing the order between the object and the adjunct is not compatible with focusing the object. So, sentence (28) below cannot have the meaning of (27), listed in (28c).

(28) Ho cucinato [le salsicce] [in giardino].
   (I) have cooked [the sausages] [in the garden].
   a.   *I cooked the sausages in the garden.*   (no focusing)
   b.   *It is in the garden that I cooked the sausages.*   (locative adverb focused)
   c. * *It is the sausages that I cooked in the garden.*   (object focused)

We can thus maintain that the lowest location for the focus position must c-command the lowest VP projection. The result is in accord with Belletti and Shlonsky's view of presentational focus of light objects in the rightward specifier of a focus projection taking VP as its complement (Belletti and Shlonsky 1994), prompting the question whether presentational and contrastive focus occur in the same position. The result is in contrast with Bonet's admittedly unargued-for assumption locating contrastively focused subjects in Catalan in a rightward specVP position (Bonet 1990).

Saccon (1993) argues that presentational postverbal subjects are within the lowest VP projection because they precede secondary predicates, which, Saccon argues, must themselves be located in specVP if they are to satisfy the conditions on the licensing of secondary predication identified by McNulty (1988). When applied to contrastively focused subjects, this argument provides further evidence for the VP-adjoined position of contrastively focused subjects. In fact, as shown in (29) below, contrastively focused subjects must follow a secondary predicate, and therefore must be in a higher position than the predicate itself.

Sentence (29a) shows that the contrastively focused subject can follow object secondary predication. Sentence (29b) shows that the subject cannot precede secondary predication when this is within the main intonational phrase. Finally, in sentence (29c) the subject precedes the secondary predicate, but the latter is introduced by an intonational breakdown and an optional pause and is interpreted as if the predicate had been introduced in previous discourse; all indications of rightward dislocation of the predicate.

(29a) L$_i$'ha mangiata t$_i$ cruda Marco,, la carne$_i$, (non Gianni).

    It has eaten   raw   Mark,, the meat, (not John).

    The meat, it was Mark who ate it raw, (not John).

(29b) *L$_i$'ha mangiata t$_i$ Marco cruda,, la carne$_i$, (non Gianni).

(29c) L$_i$'ha mangiata t$_i$ Marco,, cruda,, la carne$_i$, (non Gianni).

Summarizing the discussion so far, it is possible to conclude that postverbal contrastively focused subjects lie in a position c-commanding the lowest VP projection.

The upper boundary for the location of the focus position is I⁰, which can be shown to c-command it. There are three arguments for this claim. First, under the syntax of auxiliaries given in Belletti (1990), I⁰ c-commands the adverb *only* in (30), and the adverb *only* in turn c-commands the focused subject, because the latter is in the scope of *only*. By transitivity, it follows that I⁰ c-commands the focused subject and therefore the focus position as well.

(30) Ha soltanto cantato Gianni,, ieri.

    [$_{I'}$ Ha [$_{vp}$ soltanto$_i$ [$_{vp}$ [$_{vp}$ t$_i$ cantato] Gianni$_i$]]] ieri.

    Has only sung John, yesterday

    Only John sang yesterday.

Second, unlike VP-level adverbs such as *sempre*, 'always', sentence-level adverbs like *probabilmente*, 'probably', cannot be structurally focused. This fact is predicted if structural focus is within the complement of I⁰ and therefore too low to be accessed by a sentence-level adverb. Compare the question-answer pairs in (31) and (32). In (31), the question requires focusing of a VP-level adverb in the answer. There are three grammatical answers: either the adverb is provided in isolation, as in (31a), or it is focused by stress preverbally, as in (31b), or, finally, it is focused structurally, postverbally.

(31) Q: Quanto spesso pensi che verrá,, Bill?

    How often do you think that Bill will come?

(31a) A: Sempre.	*Always.*
(31b) A: SEMPRE,, verrá,, Bill.	*Bill,, he will always come.*
(31c) A: Bill verrá sempre.	*Bill will always come.*

When we turn to question-answer pairs involving sentence-level adverbs, we discover that structural focus is no longer available. See (32) below, which parallels (31) but for the lack of option (31c), involving structural focus in VP-adjoined position.

(32) Q: Credi che Bill verra' Domenica?

    Do you think that Bill will come on Sunday?

(32a) A: Probabilmente.

    Probably.

(32b) A: PROBABILMENTE verra',, Bill,, Domenica.

    Bill, he will probably come, on Sunday.

(32c) A: * Bill verra' probabilmente.

    Bill will probably come, on Sunday.

This is precisely the expected pattern if the location of structural focus is inside the complement of I⁰, thus out of reach for sentence-level adverbs.

A third argument identifying I⁰ as the c-commanding boundary for the position of the focused subject is provided in Brandi and Cordin (1989:138), who notice how focused postverbal subjects are in the scope of the sentential neg-marker, which I assume with Belletti (1990) to be cliticized to I⁰. Sentence (33) shows that the focused subject can be in the scope of the neg-marker (the original argument is given for Fiorentino and Trentino, suggesting that these two dialects also allow for structural contrastive focusing in postverbal position.)

(33) Non hanno telefonato le mie sorelle, ma le mie cugine!

    Not have called the my sisters, but the my cousins.

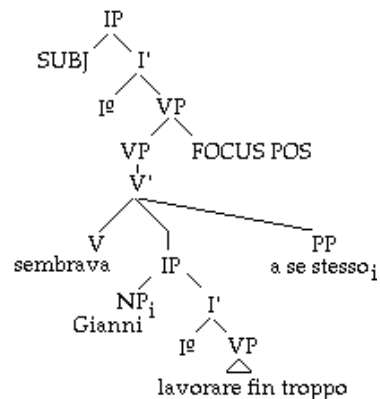   *It was not my sisters who called, but my cousins.*

In conclusion, the focus position has been shown to c-command the lowest VP projection while being c-commanded by I^0, Consistent with these results, I assume it to be right-adjoined to the VP projection.

3.1.4.2. A'-status

There are two sources of evidence for the A'-status of the focus position. The first source involves the study of its anaphor-binding properties. Consider sentence (34a) below and its structure prior to movement in (34b). In its base-generated position, the anaphor c-commands the subject's base-generated position in the embedded clause, but it is c-commanded by both the specIP subject and the focus position of the matrix clause.

(34a) A se stesso, Gianni sembrava lavorare troppo.
    To himself$_j$, John$_j$ seemed to-work too-much.

(34b)

```
              IP
            /    \
         SUBJ    I'
                /  \
              I⁰    VP
                  /    \
                VP    FOCUS POS
                 |
                 V'
               /   \
              V      \
          sembrava   IP      PP
                    /  \    a se stesso_i
                 NP_i   I'
                Gianni /  \
                      I⁰   VP
                           △
                      lavorare fin troppo
```

If the focus position were an A-position, it should be able to A-bind the anaphor much like a raised subject in the matrix preverbal position does. This is not the case. Compare (35a) and (35b) below. Both sentences involve a topicalized anaphor (topicalization is irrelevant for the argument, but seems to improve the contrast). As in other reconstruction structures, binding takes place from the anaphor's base-generated

position. While sentence (35a) is grammatical, sentence (35b), with the subject in focus position, is ungrammatical.

(35a) A se stesso, Gianni sembrava lavorare troppo.
    [A se stesso$_k$]$_i$ Gianni$_k$ [sembrava t$_i$ [t$_k$ lavorare troppo]].
    To himself, John seemed to work way too much.

(35b) *A se stesso, sembrava lavorare troppo Gianni.
    [A se stesso$_k$]$_i$ [$_{vp}$ [$_{vp}$ sembrava t$_i$ [$_{IP}$ t$_k$ lavorare troppo]] Gianni$_k$].
    It was John who seemed to work too much to himself.

Since postverbal focusing is grammatical when the topicalized indirect object is not anaphoric, as shown in (35c) below, the ungrammatical status of (35b) is due to the focused subject's inability to A-bind the anaphor. But the focused subject c-commands the anaphor, therefore the failure must be due to the A'-status of the focus position.

(35c) A me, sembrava lavorare troppo Gianni.
    [A me]$_i$ [$_{vp}$ [$_{vp}$ sembrava t$_i$ [$_{IP}$ t$_k$ lavorare troppo]]   Gianni$_k$].
    It was John who seemed to work too much to me.

There are two possible objections to this argument.

The first disputes the location of the focus position in (34b). If raising verbs were unable to license a focus position, then the focus position of (34b) would be within the embedded clause, and could not c-command the indirect object of the matrix clause at s-structure, explaining the ungrammaticality of (35b).

This is not the case. In fact, the example in (36) shows that raising verbs can license a structural focus position. In particular, in (36b) the infinitival complement precedes the raising verb, but its subject follows the matrix raising verb. If this subject is structurally focused in a matrix VP-adjoined position, as in (37a), the grammaticality of the sentence follows straightforwardly, with the trace of the subject governed by the raising verb once the preposed IP-complement is reconstructed. If instead the focused subject is taken to occur in its base-generated position, as in (37b), its contrastively focused status

in the absence of emphatic stress would be a mystery, and in sharp contrast with the absence of a contrastive-focus interpretation for all other nonemphatic specIP subjects.[9]

(36) a. Tu non sei sempre sembrato lavorare poco...
     You not are always seemed to-work little...
     You did not always seem to work little. ..

   b. ... [Lavorar poco] (lo) é sempre sembrato tuo fratello.
     ... To-work little   it   is always   seemed your brother.
     ...It is your brother who always seemed to work little.

(37a)... [$_{IP}$ t$_i$ lavorar poco]$_k$ (lo$_k$) é sempre [[sembrato t$_k$] [tuo fratello]$_i$].
(37b)...[$_{vp}$ lavorar poco]$_k$ (lo$_k$) é sempre [sembrato [$_{IP}$ [tuo fratello] t$_k$]].

A second instance showing licensing of the postverbal focused subject by the matrix verb is presented in (38) below. Here, the whole embedded IP has been postposed, and occurs to the right of the focused subject. If the matrix raising verb could not license its own focused position, the subject in (38) should not have the focused interpretation it has.

---

9 Sentence (36b), which has been found grammatical by all informants I tested, raises interesting problems concerning the licensing of empty-categories. On the basis of data like (1) below, Rizzi (1990:38) argues that reconstruction is not available for the infinitival complements of raising infinitivals. For example, sentence (1) would be ungrammatical because the subject trace violates the ECP.

(1) *E' [t$_k$ lavorare di piú]$_i$ che Gianni$_k$ sembra t$_i$.

Rizzi also shows that the infinitival complement resists left- and right-dislocation; see the data below.

(2) * [Lavorar male],, non vedo il modo in cui possa sembrar-lo.
     Working badly,, (I) not see the way in which (I) could seem-it
     To-work in a bad way, I do not see how I may seem it.

(3) * Luca lo sembrava spesso,, [lavorar poco].
     Luke seemeed it often,, to work little.

Possibly, the grammaticality of sentence (36b) relies on the fact that the displaced infinitival complement is sufficiently local to its trace to reconstruct successfully. Kayne (p.c.) notes how the landing site of the emargination rule of Antinucci and Cinque (1977) could be distinct from the right-dislocated position. This opens the possibility that (36b) is grammatical because its complement occurs in a more local position than left-dislocated constituents. According to my intuitions, even (3) above improves greatly when the clitic is absent, and the adverb is focused.

(38) Sembrava Bill,, aver sempre cantato, (non Marco).
   [$_{IP}$ [$_{IP}$ Sembrava$_i$ [$_{vp}$ [$_{vp}$ e$_i$ t$_h$] Bill$_f$], [$_{IP}$ t$_f$ aver sempre cantato]$_h$].
   Seemed Bill, to-have always sung, (not Mark).
   It is Bill who seemed to have sung all time, (not Mark).

A second objection to the analysis of (35b), arises if the matrix VP licensed a base-generated specifier position for the raising subject to land in on its way to the matrix focus position. As a *potentially theta-marked* position, this position could have an A-status, and the trace left in this position could then A-bind the reconstructed anaphor, casting doubts on the analysis of (35b).

There is host of reasons to exclude the existence of such nonthematic base-generated specifier. To begin with, if VP-internal nonthematic positions were possible, we would expect the existence of nonthematic object positions as well; however, movement into nonthematic object position has never been attested. Furthermore, notice that when a (thematic) specVP position does exist, it does A-bind an anaphoric indirect argument, as in (39) below. The fact that the anaphor in (35b) doesn't get bound constitutes evidence for the absence of a specVP position.

(39) Ha pensato a se stesso Bill.
   Ha [$_{vp}$ [$_{vp}$ pensato t$_i$ [a se stesso]] Bill$_i$].
   Has thought to himself Bill.
   It is Bill who has thought about himself.

Finally, the lack of a base-generated SpecVP position in raising verbs has also been argued for by Safir (1993) in his analysis of bare infinitives, and it also follows from the design of the process generating phrase markers in the Minimalist Program, where the GT operation responsible for combining/extending phrase markers is explicitly denied the possibility of creating a position and leaving it unfilled (Chomsky, 1992:30-32).

In conclusion, the ungrammatical status of (35b) shows that the rightward VP-adjoined structural focus position has A'-status.

Additional evidence comes from the examination of Weak Cross-Over effects. Consider sentence (40a) below. The subject is a quantifier phrase raised into specIP from the embedded clause. Since specIP is an A-position and it c-commands the matrix VP, it binds the pronoun in the matrix indirect argument when this reconstructs. The

sentence therefore allows for an operator-variable reading where the pronoun is bound by the subject quantified phrase.

(40a)
Ai suoi genitori, ogni bambino e' sembrato mangiar poco.
[Ai suoi$_i$ genitori]$_k$ [[ogni bambino]$_i$ e' [$_{vp}$ sembrato t$_k$ [t$_i$ mangiare poco]]].
To his.m.pl parents.m.pl, each child is seemed to eat little.
Each child seemed to eat too little to his parents.

Compare (40a) to (40b) below. In (40b) the same quantified subject has raised to the matrix focus position. If the focus position were an A-position, sentence (40b) would be indistinguishable from (40a) binding-wise and should be grammatical under the same operator-variable interpretation. Instead, (40b) is ungrammatical.

(40b)
* Ai suoi genitori, e' sembrato mangiar poco ogni bambino.
 [Ai suoi$_i$ genitori]$_k$ e' [$_{vp}$ [$_{vp}$ sembrato t$_k$ [$_{IP}$ t$_i$ mangiare poco]][ogni bambino]$_i$].
EACH child seemed to eat too little to his parents.

The ungrammaticality follows from the A'-status of the focus position. In fact, being in an A'-position, the quantified subject cannot bind the pronoun at s-structure. Reconstruction of the quantified phrase and successive QR past the reconstructed indirect object determines the WCO-violation.

Summarizing, in raising structures, binding of anaphors and pronouns in the indirect object is either grammatical or ungrammatical depending on whether the subject has raised into specIP or into focus position. The A'-status of the focus position accounts for this alternation, which would be completely unexpected if it had an A-status.

3.1.5. Summary

We have seen that in Italian any VP-level constituent can be structurally focused by raising to a rightward VP-adjoined A'-position. The main evidence came from the analysis of question-answer pairs, the analysis of sentences involving focus-sensitive adverbs, and the analysis of raising constructions involving binding by a focused subject.

Together with the results on postverbal presentational focus of Calabrese (1982, 1985, 1992), Saccon (1993) and Belletti and Shlonsky (1994), the results on structural contrastive focus attained here show that the concept of *free subject inversion*, often used in the pro-drop literature, hides an improper generalization. As Saccon (1993) also pointed out, subject inversion is not *free*. In fact, inverted subjects are either presentationally or contrastively focused, and since their interpretation distinguishes them from their preverbal counterparts they cannot function as optional equivalent alternatives of preverbal subjects.

Moreover, structural focus in VP-adjoined position was shown to be available to any VP-level constituent and hence not to be a specific property affecting subjects. Therefore, the expression *subject inversion* only describes a specific instance of the more general syntactic phenomenon of structural focus in postverbal position. The peculiarity of subject inversion arises only by virtue of the fact that non-focused subjects occur in specIP position, making the contrast between focused and unfocused subjects particularly evident, but it should not be seen as a syntactic phenomenon targeting subjects.

In the following, I will analyze subject inversion as being determined by the interaction between the structural constraint placed on focused constituents, ALIGNFOCUS, and the conflicting constraint SUBJECT. The ranking of the two constraints will determine for any given input whether the subject may or may not occur in the structural focus position. The analysis will thus implement the insight that inversion is not free, deriving the distribution of focus-determined subject inversion within null subject languages as well as crosslinguistically, for any language presenting rightward VP-adjoined structural focus.

3.2. Subject Inversion: a Conflict between SUBJECT and ALIGNFOCUS

I assume that structural focus in peripheral position is in principle available to all languages. This is modelled through the constraint ALIGNFOCUS below, which specifies that a focused constituent should be aligned to the right edge of the verbal projection of the clause (Grimshaw and Samek-Lodovici 1995a,b , McCarthy and Prince 1993).

(41) A<small>LIGN</small>F<small>OCUS</small> (XP, Left, VP, Right): Align the left edge of the focused   constituent XP with the right edge of VP.

Failed by non-aligned focused constituents.

The constraint is cast in terms of alignment to emphasize the parallel with Phonology, where the notion of alignment is pervasive (McCarthy and Prince, 1993). The constraint can thus be seen as an instance of a more abstract constraint not specifying the projection and the edge of the target projection which the focused phrases should be aligned to. The above constraint would then be only an instance of a family of alignment constraints formalized through the general schema below, which closely parallels the definition of generalized alignment found in McCarthy and Prince (1993).

(42) A<small>LIGN</small>F<small>OCUS</small> (XP, Edge1, YP, Edge2): $\forall$ XP, $\exists$ YP such that Edge1 of XP and Edge2 of YP coincide, where XP is a focused XP, YP is a verbal projection of the extended projection, and Edge1 and Edge2 are members of the set {Left, Right}.

Ideally, which edges align and which projection functions as target are eventually determined by the interaction of A<small>LIGN</small>F<small>OCUS</small> with other constraints. Alternatively, one could hypothesize the simultaneous existence of distinct A<small>LIGN</small>F<small>OCUS</small> constraints differentiated by the value assigned to the variables of (42). In other words, the fact that Italian has rightward alignment but Hungarian has leftward alignment could either be derived from other properties of these languages that make their specific alignment solutions optimal, or it could be a sign of the actual existence of a leftward and a rightward instance of the A<small>LIGN</small>F<small>OCUS</small> constraint, both present in UG, and thus both present in the grammar of any language, with one ranked higher than the other. I will come back to this issue in section 3.3, where I analyze the mixed focusing system of the Chadic language Kanakuru as evidence for the simultaneous existence of a rightward and a leftward instance of the A<small>LIGN</small>F<small>OCUS</small> constraint.

In the following analysis, I will assume that the parameters of A<small>LIGN</small>F<small>OCUS</small> are specified as in its first definition, in (41) above.

There is considerable evidence in favor of a universal constraint such as A<small>LIGN</small>F<small>OCUS</small>. This includes Kiss's argument for the existence of a left-peripheral focus position to the left of the verb in Hungarian (the exact location has been analyzed in

various ways: S-adjoined, or in specVP, or forming a constituent with the main verb, or in the specifier of a focus projection taking VP as complement. See work by Kiss (1981, 1987, 1990), Horvath (1986), Brody (1990) respectively).

Left-peripheral focusing, in CP or other clause-initial position, has been also claimed for Basque (Ortiz de Urbina, 1989), and for the African languages of Kru (Ivory coast), Tikar (Cameroon) and Gungbe (Kwa family, Benin); see work by Koopman (1984), Stanley (1994), and Aboh (1995) respectively.

Finally, structural focus within the VP projection has been argued for by Tuller (1992) for Afroasiatic Chadic languages, by Rochemont and Culicover (1989) for English, by Bonet (1990) for Catalan, and in this work for Italian (also Samek-Lodovici 1993, 1994).

The existence of the universal constraint A<small>LIGN</small>F<small>OCUS</small> does not entail that focused phrases occur in peripheral position in all languages. The constraint is in fact going to be violated in all those grammars where it is ranked lower than other conflicting constraints. Before examining how this analysis determines the lack of subject inversion in English and similar languages, it is worth reviewing the evidence for structural focus in VP-adjoined position in English by Rochemont and Culicover (1989).

3.2.1. Structural focus in English and the Design of UG

Culicover and Rochemont (1989:24) show how, in accord with the universal nature of the constraint A<small>LIGN</small>F<small>OCUS</small>, structural contrastive focusing is present in English as well, although in this language it does not affect subjects.

Their evidence is based on the QA-pairs in (43) and (44) which contain two distinct questions, but a unique answer with the direct object following the indirect object. This answer is appropriate for the question in (43), which focuses the direct object, but inappropriate for the question in (44), which focuses the indirect object. Since the answer with the *inverted* object is appropriate only where the object is focused, Culicover and Rochemont conclude that focusing is a crucial factor licensing its VP-adjoined position.

(43) Q: What did John purchase for his wife?
   A: John purchased for his wife [a brand new fur coat].

(44) Q: For whom did John purchase a brand new fur coat?

A: *John purchased for his wife [a brand new fur coat].

Additional evidence comes from the study of focusing adverbs. Rochemont (1986) provides the following example, where the contrastive focusing adverb *also* is associated with the right-adjoined constituent *a new girlfriend*.

(45) A: Sam just came back from England, and brought me a new bracelet.

B: Well I don't know if you know this yet, but Sam *also* brought back

from England *[a new girlfriend]*.

Moreover, Culicover and Rochemont point out that in the following sentences, the constituent associated with the contrastive focusing adverb *only* is always to the right edge of the VP; see the underlined constituents in (45a) through (45f).

(45a) I only gave a book about linguistics to Mary.
(45b) I only gave a book about linguistics to Mary.
(45c) *I only gave a book about linguistics to Mary.

(45d) I only gave to Mary a book about linguistics.
(45e) ?I only gave to Mary a book about linguistics.
(45f) *I only gave to Mary a book about linguistics.

This distribution, which matches a similar distribution in Italian, is accounted for if focusing occurs in VP-adjoined position, like in the Italian case.

English is thus like Italian with regard to contrastively focused objects and indirect objects, but diverges from Italian with respect to contrastively focused subjects. Consequently, it is natural to seek an analysis where English and Italian undergo the same requirement on structural focus, and derive the divergent behaviour of subjects from other, independent factors.

3.2.2. Focused and Unfocused Subjects in Italian and English

The goal of the OT analysis presented here is to derive both (i) the absence of postverbal unfocused subjects in Italian, and (ii) the absence of postverbal focused

subjects in English, from the ranking of ALIGNFOCUS relative to the constraints SUBJECT, PARSE, and FULL-INT. These latter constraints, listed again below, have been independently established and motivated through the analysis of the pro-drop alternation of chapter 2. Therefore, the analysis of structural focusing below will also have to respect all the already established ranking relations for the grammars of Italian and English.

- SUBJECT: The highest A-specifier of a clause must be structurally realized.
  Failed when the highest A-specifier of a clause is left structurally unrealized.

- PARSE: Structurally realize input items into phrase structure.
  Failed by unrealized input items.

- FULL INTERPRETATION: Lexical conceptual structure is parsed.
  Failed by uninterpreted lexical material.

The analysis of focused and unfocused subjects in the two languages will be presented in the following way. First, I will consider only three basic candidate structures: one with a preverbal subject, one with a VP-adjoined subject, and one with an unrealized subject. Then, I will extend the analysis to expletive structures and to the null structure. Finally, I will show that these structures exhaust the set of potential optima because they harmonically bound any other structure in the candidate set.

3.2.3. Focused Subjects

Inversion of focused subjects in Italian is due to the higher ranking of ALIGNFOCUS relative to SUBJECT.

This is shown in T1 below. The preverbal-subject candidate (a), with the subject in specIP, violates ALIGNFOCUS, while the structural-focusing candidate (b), with a VP-adjoined subject, violates SUBJECT. Since ALIGNFOCUS outranks SUBJECT, the ALIGNFOCUS violation is fatal to (a). Candidate (b) beats the null subject candidate in (c) as well, since both violate SUBJECT, but (c) also violates PARSE. The ranking of PARSE is irrelevant in this case, since (b) and (c) are equivalent on all other constraints (nevertheless, we know that PARSE dominates SUBJECT from the analysis of topic-related null subjects).

T1. Italian focused subjects: ALIGNFOCUS >> SUBJECT

<cantare(x), x=Gianni, x=focus, T=pres.perf.> *sing John*	F.I.	PARSE	A.F.	SUBJ.
a. preverbal subj: [G. ha cantato] *J. has sung*			*!	
b. ☞ postverbal subj: [-- ha cantato G.]				*
c. null subj: [-- ha cantato]		*!		*

In English, on the other hand, SUBJECT outranks ALIGNFOCUS, making the preverbal-subject candidate (a) the optimal candidate, see T2 below. In fact, both (b) and (c) violate SUBJECT, which now constitute a worse violation than violating ALIGNFOCUS. The new ranking thus derives the preverbal position of English focused subjects.

T2. English focused subjects: SUBJECT >> ALIGNFOCUS

<sing(x), x=<Mark>, x=focus, T=pres. perf.>	SUBJ.	PARSE	F.I.	A.F.
a. ☞ preverbal subj [M. has sung]				*
b. postverbal subj: [-- has sung M.]	*!			
c. null subj: [-- has sung]	*!	*		

The ranking between SUBJECT and ALIGNFOCUS thus determines whether focused subjects occur preverbally in specIP position, as in English, or postverbally, focused structurally in peripheral position, as in Italian.

3.2.4. Unfocused Subjects and Focused Objects

When subjects are not focus-marked, ALIGNFOCUS is vacuously satisfied, dissolving the conflict with SUBJECT. The ranking of the two constraints is uninfluential, and the two grammars are correctly predicted to converge on the same optimal form. This is shown in tableau T3 for the Italian ranking and tableau T4 for the English ranking: in both tableaus, the optimal candidate is the preverbal subject candidate in (a), which satisfies all constraints.

T3. Italian unfocused subjects.

<cantare(x), x=<Gianni>, --, T=pres.perf>	F.I.	PARSE	A.F.	SUBJ.
a. ☞ preverbal subj: [G. ha cantato]				
b. postverbal subj: [-- ha cantato G.]				*!
c. null subj: [-- ha cantato]		*!		*

T4. English unfocused subjects.

<sing(x), x=<Mark>, -- , T=pres.perf>	SUBJ.	PARSE	F.I.	A.F.
a. ☞ preverbal subj: [M. has sung]				
b. postverbal subj: [-- has sung M.]	*!			
c. null subj: [-- has sung]	*!	*		

The vacuous satisfaction of ALIGNFOCUS thus explains why English and Italian converge in parsing unfocused subjects in specIP. In fact, since the preverbal candidate in (a) violates no constraints, it is optimal across all 4!=24 rerankings of them, which is equivalent to saying that other constraints notwithstanding, unfocused subjects will always occur in specIP position.

Convergence also occurs when the focused constituent is not the subject. SUBJECT can then be satisfied by parsing the subject in specIP. In the tableaus below, the focused constituent is the object, which is parsed in focus position in both languages, satisfying ALIGNFOCUS. This is shown in T5 for Italian and in T6 for English (see also section 3.2.1).

T5. Italian focused objects.

<comprare(x,y,z),(x=G.,y=cap.,z=M.), y=focus,T=pres.perf.> *purchase John coat Mary*	F. I.	PARSE	A.F.	SUBJ.
a. obj in situ: G. ha [comprato [un cappotto] a M.] *J. has bought a coat to Mary*			*!	
b. ☞ obj in focus pos.: G. ha [$_{vp}$ [$_{vp}$ comprato t$_i$ a M.] [un cappotto]$_i$]				

T6. English focused objects.

<purschase(x,y,z),(x=J.,y=coat,z=M.),y=focus, T=pres.perf>	SUBJ.	PARSE	F.I.	A.F.
a. obj in situ: J. has [vp purchased [a brand new fur coat] for Mary]				*!
b. ☞ obj in focus position: J. has [vp [vp purchased ti for Mary] [a brand new fur coat]i]				

While other factors seem to restrict the occurrence of structural focus of contrastively focused objects in English, which appears to be less systematic than in Italian, the OT analysis accounts for the observed convergences among the two languages in the syntactic expression of focused objects and unfocused subjects, while at the same time predicting the divergence in the analysis of focused subjects.

3.2.5. Expletive Subjects

A structure with an expletive in specIP and a focused subject in VP-adjoined position satisfies SUBJECT and ALIGNFOCUS simultaneously and thus constitutes a challenge to the optimal structures seen above. This structure however, violates FULL-INT, which, as we will see, is potentially in conflict with both SUBJECT and A LIGNFOCUS. What determines the status of the expletive candidate is thus the relative ranking among these constraints .

We already know from the discussion of expletives in chapter 2 that FULL-INT dominates SUBJECT in Italian. For example, for the raising verb *sembrare* (to seem), the structure with an overt expletive, in (b), is beaten by that with an unrealized subject, in (a). This can only occur if failing SUBJECT is a lesser violation than failing FULL-INT, as tableau T7 shows.

T7. Italian expletives: FULL INT. >> SUBJECT

<sembrare(-,x), x=<...>, --,T=pres.>	F. I.	PARSE	A.F.	SUBJ.
a. ☞ null subj: [-- sembra [che ...]]				*
b. explet. subj: [expl. sembra [che ...]]	*!			

The same ranking correctly predicts the suboptimal status of the expletive candidate in focusing contexts. As T8 shows, the inversion candidate in (a) beats the expletive

candidate in (b) because under this ranking failing SUBJECT is a lesser violation than failing FULL-INT.

T8. Italian focused subjects. FULL INT. >> SUBJECT

<cantare(x), x=G., x=focus, T=pres.perf>	F. I.	PARSE	A.F.	SUBJ.
a. ☞ postverbal subj: [-- ha cantato G.]				*
b. expletive subj: [expl. ha cantato G.]	*!			

In English, the optimal structure for focused subjects realizes them in specIP, violating ALIGNFOCUS, while the expletive candidate satisfies ALIGNFOCUS and fails FULL-INT. It is thus the ranking between ALIGNFOCUS and FULL-INT that matters. The suboptimal status of the expletive candidate shows that violating FULL-INT is fatal, and thus that FULL-INT dominates ALIGNFOCUS. This ranking is also consistent with the rankings found so far for English.

T9. English focused subjects. FULL-INT >> ALIGNFOCUS

<sing(x), x=Mark, x=focus, T=pres.perf>	SUBJ.	PARSE	F.I.	A.F.
a. ☞ preverbal subj: [M. has sung]				*
b. expletive subj: [it has sung M.]			*!	

The status of the expletive candidate thus provides information on the relative ranking of the constraint FULL-INT, which dominates SUBJECT in Italian and ALIGNFOCUS in English.

3.2.6. The Null Candidate

A final challenge to the optimal structures identified above comes from the null structure, which vacuously satisfies all constraints except PARSE. Its suboptimal status will thus provide information on the relative ranking of this latter constraint in the two languages.

As far as Italian is concerned, the suboptimal status of the null candidate in (b) relative to the optimal inversion candidate in (a) provides evidence for the higher ranking of PARSE relative to SUBJECT, confirming a finding from the analysis of topic-antecedents in chapter 2.

T10. Italian focused subjects: **P**ARSE >> **S**UBJECT

<cantare(x), x=G., x=focus, T=pres.perf>	F. I.	**P**ARSE	A.F.	**S**UBJ
a. ☞ postverbal subj: [-- ha cantato G.]				*
b. null struct:		*!**		

In English, on the other hand, the suboptimal status of the null-structure follows from the higher ranking of **P**ARSE relative to **A**LIGN**F**OCUS.

T11. English focused subjects: **P**ARSE >> **A**LIGN**F**OCUS

<sing(x), x=Mark, x=focus, T=pres.perf>	**S**UBJ.	**P**ARSE	F.I.	A.F.
a. ☞ preverbal subj: [M. has sung]				*
b. null struct:		*!**		

3.2.7. Candidate Set Exhaustion and Cross-linguistic Variation

The candidates examined in the preceding tableaus and listed below exhaust the crosslinguistic variation attainable through reranking of the four constraints considered in this chapter for an input involving a focused subject.

(46)   Optimal Candidate   Structure   Violated Constraint
      a. preverbal subject   [DP aux V]   **A**LIGN**F**OCUS
      b. inverted subject   [-- aux V DP]   **S**UBJECT
      c. expletive subject   [expl. aux V DP]   **F**ULL-**I**NT
      d. null structure   [   ]   **P**ARSE (three times)

All other competing candidates are harmonically bound by one of the structures above, and thus can never be optimal. A brief proof follows below.

(47) Proof: assume the existence of a candidate *Cand* not harmonically bound (h-bound) by (46a)-(46d).

1. *Cand* cannot violate two constraints, because in this case it would violate a constraint among **A**LIGN**F**OCUS, **S**UBJECT, **F**ULL-**I**NT, and an additional constraint C. It would then be h-bound by one of the candidates in (a) through (c), since these do not violate any additional constraint C.

2. *Cand* cannot satisfy all constraints, because satisfying **A**LIGN**F**OCUS and **S**UBJECT simultaneously brings about a violation of either **F**ULL-**I**NT or **P**ARSE, as shown in the paragraphs discussing the expletive and null structures. *Cand* would then end up h-bound by (b) and (c), which violate only **S**UBJECT, and only **F**ULL-**I**NT respectively.

3. Steps 1 and 2 above show that *Cand* must violate exactly one constraint.

3.1 *Cand* cannot violate **A**LIGN**F**OCUS, because to be distinct from (a), *Cand* would have to either include additional expletive material, violating **F**ULL-**I**NT, or avoid parsing some elements of the input, violating **P**ARSE. In either case *Cand* would end up h-bound by (a), which fails **A**LIGN**F**OCUS alone.

3.2 *Cand* cannot violate **S**UBJECT, because in order to be distinct from (b), *Cand* would have to either include additional expletive material, failing **F**ULL-**I**NT, or parse the subject elsewhere, failing **A**LIGN**F**OCUS, or not parse the subject, failing **P**ARSE. In all cases, *Cand* is h-bound by (b), which fails only **S**UBJECT.

3.3 *Cand* cannot violate **F**ULL-**I**NT, because in order to be distinct from (c), *Cand* would have to either include other material, leading to further violations of **F**ULL-**I**NT, or the expletive or the subject would be parsed elsewhere, leading *Cand* to violate **S**UBJECT or **A**LIGN**F**OCUS. In all cases, *Cand* ends up h-bound by (c), which fails **F**ULL-**I**NT alone.

3.4 *Cand* cannot outperform (d) by violating **P**ARSE only once (whereas the null structure fails it three times), because the only legitimate competing candidates thus produced would be either (i) the null subject candidate *[-- aux V]* in (b), or (ii) the expletive candidate *[expl. aux V]* in (c). Steps 3.2 and 3.3 already examined why *Cand* cannot outperform these candidates.

4. No other option is given.

Assuming that the rankings selecting the null structure as optimal are unlearnable (see the discussion in chapter 2), the picture that emerges is that of a fundamental crosslinguistic tripartition in the realization of focused subjects. Rankings making candidate (a) optimal will realize focused and unfocused subjects in the same position. Whether this "canonical" position is specIP, as in English, or another position, as in VSO languages, depends on the constraints governing case and agreement, and possibly other constraints as well. All other constraints being equal, these languages should also

show a split between focused subjects and focused internal arguments, objects in particular, which are not being subject to the SUBJECT constraint, and are thus free to respond to the demands of ALIGNFOCUS.

A second group of languages is identified by candidate (b), which stands for languages where ALIGNFOCUS affects subjects as well. In these languages, focused subjects pattern with other focused arguments, and the split occurs between the position of focused subjects and that of unfocused, canonical subjects.

The final group, is represented by the expletive candidate in (c), and contains languages that resemble those in the previous group, with focused subjects patterning with other focused arguments, but with the difference that the specIP position is filled by an expletive.

The first and second language-group are exemplified by English and Italian respectively. I have no representative for the third group yet. Notice however that the optimal structure exemplifying the third group is familiar, being like English *there* constructions. Indeed, English presentational focus could be analyzed along the same lines as contrastive focusing, through a constraint ALIGN-PRES-FOCUS requiring constituents marked as presentationally focused to occur in rightward VP-adjoined position. The higher ranking of ALIGN-PRES-FOCUS relative to SUBJECT selects postverbal presentational focus as optimal. The obligatory expletive *there* then follows necessarily from the independently established higher ranking of SUBJECT relative to FULL-INT.

T12. English presentationally focused subjects.

<arrive(x),x=man,x=focus, T=pres.perf>	A.PR.F.	SUBJ.	PARSE	F. I.
a. preverbal subj: [a man arrived]	*!			
b. postverbal subj: [-- arrived a man]		*!		
c. null subj: [-- arrived]		*!	*	
d. ☞ expl. subj: [there arrived a man]				*
e. null struct:			*!**	

Under this analysis of presentational focus, English would be an instance of a language of the expletive class exemplified by (46c) above.

3.2.8. Focused Null Subjects

A language which the analysis predicts to be impossible is one with focused null subjects. This result follows necessarily from the analysis given here because the candidate leaving the subject unparsed is h-bound by the candidate realizing the subject in focus position.

As the following tableau shows, the null subject candidate in (b) violates SUBJECT and PARSE, while candidate (a) violates only SUBJECT. Thus (a) h-bounds (b), making (b) suboptimal universally, under any ranking.

T13. Null subject is h-bound by postverbal subject candidate.

<sing(x), x=Mark, x=focus, T=pres.perf>	F. I.	SUBJ	PARSE	A.F.
a. ☞ postverbal subj: [-- has sung M.]		*		
b. null subject: [-- has sung]		*	*!	

It is important to notice that the same result does not necessarily follow if we represent null subjects structurally, as *pro*. Nothing in fact prevents the possibility of focusing *pro*. For example, in Italian, *pro* could occur in focus position, being case-licensed the same way as overt subjects. Yet, it obviously does not, as the example below shows, and as independently argued for by Cardinaletti (1994) in her study of the positions available to *pro*. (In the examples below, the word *deictic* symbolizes a pointing gesture identifying a referent for the pronoun.)

(48) Q: Chí ha gridato?   *Who screamed?*
     A: Ha gridato lui [deictic]!   *HE screamed!*
     A: * Ha gridato *pro* [deictic]!   *(He) screamed!*

The possibility of a focused null subject is usually rejected on the basis of the belief that focusing always requires stress, which null subjects evidently cannot support. However, it was argued in section 3.1 that structurally focused subjects need no emphatic stress, a claim also made in Belletti and Shlonsky (1994). But if stress is not needed, then *pro* is a potential target for structural focusing.

Nor is it possible to argue that *pro* cannot be focused because it is not informative enough. In a QA-pair like that in (48) above it is unclear what information the overt

pronoun is supplying that could not be supplied by *pro*. This is even clearer in Chinese, where overt pronominals do not supply gender information, yet they are obligatory when pronominals are focused.

(49) Chinese: Q: Shei dapo le nazhi beizi? *Who broke that glass?*
  Who break ASP that glass.
  A: Ta [deictic] dapo de! *She/he did it!*
   S∕he   break did.
  A: * pro [deictic] dapo de! *She/he) did it!*

In the OT account, the impossibility of null subjects follows directly from their unrealized nature, without further stipulation. Unrealized subjects are no less referential than overt subjects. The only difference is that they are not realized. Their distribution is determined by their failing the **S**UBJECT and **P**ARSE constraints. They can be optimal when there is a topic-referring antecedent and the constraint **D**ROP**T**OPIC outranks **S**UBJECT and **P**ARSE. They cannot be optimal in focused contexts because they are h-bound by the candidate with the overt subject in focus position.

We can now see a difference between the conception of structural deficiency adopted here and that proposed in Cardinaletti and Starke (1994). In Cardinaletti and Starke's analysis, the restricted referential range of null subjects and their unfocused nature follow from specific assumptions on the representation of *pro*, which is conceived of as a deficient pronoun lacking its own case projection, which in turn is an essential part of full noun phrases. This missing projection forces *pro* to occur only in case-assignment positions, thus ruling out its occurrence in focus position.

In the proposal defended here, on the other hand, leaving subjects unrealized is just one of the many things GEN can do with a subject in the input. Otherwise, unrealized subjects are like overt subjects. In principle, they have the same referential range as overt subjects, and like overt subjects they must be assigned case (see chapter 1 and chapter 5). Their limited referential range (occurrence with topic antecedents only) and their unfocused nature follows directly and necessarily from their being structurally unrealized and no assumption specific to null subjects other than their unrealized status need be made. Because they are optimal only under pressure of **D**ROP**T**OPIC, their range

is limited to topic antecedents. Because they violate **P**ARSE, they are less optimal than overt subjects in focus position and therefore they never occur as focused.

The universal absence of focused null subjects is thus a strong prediction of the analysis presented here, and constitutes evidence for the view of null subjects as unrealized, on which it is crucially based.

3.2.9 Summary

Summing up, the interaction of the four constraints **A**LIGN**F**OCUS, **F**ULL-**I**NT, **S**UBJECT, and **P**ARSE accounts for the language-internal alternation between focused and unfocused subjects in Italian, as well as for the crosslinguistic alternation between Italian and English in the analysis of focused subjects. The analysis also accounts for the convergent analysis of focused objects in the two languages, and for the alternation between focused subjects and focused objects internal to English, where only the latter can focus structurally.

Moreover, the analysis is consistent with the analysis of null subjects developed in chapter 2, with which it shares the use of three constraints.

The relevant rankings argued for in this chapter are summarized below.

(50) Rankings for Italian and English:
  Italian:
    ALIGN**F**OCUS **P**ARSE **F**ULL-**I**NT
          SUBJECT

  English:
    SUBJECT **P**ARSE **F**ULL-**I**NT
        ALIGN**F**OCUS
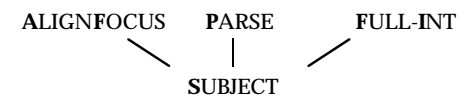
3.3. Parametrization Issues: OT vs. Principles and Parameters

Different languages show structural contrastive focus in different positions. For example, whereas Italian, Catalan and English show rightward structural focus, Hungarian, Basque, Tikar and Gungbe have leftward structural focus (Samek-Lodovici

1994, Bonet 1990, Rochemont and Culicover 1989, Kiss 1981, 1987, 1990, Horvath 1986, Brody 1990, Ortiz de Urbina 1989, Koopman 1984, Stanley 1994, Aboh 1995).

How is this opposition in the direction of structural focus to be captured? The importance of this question lies in the distinction it brings out between the Optimality Theoretic and the Principles and Parameters perspectives of grammar. In the Principles and Parameters perspective, distinct values of a parameter exclude each other. Therefore, once the value of an hypothetical parameter specifying the direction of focus-alignment as either *leftward* or *rightward* is set, the opposite value becomes inaccessible.

In the Optimality Theoretic perspective, on the other hand, all constraints are universal, and therefore they are present in the grammar of every language. Thus, if there exist a leftward and a rightward version of the abstract ALIGNFOCUS constraint, they should both be part of each language's grammar (a similar perspective is adopted in Grimshaw (1995) in her discussion of the position of a head relative to its complement in different languages).

The crucial question is whether there are empirical consequences distinguishing among these two perspectives. The answer is yes, as the following analysis of the mixed focusing pattern of Kanakuru will show.

3.3.1. Mixed Focusing Pattern in Kanakuru

The focus data reported in Tuller (1992) for the Chadic language Kanakuru can be classified into the following three basic patterns. (Similar data are also found in Southern Bade, Tangale, and Ngizim; see Tuller, 1992).

(i) Pattern 1 - Clauses. When the main verb takes a clausal complement, the focused constituent follows the main verb and precedes the clause, as in (51) below. This is shown by the examples in (52), where the focused wh-subject intervenes between the verb and the clausal complement. (According to Tuller, in the absence of focus Kanakuru follows a strict SVO pattern, with unfocused subjects in preverbal position. Tuller also shows that the distribution of wh-phrases matches that of other focused constituents and should thus also be analyzed as focused.)

(51) Clausal Complements: V FocusXP CP.

(52a) Yimbɛn **nuN** [ka bome wat gɔ Billiri].   (Tuller, ex. (23a), p.321)
   Think **who**   that Bome went Billiri.
   Who thinks that Bome went to Billiri?

(52b) Neigon **nuN** [ka Aish wat g Billiri].   (Tuller, ex. (23b), p.321)
   Said   **who** that Ash went to Billiri.
   Who said that Aisha went to Billiri?

(ii) Pattern 2 - Complex DP. When the complement is a complex DP containing an adjoined PP-modifier or relative clause, then the focused constituent intervenes between the nominal head N of the DP and the adjoined modifier or relative clause, as if the head had incorporated into the verbal head. This pattern is shown in (53). Some examples are given in (54).

(53) Complex DPs: V N$_i$ FocusXP [$_{DP}$ t$_i$ YP].

(54a) Wupe [dowi] **mɛni** [gɛn lai].   (Tuller, ex. (20b), p.319)
   Sold horse-the **we** with cow-the.
   WE sold the horse and the cow.

(54b) Ade [shiruwoi] **Ngadlai** [mɛ shee wura ane].   (Tuller, ex. (9a), p.309)
   Ate fish-the cat-the RM she fried up.
   THE CAT ate the fish that she fried.

(iii) Pattern 3 - Simple DP. When the verb takes a simple DP complement, i.e. a DP with no more than number or possessive specifications, the focused constituent follows the DP complement, as in (55). Some examples follow in (56).

(55) Simple DPs: V DP FocusXP.

(56a) Tui [worom mono] **shire**.   (Tuller, ex. (21a), p319)
   Ate bean my   **she**.
   SHE ate my beans.

(56b) °«k [p⩿m«nai] **amnai.**   (Tuller, ex. (22), p319)

   built new house **chief**-**the**[10].

   THE CHIEF built the new house.

(56c) Wupe   [landaɴgin rap] **m«ni**.   (Tuller, ex. (i)b, p320)

   Sold   gowns   two **we**.

   WE sold two gowns.

I follow Tuller (1992) in analyzing patterns (i) and (ii) as involving leftward VP-adjunction of the focused phrase. As Tuller proposes, the two patterns arise from the requirement that the DP complement be assigned case under adjacency. When the complement is a clause, the requirement is vacuously satisfied and the focused phrase can left-adjoin to VP, as in (57i) below. However, when the complement is a DP, the intervening focused phrase interferes with the adjacency requirement. The nominal head then incorporates into the verbal complex in order to get case under adjacency, leaving behind any DP adjuncts (Tuller, 1992). The structure for this latter case is shown in (57ii) below. The focused phrase is marked as '+focus.' I also assume that in (57ii) what incorporates is the complex Determiner+Noun, as Tuller's glosses suggest.

(57) Kanakuru, focusing of clausal and complex DPs.

(i) Clausal complements

(ii) Complex DP complements
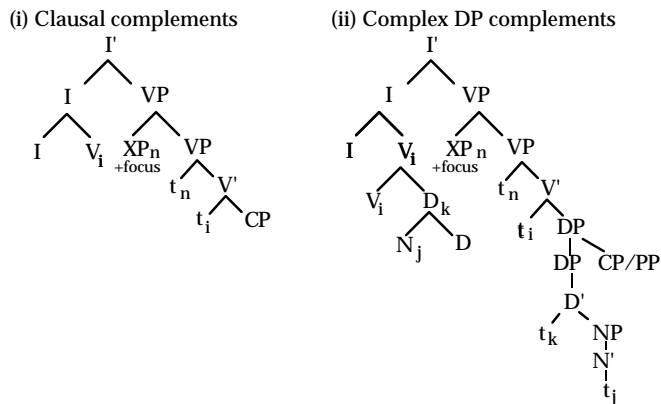
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[10] This gloss is not given in the original paper, but can be deduced.

The problematic pattern for Tuller's analysis is the third one, as she herself points out (see her discussion in footnote 16 page 320). In these cases, a whole DP precedes the focused phrase, and therefore an incorporation analysis is excluded. My proposal is that in this case the head of the DP stays in situ unaffected, while the focused phrase VP-adjoins to the right, rather than to the left, as in structure (58) below.

(58) Simple DP complements.
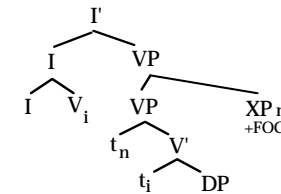
In the next section, I will claim that head-incorporation is not possible in these construction. Leftward focus alignment would thus inevitably block case-assignment under adjacency. Precisely in these cases, the constraint requiring *rightward* focus-alignment has a chance to be satisfied by the optimal candidate in order to maintain case-adjacency, determining the otherwise mysterious focusing pattern of Kanakuru.

3.3.2. Opposite Alignment Constraints

In order to derive the patterns of Kanakuru, I make the following assumptions.

First, I assume that Tuller's case adjacency is a constraint **C**ASE**A**DJ requiring linear adjacency between the verb and the DP it assigns case to.

Second, I assume the existence of a constraint **E**CP, reminiscent of the ECP principle of the Principles and Parameters tradition, violated by ungoverned traces, and applying also to the traces left behind by head-movement (Baker 1988, Travis 1984). In particular, the **E**CP is sensitive to the DP context in which noun incorporation occurs. When the DP does not include any possessive or number specifications, the noun can first head-move into D⁰ and then incorporate into the verb. In this case, each trace is antecedent-governed, and **E**CP is satisfied. However, when a possessive or a number projection is part of the DP, the possessive or numeral head blocks antecedent government of the trace in N⁰, causing a violation of the constraint **E**CP. Such blocking does not occur when the DP projection contains only prepositional and relative-clause modifiers,

which are external and adjoined to the DP-node, and therefore do not interfere with head-movement nor antecedent-government.

For completeness, I also include in the analysis the constraints SUBJECT and STAY. SUBJECT is satisfied by the candidate placing the focused subject preverbally, in specIP position. SUBJECT must be dominated by the focus constraints, since in the absence of focusing the subject occurs in specIP position. STAY is always violated by movement, therefore it is violated every time a focused constituent aligns, and when a head incorporates. The role of STAY will become clearer in section 3.3.3.

Finally, I assume that GEN is extended so as to allow for noun-incorporation, and that the theory of inputs can be further developed in order to represent the internal structure of DPs, but I leave the actual development to further research.

The pattern of Kanakuru is determined by the interaction of the constraints CASEADJ, ECP, and the two opposite versions of ALIGNFOCUS, AF_{right} and AF_{left}. The constraint AF_{right} is the constraint requiring rightward VP-adjoined alignment of focused constituents seen in the previous analyses of Italian and English. The constraint AF_{left} is its leftward counterpart. The pattern of Kanakuru follows when CASEADJ and ECP dominate AF_{left} and AF_{right}, AF_{left} dominates AF_{right}, which dominates SUBJECT, as in the ranking in (59).

(59) Kanakuru: {ECP, CASEADJ} >> AF_{left} >> AF_{right} >> SUBJECT >> STAY[11]

The tableaus below show how a focused subject ends up left- or right-adjoined to VP, obeying either AF_{left} or AF_{right}, depending on the form of the complement.

Let us start with the simple case of clausal complements. Consider first candidates (b) and (c), which align the focused subject in leftward and rightward position, respectively. Candidate (b) satisfies AF_{left} and violates AF_{right}, while (c) does the opposite. Since AF_{left} outranks AF_{right}, candidate (b) wins the competition between the two. Next comes candidate (a), with the subject in specIP position. This candidate satisfies SUBJECT, but fails both focus constraints, and AF_{left} in particular. Since this is

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[11] The ranking SUBJECT >> STAY is not determined by the tableaus presented here; however, if this ranking did not hold, unfocused subjects could not move to specIP position, as they do.

ranked higher than SUBJECT, candidate (b) also wins this competition and is selected as optimal, deriving the pattern associated with clausal complements.[12]

T14. Clausal complements: AF_{left} >> {AF_{right}, SUBJECT}

<V(x,y), (x=X, y=<...>), x=focus, T=pres.>	ECP	C.A.	AF_L	AF_R	SUBJ	STAY
a. XP$_f$ V [$_{vp}$ CP]			*!	*		*
b. ☞ V [$_{vp}$ XP$_f$ [$_{vp}$ CP]]				*	*	*
c. V [$_{vp}$ [$_{vp}$ CP] XP$_f$]			*!		*	*

The second pattern is that of DPs with adjoined modifiers, but no possessive or number specifications. Here we have the four candidates shown in T15 below. In the optimal candidate (d), the nominal head of the DP complement incorporates into the verbal complex where it is assigned case (I represent it only as N, with no reference to potential incorporated Ds). The leftward VP-adjoined subject intervenes between the noun and its adjoined modifiers, but does not interfere with case-assignment under adjacency, hence CASEADJ is satisfied, and so is AF_{left}.

All other candidates violate one or the other of these two high ranked constraints. Candidate (a), with the subject in specIP, fails both focus constraints, and thus AF_{left} as well. It satisfies SUBJECT, but SUBJECT is ranked lower than AF_{left} as we know from the analysis of the previous tableau. It also violates STAY one less time than (d), showing that STAY is lower ranked than AF_{left}, else (a) would win and (d) would not be grammatical.

Candidate (b), identical to (d) but for the lack of noun incorporation, fails CASEADJ, because the focused phrase intervenes between the verb and the complement DP, but violates STAY one time less than (d). STAY is thus also lower ranked than CASEADJ, otherwise (b) would win over (d).

Finally, candidate (c), with rightward adjunction of the focused phrase, fails AF_{left} and satisfies AF_{right}, while (d) does the reverse. But as we already know, AF_{right} is ranked lower than AF_{left}, and thus failing AF_{left} is fatal to (c). Candidate (c) also violates

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[12] Whether the subject in (a) violates CASADJ or not is uninfluential to the analysis, thus I will assume it does not. Both (b) and (c) violate STAY once due to the alignment movement. The incorporation candidate is not shown, since no nominal complement is present in the input. A possible incorporation candidate could involve incorporation of the verbal head of the complement. This candidate would fail ECP, and therefore it would have suboptimal status.

STAY one time less than (d), but STAY was shown to be lower ranked than AF$_{left}$ already in the analysis of the status of (a).

T15. Object DP with adjoined modifiers: AF$_{left}$ >> {SUBJECT, STAY, AF$_{right}$}
CASEADJ >> STAY

<V(x,y), (x=X, y=N), x=focus, T=pres.perf>	ECP	C.A.	AF$_L$	AF$_R$	Subj	Stay
a.　　XP$_f$ V　　　　　[$_{vp}$ DP]			*!	*		*
b.　　　　V [$_{vp}$ XP$_f$ [$_{vp}$ DP]]		*!		*	*	*
c.　　　　V [$_{vp}$　　[$_{vp}$ DP] XP$_f$]			*!		*	*
d. ☞ V+N$_i$ [$_{vp}$ XP$_f$ [$_{vp}$ [$_{DP}$ t$_i$ PP/CP]]]				*	*	**

Finally, let us derive the diverging pattern involving DPs containing possessive and number projections. The optimal candidate is (c), focusing the subject in rightward VP-adjoined position. Candidate (a) satsfies SUBJECT but fails AF$_{right}$, while (c) does the reverse. The optimal status of (c) thus shows that AF$_{right}$ outranks SUBJECT. The suboptimal status of (a) also shows that AF$_{right}$ is indeed part of the grammar of Kanakuru. If AF$_{right}$ did not exist in Kanakuru, (c) could not be grammatical, because its set of violations would then be a superset of those of (a). Candidate (a) would therefore harmonically bound (c), which could not be optimal under any reranking of the given constraints.

The suboptimal status of (b) shows that violating case adjacency is worse than violating leftward focus alignment. In fact, (b) and (c) conflict on CASEADJ and AF$_{left}$, and since (c) wins, CASEADJ must be higher ranked than AF$_{left}$. These candidates also conflict on AF$_{right}$ and AF$_{left}$, but violating AF$_{right}$ cannot be fatal to (b), because we already know that AF$_{right}$ is ranked lower than AF$_{left}$.

Finally, let us consider the noun-incorporation candidate in (d), which according to the assumptions discussed in the previous section violates the constraint ECP, which (c) satisfies. Its suboptimal status tells us that violating the ECP is worse than failing leftward structural focusing, giving us the ranking ECP>>AF$_{left}$. Candidate (d) violates also STAY, but this constraint was already shown to be lower ranked than AF$_{left}$.

T16. Object DP with number and possessive projections:
{ECP, CASEADJ >> AF$_{left}$ >>AF$_{right}$ >> {SUBJECT, STAY}

<V(x,y), (x=X, y=N), x=focus,T=pres.perf>	ECP	C.A.	AF$_L$	AF$_R$	SUBJ	STAY
a.　　　XP$_f$ V　　　　　[$_{vp}$ DP]			*	*!		*
b.　　　　V [$_{vp}$ XP$_f$ [$_{vp}$ DP]]		*!		*	*	*
c. ☞　　　V [$_{vp}$ [$_{vp}$ DP] XP$_f$]			*		*	*
d. V+N$_i$ [$_{vp}$ XP$_f$ [$_{vp}$ [$_{DP}$ [$_{#P}$ [$_N$ t$_i$] #]]]]	*!			*	*	**

The pattern of Kanakuru is thus derived in terms of the interaction of the focus constraints AF$_{left}$ and AF$_{right}$ and the constraints ECP, CASEADJ, SUBJECT, and STAY. In particular, when the input involves a DP complement with number and possessive projections, there is no way to satisfy both AF$_{left}$ and the constraints ECP and CASEADJ. The lower constraint AF$_{left}$ is thus violated, and the effects of AF$_{right}$ may then surface.

Once put together, the rankings argued for in these tableaus, together with the ranking SUBJECT>>STAY discussed in footnote 11, identify the hierarchy presented in (59) and repeated below.

(60) Kanakuru: {ECP, CASEADJ} >> AF$_{left}$ >> AF$_{right}$ >> SUBJECT >> STAY

3.3.3. Constraint Reranking: Western Bade, Podoko and Aghem

In her study, Tuller also examines structural focus in the Chadic languages Western Bade, Podoko, and Aghem. In these languages the focused phrase always occurs immediately adjacent to the verb and Tuller analyzes it as leftward VP-adjoined (Tuller 1992).

(61) A t«la **d« ᵞkw«°«g«** mal« sl«d«.   (Podoko)
　　Cook$_i$ [**in the kitchen** [mother-my t$_i$ meat]].
　　My mother cooked meat IN THE KITCHEN.

Patterns 2 and 3 of Kanakuru, i.e. noun incorporation and rightward focusing, are both missing. Why? Under Tuller's analysis, the verb trace of these languages can assign case to its complement, making noun incorporation unnecessary. The solution is thus cast in parametric terms: the specific device of *case-assignment by a verb trace* is assumed to be available to Western Bade, Podoko, and Aghem but not to Kanakuru. A class of languages have it, another lacks it completely. By contrast, in the OT analysis,

the focusing pattern of Western Bade, Podoko, and Aghem follows directly from the reranking of CASEADJ below STAY, with no need to postulate a new device and restrict its use through a parameter. This is shown below.

The pattern involving clausal complements is not affected by the reranking, and the analysis is analogous to that given for Kanakuru. Consider instead the case of DP complements with adjoined modifiers. As the tableau below shows, under the new ranking the optimal candidate is (b), with a left-adjoined focused subject and no incorporation. In fact, (b) now wins over the incorporation candidate (d), because incorporation adds violations of STAY that (b) spares at the price of violating CASEADJ, which is now ranked lower than STAY. Candidate (b) also outperforms (a) and (c) because it satisfies AF_{left}, which the latter fail. The price is once again a violation of CASEADJ, which (a) and (c) satisfy. But CASEADJ is now lower ranked than AF_{left}, and therefore (b) is optimal.

The other ranking relations inferrable from the optimal status of (b) were already observable in Kanakuru. The suboptimal status of (a) vs. (b) shows that AF_{left} outranks SUBJECT, otherwise putting the subject in specIP would be a better choice than focusing it in leftward VP-adjoined position. Similarly, if AF_{left} did not outrank AF_{right}, as in Kanakuru, rightward focusing would win over leftward focusing, making (c) optimal rather than (b).

T17. Focusing with object DP with adjoined modifiers[13].
AF_{left}>>{F_{right},SUBJECT, CASEADJ}
STAY >> CASEADJ

<V(x,y), (x=X, y=N), x=focus,T=pres.perf>	ECP	AF$_L$	AF$_R$	STAY	SUBJ	C.A.
a. XP$_f$ V [$_{vp}$ DP]		*!	*	*		
b. ☞ V [$_{vp}$ XP$_f$ [$_{vp}$ DP]]			*	*	*	*
c. V [$_{vp}$ [$_{vp}$ DP] XP$_f$]		*!		*	*	
d. V+N$_i$ [$_{vp}$ XP$_f$ [$_{vp}$ [$_{DP}$ t$_i$ PP/CP]]]			*	*!*	*	

The reranking of CASEADJ makes leftward focusing optimal also when the DP complement has number and possessive projections, as shown in T18 below. In fact, AF_{left} now outranks both AF_{right} and CASEADJ, ensuring that rightward focusing in (c) loses to leftward focusing in (b). Lack of structural focusing, in (a), is excluded because it violates AF_{left}, which (b) satisfies, and which outranks both CASEADJ, and SUBJECT. Noun incorporation in (d) is also excluded, because (d) violates STAY one more time than (b), and STAY was shown to outrank CASEADJ, the highest violation of (b) unmatched by (d). If ECP has the same ranking that it has in Kanakuru, its violation is also fatal to (d), since ECP then outranks AF_{left}, which in turn outranks CASEADJ, which is the constraint to beat.

T18. Object DP with number and possessive projections:
AF_{left}>>{AF_{right},, SUBJECT, CASEADJ}.
(ECP or STAY) >> CASEADJ.

<V(x,y), (x=X, y=N), x=focus,T=pres.perf>	ECP	AF$_L$	AF$_R$	STAY	SUBJ	C.A.
a. XP$_f$ V [$_{vp}$ DP]		*!	*	*		
b. ☞ V [$_{vp}$ XP$_f$ [$_{vp}$ DP]]			*	*	*	*
c. V [$_{vp}$ [$_{vp}$ DP] XP$_f$]		*!		*	*	
d. V+N$_i$ [$_{vp}$ XP$_f$ [$_{vp}$ [$_{DP}$ [$_{\#P}$ [$_N$ t$_i$]#]]]]	*!		*	* *	*	

The pattern of Western Bade, Podoko, and Aghem thus follows from the the same constraints used in the analysis of the mixed pattern of Kanakuru, once CASEADJ is ranked lower than STAY.

In closing this section, let me turn again to the original argument that the analysis is taken to support. Descriptively, structural focus across languages appears parametric in nature, sometimes involving rightward alignment, as in Italian, sometimes leftward alignment, as for example in Hungarian. The issue is how this alternation is best accounted for.

Under the Principles and Parameters framework, a language would have to set a parameter determining the direction of alignment on one or the other value. Mixed focusing patterns would be unexpected, and focusing patterns such as the one displayed by Kanakuru become very difficult to account for, as attested by Tuller's difficulties with the analysis of DPs with possessive and number specifications.

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[13] As this tableau and tableau T18 show, in Podoko STAY is ranked above SUBJECT, accounting for the VP-internal position of the unfocused subject of example (61). This corrects an inconsistency in the version of the dissertation officially filed at Rutgers University, which contains the reverse ranking. No other changes have been made. The reader may check on his/her own that the proposed ranking correctly determines the word order of (61) when the focused constituent is a locative modifier rather than the thematic subject.

Under the OT framework, languages with consistent alignment in one or the other direction are derived by the interaction of UG constraints with $\mathbf{AF}_{\text{right}}$ or $\mathbf{AF}_{\text{left}}$, depending on which is ranked highest in the grammar of each specific language. This was shown in the analysis of leftward focusing in Western Bade, Podoko, and Aghem, where the lower ranked $\mathbf{AF}_{\text{right}}$ has no opportunity to select the optimal candidate. The opposite situation occurs in Italian, where the higher-ranked focus constraint is $\mathbf{AF}_{\text{right}}$, leaving $\mathbf{AF}_{\text{left}}$ no opportunity to show its effects (the reader may check for him/herself by adding the constraint $\mathbf{AF}_{\text{left}}$ at the bottom of the tableaus in section 3.2).

However, since the constraints are universal, the OT framework predicts that under specific rankings, both constraints will affect the selection of the optimal structure, giving rise to mixed patterns. This is precisely what occurs in Kanakuru, where the relatively high ranking of $\mathbf{E}$CP and $\mathbf{C}$ASE$\mathbf{A}$DJ forces a violation of $\mathbf{AF}_{\text{left}}$ when the DP complement has number or possessive specifications, giving $\mathbf{AF}_{\text{right}}$ an opportunity to determine the optimal form.

Put differently, not only does the OT analysis account in a principled way for the problematic pattern of Kanakuru, but this pattern constitutes precisely the kind of case one expects to find under an Optimality Theoretic view of Syntax.

3.4. Conclusions

Like the preceeding chapter, this chapter too shows how linguistic variation within and across languages is accounted for in a unified manner under an OT approach to syntax. In particular, I first demonstrated how a systematic class of subject inversion structures in Italian are actually instances of rightward structural focus. Then, I showed how the distribution of this type of subject inversion and its absence in languages like English both follow from the interaction of the constraint $\mathbf{A}$LIGN$\mathbf{F}$OCUS with the constraints $\mathbf{S}$UBJECT, $\mathbf{P}$ARSE, and $\mathbf{F}$ULL-$\mathbf{I}$NT, which in the previous chapter were already shown to govern together with $\mathbf{D}$ROP$\mathbf{T}$OPIC the language-internal and crosslinguistic distribution of null subjects. The impossibility of having structurally focused null subjects was shown to follow inevitably from the analysis, while it does not appear to follow as inevitably under Principles and Parameters.

The last section turned to the issue of parametrization, contrasting the mutually exclusive parameter values of the Principles and Parameters perspective with the coexistence of opposite constraints in OT. I claimed that the focusing pattern of

Kanakuru is evidence for the latter view, since both leftward and rightward focus alignment are found within the same language, and their grammaticality depends on their status relative to the hierarchy of UG constraints that identifies the grammar of Kanakuru.

Finally, the analysis of Western Bade, Podoko, and Aghem showed how the existence of mixed patterns is contingent on particular constraint rankings, accounting for why in most languages focusing alignment is attested only in one direction.

4. Optimal Agreement

This chapter proposes an Optimality Theoretic analysis of agreement. As in the analyses of null and focused subjects, the O.T. approach permits us to account for crosslinguistic variation in terms of conflicting constraints, and yet derive universal generalizat
ions from the same constraints. Moreover, as in the analysis of expletives in chapter 2, here too a property like agreement, which has been classically conceived as lexically determined is instead derived by grammar.

In particular, reranking of agreement-related constraints will account for presence vs. absence of agreement on distinct structures across languages. At the same time, the analysis derives the universal implication that if an inflectional head agrees on feature φ with a subject in its c-commanding domain, it will also agree on feature φ with a subject in its specifier, while the opposite does not hold true.

Additional and important support for modeling agreement in terms of violable constraints will also come from the discussion of case in chapter 5, where a variety of syntactic paradigms within and across languages will be shown to follow from the interaction of the agreement constraints proposed in this chapter and the constraint on case-assignment introduced in the next chapter.

This chapter is organized as follows. Section 4.1 shows evidence for the universal implication on non spec-head and spec-head agreement. Section 4.2 introduces the agreement constraints and shows how they derive the universal implication of section 4.1. Section 4.3 extends the analysis to instances of mixed agreement in Italian and Standard Arabic, where distinct agreement features give rise to distinct agreement paradigms. Section 4.4 examines lack of agreement across extended projections, as well as agreement with null subjects, with expletives, and in past-participles. Section 4.5 discusses the interaction between the agreement constraints introduced in section 4.2 and the constraints that were introduced in chapters 2 and 3, concluding and recapitulating the analysis of agreement with postverbal and null subjects. Section 4.6 concludes the chapter.

4.1. Crosslinguistic Typology

The study of agreement in languages allowing for subject inversion reveals the universal implication in (1), mentioned in informal terms by Moravcsik (1978:365), and for specific languages also by Saccon (1993:104) and by Fassi Fehri (1993). An inflectional head agreeing on an agreement feature F with a subject in its c-commanding domain, also agrees on that same feature with a subject in its specifier. Put differently, there is no language where an inflectional head H displays a richer agreement morphology with a subject that H c-commands than with a subject in the specifier of the projection projected by H.[1]

(1) Primacy of Spec-Head Agreement: Let X^0 be the head carrying agreement features in a clause S, and DP be the subject of S. Then, if X^0 agrees with DP on feature F when X^0 c-commands DP, X^0 agrees on F also when DP is in specIP.

The evidence for the above universal implication is summarized in table (2). The first column lists the set of languages allowing for multiple subject positions that I examined. The comparison between the second and third columns shows that when moving from a spec-head to a c-commanding configuration, agreement on a specific feature can be preserved or lost, but never acquired, in accord with the above implication.

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[1] This study was limited to languages of the accusative type (as per the classification of case systems in Bittner and Hale 1996) and lacking simultanous subject and object agreement (see Bittner and Hale 1996). Further investigation is required to see if the generalization holds also for other languages Notice however that the existence of object agreement in addition to subject agreement does not per se contradict the generalization. This would be contradicted only if object agreement would cease once the object is in the specifier of the head hosting object agreement. For example, the generalization would be clearly falsified if Italian past-participles agreed with in situ objects but not with object-clitics raised into the specifier position of the past-participle (I am here referring to Kayne's 1987 analysis of past participle agreement; see also Chomsky 1989 section 2.5).

(2) Agreement in gender (gen), number (num) and person (ps) between I⁰ and
   a subject under a spec-head and a c-command configurations.

Language:	spec-head agreement	agreement under c-command	References
Moroccan Arabic, Italian, Spanish, Chinese.	num, ps, gen num, ps num, ps none	num, ps, gen num, ps num, ps none	Fassi Fehri (1993)
Standard Arabic, French.	num, ps, gen num, ps	ps, gen ps	Fassi Fehri (1993)
Fassan, Genoese, Ampezzan, Romagnol.	num, ps, gen num, ps, gen num, ps, gen num, ps, gen	(num)[2], ps (num), ps (num), ps (num), ps	Haiman & Benincá (1992)
Conegliano, Trentino, Fiorentino.	num, ps, gen num, ps, gen num, ps, gen	ps ps ps	Saccon (1993), Brandi & Cordin (1989).

The relevant data are listed in appendix B. However, to clarify the interpretation of the table, the agreement patterns of Italian, Standard Arabic, and Conegliano are presented below. These involve instances of preservation of agreement under c-command configuration, as well as of agreement loss. The discussion will help to understand the kind of linguistic variation that any theory of agreement must deal with. This includes variation in the set of agreement features that are realized, and among these variation in the set of features allowing for unrestricted agreement, i.e. agreement under spec-head as well as under c-command configuration.

Unrestricted agreement is exemplified by Italian. In this language, specIP subjects agree with I⁰ in number and person, as shown in (3a). An equally rich pattern holds with the postverbal focused subjects in (3b), which were shown to occur in VP-adjoined position in chapter 3, and are therefore c-commanded by I⁰ (evidence for the low position of postverbal subjects is also found in Rizzi 1982, 1990, Brandi and Cordin 1989:footnote 8, Saccon 1993, Belletti and Shlonsky 1994 and Samek-Lodovici 1993, 1994).

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[2] Haiman & Benincá (1992) notice in passing that while loss in number agreement does not affects masculine subjects, it can affects feminine subjects: plural feminine subjects in postverbal position can occur with singular third person morphology.

(3a) Io ho/*ha/*abbiamo [vp camminato].
      I have.1s/*3s/*1pl walked.
      I walked.

(3b) Ho/*ha/*abbiamo [vp [vp camminato] io].
      Have.1s/*3s/*1pl walked I.
      The person who walked is me.

Unrestricted agreement coexists with agreement loss in Standard Arabic. Fassi Fehri (1993) shows that although subjects in specIP are possible, as in (4a), the position of pragmatically neutral subjects is specVP, as in (4b), where the subject is c-commanded by I⁰. As seen in the comparison between (4a) and (4b), while gender and person agreement is available under both agreement configurations, number agreement is restricted to the spec-head configuration of (4a).

(4a) L-banaat-u   Darab-<u>na</u>/*-at   [vp t_subj t_verb   l-?awlaad-a].
     The-girls-Nom   hit-pst-3Fpl/*-3Fs   the-boys-Acc.
     The girls hit the boys.

(4b) Darab-<u>at</u>/*-na   [vp   ?al-banaat-u   t_verb   Zayd-an].
     Hit-pst-3Fs/*-3Fpl   the-girls-Nom   Zayd-Acc.
     The girls hit Zayd.

Agreement loss, this time in number and gender, is also attested in Conegliano, a northern Italian dialect studied by Saccon (1993). In Conegliano, subjects may occur preverbally, in specIP, or postverbally, where they are assigned a presentational interpretation. According to Saccon, postverbal subjects lie within the VP projection, and are therefore c-commanded by I⁰. Third person number and gender agreement is expressed through an obligatory preverbal clitic which is obligatorily lost when passing from the spec-head agreement configuration of specIP subjects to the c-command configuration of postverbal subjects: compare (5a) with (5b).[3]

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[3] For the status of subject clitics as agreement markers see Rizzi (1986). Notice moreover, that it is important to distinguish among distinct postverbal subjects, as was done in the study of Italian postverbal subjects in chapter 3. Saccon (1993) distinguishes presentational postverbal subjects, whithin VP, from right-dislocated ones. The latter subjects, which are commonly assumed to c-command I⁰, cannot omit the subject clitics.

(5a) La Maria la riva.   vs.   *La Maria riva.
The Mary 3Fs arrive.3.   The Mary arrive.3.
Mary arrives.   *Mary arrives.*

(5b) *La riva la Maria.   vs.   Riva la Maria.
3Fs arrive.3 the Mary.   arrive.3 the Mary.
Mary arrives.   *Mary arrives.*

The three patterns just introduced already display a significant degree of linguistic variation concerning which agreement features are realized, and whether they are realized only under the spec-head configuration or also under c-command. The analysis developed in the next section will explain such variation through constraint reranking, while still deriving the universal implication just established.

4.2. Constraints on Agreement

As mentioned in chapter 1, I assume that GEN may freely add agreement features to a head, generating both candidates with and without agreement. Therefore, whether a language allows for agreement or lacks it is not a lexical choice, but will eventually depend on whether the optimal structures selected by a language grammar hosts agreement features or not.[4]

4.2.1 The Agreement Coindexation

Before introducing the constraints governing agreement, let me clarify the notion of agreement itself. Agreement is here a coindexation between agreement features on a head and the referential role of a *potential nominal constituent*, i.e. the referential role of a realized or an unrealized nominal argument, or of an expletive. I assume that agreement features are collectively or individually expressed by overt agreement morphology. This choice eliminates the need to distinguish between the lack of agreement due to absence of agreement features, from invisible covert agreement by non overt agreement features.

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[4] One could also imagine a theory where agreement features are provided in input and then parsed into specific functional heads or left unparsed, according to the grammar of each language. I chose to keep inputs as minimal as possible, containing only the information that is minimally necessary to determine meaningful sets of legitimate competitors.

When a head-complex hosts a case-assigner, the agreement features on any head of the complex are by assumption coindexed with the correspondent case-assignee (for a different view see Bittner and Hale 1996). Support for this strong correlation between agreement and case-assignment can be found in languages with overt case morphology, as shown in the following German example. As (6) and (7) show, the verb *sein* 'to be' and *geben* 'to give' may both introduce a presentationally focused DP. However, only with *sein* does I⁰ agree with the lower DP.

(6)   Es   *ist ∕ sind   drei   Igel im Garten.
Expl   is.3s ∕ are.3pl three   urchins in the garden.
There are three urchins in the garden.

(7)   Es   gibt ∕ *geben   drei   Igel im Garten.
Expl   gives.3s ∕ give.3pl   three   hedgehogs in the garden.
There are three hedgehogs in the garden.

When we examine the correspondent sentences with a singular indefinite DP, where the nominative case is overtly marked on the DP determiner, we observe that the agreeing I⁰ of *sein* assigns nominative case to the lower subject, while the agreementless I⁰ of *geben* does not, in which case the DP surfaces in the accusative case (for direct case-assignment from I⁰ to the lower DP see the analysis of case in chapter 5).

(8)   Es   ist   ein.NOM ∕ *einem.ACC   Igel im Garten.
Expl   is   a   hedgehog in the garden.
There is a hedgehog in the garden.

(9)   Es   gibt   *ein.NOM ∕ einem.ACC   Igel im Garten.
Expl   gives   a   hedgehog in the garden.
There is a hedgehog in the garden..

The effect of this correlation between case-assignment and agreement for the languages examined here is that the agreement features on a nominative-assigning I⁰ are always coindexed with the nominative-assigned subject.

4.2.2 The constraints AGR$_\phi$**, L**OOSE**A**GR$_\phi$**, and N**O **Φ-F**TS

Let us now turn to the constraints determining the agreement patterns observed in section 4.1. Intuitively, the first two constraints, **A**GR$_\phi$ and **L**OOSE**A**GR$_\phi$, state that structures with sufficiently local agreement are preferred to structures with less local agreement. The constraint **A**GR$_\phi$ requires a head to host spec-head agreement with the referential role of a potential nominal constituent.

(10) **A**GR$_\phi$: A head H should host spec-head agreement between an agreement feature φ
   and the referential role of a potential nominal constituent.
   Failed when no spec-head agreement occurs on H relative to φ.

In the next few sections, I will restrict the discussion to agreement with realized subjects. In this case, **A**GR$_\phi$ is satisfied only if the subject occurs in the specifier of the head carrying the agreement feature. For example, agreement between I° and a subject in specIP satisfies **A**GR$_\phi$, but agreement between I° and a subject in a lower position fails it. Section 4.4.2 will examine agreement with unrealized subject, showing why they always satisfy **A**GR$_\phi$.

Like **A**GR$_\phi$, the constraint **L**OOSE**A**GR$_\phi$ favors candidates hosting agreement. But **L**OOSE**A**GR$_\phi$ imposes a looser condition on the configuration of agreement, only requiring that the relation hold within the clause, intended as the extended projection of the head carrying the agreement features (Grimshaw 1991). The constraint is violated when a head does not host agreement within its clause, either because it lacks the relevant agreement feature, or because the coindexed referential role is in another clause (this latter case is addressed in section 4.4.1).

(11) **L**OOSE**A**GR$_\phi$: A head H should host clause-bound agreement between an agreement feature φ and the referential role of a potential nominal constituent.
   Failed when no clause-bound agreement occurs on H relative to φ.

The fact that languages differ in the set of agreement features that they realize leads to design the above constraints as constraint-families, relativizing them through a variable φ which can vary over features of person, number and gender (on constraint families see also Prince & Smolensky 1993, McCarthy & Prince 1993). For the sake of simplicity, I will initially leave such relativization in the background, and make full use

of it only later, in the analyses of the actual languages. Also, in the following the names **A**GR and **L**OOSE**A**GR, with no φ-subscript, are intended to refer to **A**GR$_\phi$ and **L**OOSE**A**GR$_\phi$.

Both constraints above conflict with a third constraint, **N**O Φ-F**TS**, which militates against agreement-features.

(12) **N**O Φ-F**TS**: Avoid agreement-features.
   Failed once by each agreement feature.

As I will show, these constraints predict precisely the kind of linguistic variations examined in the previous section. In fact, their reranking establishes a partition of three language groups:
-(i) languages with unrestricted agreement, i.e. languages preserving agreement on feature φ when moving from a spec-head to a c-command agreement configuration. Italian belongs to this group with respect to person and number agreement, and Standard Arabic relative to gender agreement;
-(ii) languages with agreement loss, i.e. languages which show agreement on feature φ under the spec-head configuration but not under the c-command configuration, such as Standard Arabic on number, and Conegliano on number and gender agreement;
-(iii) languages with no agreement, i.e. languages lacking feature φ, hence lacking φ-agreement under any configuration, such as Italian on gender agreement or Chinese on any agreement feature.

In order to derive the partition from the constraints, it is important to keep in mind that for any specific head H and feature φ, grammars always have a choice between two structures: one where H hosts φ and hence φ-agreement, and one where H does not host φ, and thus lacks φ-agreement. The ranking of **A**GR, **L**OOSE**A**GR, and **N**O Φ-F**TS** drives the choice within these two structures in the manner examined below.

• Unrestricted agreement occurs when **L**OOSE**A**GR dominates **N**O Φ-F**TS**, as in the tableau below. As far as spec-head agreement is concerned, the structure with agreement, in (a), wins over the one lacking it, in (a'), because it satisfies **L**OOSE**A**GR, which the no-agreement alternative fails. As far as agreement under c-command is

concerned, the structure with agreement, in (b) wins over the one lacking agreement, in (b') for the same reason. This ranking thus determines languages with unrestricted agreement.

T1. Preserved agreement: $\text{LOOSEAGR} \gg \text{NO } \Phi\text{-FTS}$

Competitions: a vs. a' and b vs. b'	LOOSEAGR	NO Φ-FTS	AGR
a. ☞ spec-head agreement		*	
a'. no-agreement	*!		*
b. ☞ agreement under c-command		*	*
b'. no agreement	*!		*

Notice that no condition holds on the ranking of AGR. This because AGR concords with LOOSEAGR when agreement occurs under a spec-head configuration, as in (a), and is failed by both structures otherwise, as shown in (b) and (b'). Hence, structures (a) and (b') are selected as optimal independently of the actual rank taken by AGR, which is therefore irrelevant for the characterization of the ranking conditions yielding unrestricted agreement.

• Agreement loss arises when AGR dominates NO Φ-F, which in turn dominates LOOSEAGR. In fact, when agreement occurs under spec-head, as in (a), it wins over non-agreement, in (a'), because it satisfies the highest ranked AGR, which (a') fails. However, when agreement occurs under a non spec-head configuration, as in (b), it ties with the agreementless candidate (b') on AGR. Thanks to its rank, which is higher than that of LOOSEAGR, NO Φ-FTS determines the outcome, selecting as optimal the agreementless structure (b').

T2. Spec-head agreement only: $\text{AGR} \gg \text{NO } \Phi\text{-FTS} \gg \text{LOOSEAGR}$

Competitions: a vs. a' and b vs. b'	AGR	NO Φ-FTS	LOOSEAGR
a. ☞ spec-head agreement		*	
a'. no-agreement	*!		*
b. agreement under c-command	*	*!	
b'. ☞ no agreement	*		*

• Finally, languages with no agreement emerge when NO Φ-FTS dominates both LOOSEAGR and AGR. In this case, the no-agreement candidate is always optimal, independently of the agreement configuration under consideration and independently of the ranking of the two agreement constraints relative to each other.

T3. Lack of agreement: $\text{NO } \Phi\text{-FTS} \gg \{\text{AGR}, \text{LOOSEAGR}\}$

Competitions: a vs. a' and b vs. b'	NO Φ-FTS	AGR	LOOSEAGR
a. spec-head agreement	*!		
a'. ☞ no agreement		*	*
b. agreement under c-command	*!	*	
b'. ☞ no agreement		*	*

A synthesis of the results illustrated by the above tableaus is shown in the table below. Remember that the agreement constraints are relativized with respect to agreement features. Therefore, a language may fall into one class relative to one feature but in another with respect to a different feature. For example, Italian has unrestricted agreement with respect to person and number, but lacks agreement in gender, thus belonging to the no-agreement class gender-wise. A similar picture holds true for Standard Arabic, which has unrestricted agreement in gender, but agreement loss in number.

(13) Agreement on feature ϕ.

Agreement-Type and Ranking.	Effect
• Unrestricted Agreement. $\text{LOOSEAGR}_\phi \gg \text{NO } \Phi\text{-FTS}$ (ranking of AGR_ϕ irrelevant)	Agreement on ϕ under spec-head as well as c-command configurations. (Moroccan Arabic on num & ps & gen; Italian on ps & num; Standard Arabic on gen; French , Conegliano, Trentino, Fiorentino on ps)
• Agreement Loss. $\text{AGR}_\phi \gg \text{NO } \Phi\text{-FTS} \gg \text{LOOSEAGR}_\phi$	Agreement on ϕ only under spec-head configurations. (Conegliano, Trentino, Fiorentino on num & gen; Fassan, Genoese, Ampezzan, Romagnol on gen; Standard Arabic, French on num)
• No Agreement. $\text{NO } \Phi\text{-FTS} \gg \{\text{AGR}_\phi, \text{LOOSEAGR}_\phi\}$	ϕ absent, no agreement. (Italian on gen; Chinese on ps & num & gen)

Any possible grammar created by the three agreement constraints falls into one region of the tripartition. Any grammar will in fact either rank LOOSEAGR over NO Φ-FTS, and fall into the first group, or rank them in the reverse order. In this latter case, a grammar will either rank AGR over NO Φ-FTS, and fall into the second group, or do the reverse, and fall into the third group. No other agreement pattern is thus possible. In particular, what is excluded from this list, and hence is predicted impossible by this theory of agreement, is a language where agreement under c-command is richer than agreement under a spec-head configuration. Hence the analysis entails the universal implication on the primacy of spec-head agreement.

4.3. Instances of Mixed Agreement Configurations

One issue that deserves further discussion concerns how languages can belong to a certain class with respect to one agreement-feature and to another with respect to another agreement-feature. If the agreement constraints are relativized with respect to features, such distribution follows automatically. For example, a grammar with LOOSEAGR$_{num}$ dominating NO Φ-FTS falls into the class of unrestricted agreement relative to agreement in number. The same grammar may simultaneously rank NO Φ-FTS higher than both LOOSEAGR$_{gen}$ and AGR$_{gen}$, and therefore lack agreement in gender, thus belonging to the no-agreement class with respect to gender agreement.

The expression of this analysis in tableau-format requires a brief digression about the representation of the competing candidates. I will represent the competing candidates in the abstract terms proposed in (14) below, i.e. as the list of possible combinations of the person, gender and number features.

(14) Candidate-set of agreement features.

a. ps	c. num	e. ps, num	g. ps, gen, num
b. gen	d. ps, gen	f. gen, num	h. none

Each abstract candidate in (14) represents all structures with a particular combination of agreement features. For example, candidate (f), represents any candidate where agreement is restricted to gender and number, candidate (b) represent any candidate displaying agreement under gender only, and finally, candidate (h) represents candidates lacking agreement completely. Hence, to say that Standard Arabic shows

agreement in gender and number on preverbal subjects is equivalent to saying that candidate (f) is the optimal candidate for Standard Arabic preverbal subjects. Likewise, if Standard Arabic shows only gender agreement with specVP subjects, the model will have to predict (b) as the optimal candidate for this case. The following analysis of Italian and Standard Arabic agreement should further clarify this proposal.

4.3.1. Italian

In Italian indicative finite-tense clauses, I⁰ shows unrestricted agreement with subjects in person and number, but shows no-agreement relative to gender (for past-participle agreement in gender see section 4.4.4). This was shown in (3), and is shown again in (15) and (16), which have overt agreement in person and number for specIP and postverbal VP-adjoined subjects.

(15) Le   auto   funziona-no/*{o,i,a,iamo,te}   bene.
       The.Fpl   car.Fpl   work.3pl/*{1s,2s,3s,1pl,2pl}   well.
       The cars work fine.

(16) Funziona-no/*{o,i,a,iamo,te}   bene   le auto.
       Work.3pl/*{1s,2s,3s,1pl,2pl}   well   the.Fpl car.Fpl.
       It is the cars that work fine.

The overall pattern can be seen as the merging of three rankings characterizing unrestricted agreement in person, unrestricted agreement in number and lack of agreement in gender. As we know from the previous discussion, these three subpatterns are characterized by the ranking conditions shown in (17) below.

(17) Italian agreement-pattern.
-Unrestricted agreement in number: LOOSEAGR$_{num}$ >> NO Φ-FTS
-Unrestricted agreement in person: LOOSEAGR$_{ps}$ >> NO Φ-FTS
-No agreement in gender: NO Φ-FTS >> {LOOSEAGR$_{gen}$, AGR$_{gen}$}

Any total ranking compatible with all the above ranking conditions will derive the overall agreement pattern of Italian. This is shown for specIP subjects in tableau T4, and for postverbal subjects in tableau T5 below. Notice that the constraints AGR$_{ps}$ and AGR$_{num}$ are not present in (17), because their ranking was shown ininfluential in

determining unrestricted agreement (see the discussion of T1 in section 4.2). To improve readability, I omit them from the tableaus below.

In T4, the competition between the optimal candidate (e), representing agreement in person and number, and the no–agreement candidate in (h), motivates the higher rank of $\mathbf{L}$OOSE$\mathbf{A}$GR$_{num}$ and $\mathbf{L}$OOSE$\mathbf{A}$GR$_{ps}$ over N$_O$ Φ-F$_{TS}$: were N$_O$ Φ-F$_{TS}$ ranked highest rather than lowest, candidate (e) would be suboptimal relative to (h) and thus ungrammatical, contrary to observation.

The same ranking is also responsible for the suboptimal status of all other candidates except for the full agreement candidate (g). However, by expressing gender agreement, which (e) lacks, (g) violates N$_O$ Φ-F$_{TS}$ one time more than (e). Since N$_O$ Φ-F$_{TS}$ is ranked higher than $\mathbf{L}$OOSE$\mathbf{A}$GR$_{gen}$ and $\mathbf{A}$GR$_{gen}$, the violation is fatal to (g), and the optimal status of (e) is successfully determined.

T4. Spec-head agreement in person and number in Italian.

	L.AGR$_{num}$	L.AGR$_{ps}$	NO Φ-FTS	L.AGR$_{gen}$	AGR$_{gen}$
a. ps	*!		*	*	*
b. gen	*!	*	*		
c. num		*!	*	*	*
d. ps, gen	*!		* *		
e. ☞ ps, num			* *	*	*
f. gen, num		*!	* *		
g. ps, gen, num			* *! *		
h. none	*!	*		*	*

The same ranking hierarchy determines unrestricted agreement in person and number on postverbal subjects, as shown in tableau T5. The only change in the tableau concerns $\mathbf{A}$GR$_{gen}$, which is now always violated, because the subject is never in a spec-head relation with I⁰. The discussion proposed for the former tableau applies to this tableau as well, and is therefore not repeated. The optimal status of (e) shows that under this ranking agreement in person and number is preserved under c-command configurations.

T5. Agreement in person and number under c-command in Italian.

	L.AGR$_{num}$	L.AGR$_{ps}$	NO Φ-FTS	L.AGR$_{gen}$	AGR$_{gen}$
a. ps	*!		*	*	*
b. gen	*!	*	*		*
c. num		*!	*	*	*
d. ps, gen	*!		* *		*
e. ☞ ps, num			* *	*	*
f. gen, num		*!	* *		*
g. ps, gen, num			* *! *		*
h. none	*!	*		*	*

Summing up, we have seen how combining the proper ranking conditions from table (13) predicts the unrestricted agreement in person and number found in Italian. By changing the agreement feature index at the foot of each constraint, this specific study can be systematically extended to any language showing unrestricted agreement on one or more features, while lacking agreement on one or more different features.

The analysis can also be extended to any language lacking agreement on one or more features, by ranking N$_O$ Φ-F$_{TS}$ higher than the relevant $\mathbf{A}$GR$_{\phi}$ and $\mathbf{L}$OOSE$\mathbf{A}$GR$_{\phi}$ constraints, much like the ranking of N$_O$ Φ-F$_{TS}$ in T4 ad T5 excludes gender agreement in Italian.

4.3.2. Standard Arabic

This second study addresses languages showing agreement loss, exemplified here by Standard Arabic.

In Standard Arabic, I⁰ agrees in person, number and gender with specIP subjects but only in person and gender with specVP subjects (see section 4.1). Standard Arabic thus shows unrestricted agreement with respect to person and gender agreement, but agreement loss with respect to number. Drawing from table (13), we combine the following ranking conditions:

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(18) Ranking conditions for the Standard Arabic agreement pattern.
-Unrestricted agreement in person: LOOSEAGR_ps >> NO Φ-FTS
-Unrestricted agreement in gender: LOOSEAGR_gen >> NO Φ-FTS
-Agreement loss in number: AGR_num >>NO Φ-FTS >>LOOSEAGR_num

Any total ranking, consistent with these conditions, produces the sought agreement pattern. This is shown in the two tableaus below. Once again, for reasons of readability I omit from the tableaus the ininfluential constraints AGR_gen and AGR_ps.

Consider agreement in specIP first, in T6. The higher ranking of LOOSEAGR_ps and LOOSEAGR_gen relative to NO Φ-FTS is sufficient to exclude from the competition all candidates that violate one or both constraints, leaving only (d) and (g) as potential optima. Violation of AGR_num, crucially ranked higher than NO Φ-FTS, is fatal to (d), leaving the full-agreement candidate (g) as the optimal.

T6. Spec-head agreement in person, number and gender in Standard Arabic.

	L.AGR_ps	L.AGR_gen	AGR_num	NO Φ-FTS	L.AGR_num
a. ps		*!	*	*	*
b. gen	*!		*	*	*
c. num	*!	*		*	
d. ps, gen			*!	* *	*
e. ps, num		*!		* *	
f. gen, num	*!			* *	
g.☞ ps, gen, num				* * *	
h. none	*!	*	*		*

A major change occurs when turning to specVP subjects, which are no longer in a spec-head configuration with I°. All the AGR constraints are now violated by all candidates. This has no effect on gender and person agreement, which is motivated by the same reasoning applied before. However, the change affects number agreement, which becomes suboptimal. In fact, AGR_num is now violated by all candidates, and the responsibility of determining the most harmonic form between the number-deficient (d) and the full-agreement candidate (g) now falls onto NO Φ-FTS. But NO Φ-FTS selects (d) as optimal by virtue of its minor number of violations. Hence, the optimal candidate preserves number and person agreement, but not number agreement.

[Right column]

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T7. Agreement in person, number and gender under c-command in S. Arabic.

	L.AGR_ps	L.AGR_gen	AGR_num	NO Φ-FTS	L.AGR_num
a. ps		*!	*	*	*
b. gen	*!		*	*	*
c. num	*!	*	*	*	
d.☞ ps, gen			*	* *	*
e. ps, num		*!	*	* *	
f. gen, num	*!		*	* *	
g. ps, gen, num			*	* * *!	
h. none	*!	*	*		*

In summary, the Standard Arabic case has shown how the reranking of agreement constraints can account for loss of number agreement while preserving person and gender agreement.

More generally, any agreement pattern involving lack, loss, or preservation of any agreement features can be accounted for by reranking the agreement constraints in accord with the relevant conditions found in table (13).

4.4. Issues in the Theory of Agreement

This section is devoted to some issues that have been left open in the preceeding discussion. Section 4.4.1 examines agreement with subjects in a separate clause. Sections 4.4.2 and 4.4.3 address agreement with null subjects and with expletives, respectively. Section 4.4.4 discusses past participle agreement .

4.4.1. Lack of Agreement with Subjects of Separate Clauses

The definition of LOOSEAGR_φ requires agreement to occur within a clause, i.e. the agreement coindexation should not cross any extended projection boundaries. This requirement is necessary to account for the ungrammaticality of agreement between a matrix verb and the subject of a lower clause in languages with unrestricted agreement (languages lacking agreement or with agreement restricted to the spec-head configuration already exclude such cases). As (19) shows, even when the matrix clause lacks a subject, the matrix verb cannot agree with the lower subject, and surfaces with

what I assume to be a default morphology associated with the absence of agreement features (see also Harris 1991).

(19) Sembra ⁄ *sembrano che abbiano votato pochi elettori.
    Seem-(3s)$_{default}$ ⁄seem-3pl that have.3pl voted few voters.
   It seems that few voters voted,

The two verb forms in (19) compete with each other and are evaluated in accord to the ranking of Italian identified in section 4.3.1. As shown in T8 below, both the candidate lacking agreement, in (a), and the one with agreement with the lower clause subject, in (b), violate the high ranked constraints L$_{OOSE}$A$_{GR_{num}}$ and L$_{OOSE}$A$_{GR_{ps}}$, because neither candidate hosts a clause-bound agreement coindexation. Candidate (a) does not because it lacks agreement, and candidate (b) because the coindexation spans over two clauses. However, candidate (a) satisfies the next lower constraint, N$_O$ Φ-F$_{TS}$, while candidate (b) violates it twice, and is therefore suboptimal, deriving the correct result. Notice that if L$_{OOSE}$A$_{GR}$ had no conditions on the domain of the agreement relation, candidate (b) would satisfy the higher ranked L$_{OOSE}$A$_{GR_{num}}$ and L$_{OOSE}$A$_{GR_{ps}}$, and incorrectly surface as optimal. (The lower constraints L$_{OOSE}$A$_{GR_{gen}}$ and A$_{GR_{gen}}$ as well as the constraints A$_{GR_{ps}}$, A$_{GR_{num}}$ are all failed by both candidates and therefore ininfluential.

T8. Lack of agreement with subjects in a separate clause.

<sembra(,y),y=<...,T=pres.perf.>,--,T=pres.> *seem*	L.AGR num	L.AGR ps	NO Φ-FTS	L.AGR gen	AGR gen
a. ☞ sembra$_{no-agreem.}$ [CP.... DP ....]	*	*		*	*
b. sembrano$_{ps,num}$ [CP .... DP ....]	*	*	*! *	*	*

When *seem* takes an infinitival IP as complement, I will assume that it forms a unique extended projection with it, as the availability of subject raising seems to confirm (for a proposal explaining this possibility in terms of the intrinsic syntactic and semantic properties of *seem* and of CPs see Williams 1994). In this latter case, the agreement coindexation between *seem* and the lower subject is analogous to that between a verb and a postverbal subject in simple declarative clauses. Since Italian has unrestricted agreement, we expect agreement in gender and number to occur in this case as well. The prediction is correct, as shown in (20).

(20) Sembrano ⁄ *sembra aver votato pochi elettori.
    Seem-3pl ⁄ seem-(3s)$_{default}$ to- have voted few voters.
   Few voters seems to have voted,

The grammaticality of agreement in this case follows from the grammar of Italian. As tableau T9 shows, the agreement candidate in (b) satisfies the high ranked constraints L$_{OOSE}$A$_{GR_{num}}$ and L$_{OOSE}$A$_{GR_{ps}}$, because the agreement coindexation does not cross an extended projection boundary. The candidate lacking agreement in (a) instead fails these constraints, and is therefore suboptimal.

T9. Agreement with subjects in a separate clause.

<sembra(,y),y=<....,T=non finite>,--,T=pres.>	L.AGR num	L.AGR ps	NO Φ-FTS	L.AGR gen	AGR gen
a. sembra$_{no-agreem.}$ [IP.... DP ....]	*!	*		*	*
b. ☞ sembrano$_{ps,num}$ [IP .... DP ....]			* *	*	*

In conclusion, we have seen how the condition on the domain of agreement imposed by L$_{OOSE}$A$_{GR}$ correctly accounts for the lack of agreement with subjects of lower clauses in languages with unrestricted agreement such as Italian.

4.4.2. Agreement with Null Subjects

If null subjects are not represented through an overt projection, how can agreement with null subjects occur? The answer relies on the assumption that agreement between X^o and a DP in specXP actually relates the agreement features on X^o and the referential role of the DP (for a similar proposal underlying the view taken here see Williams 1994). In particular, I assume that the agreement features on X^o have access to X^o's maximal projection XP, whether by percolation or by any other mechanism exploiting the fact that maximal projections should recapitulate the properties of their heads. Under this view, spec-head agreement with an overt DP is actually a relation of direct domination between the projected agreement features on the XP node and the referential role of the DP in specIP. By contrast, agreement under c-command involves a relation between the projected features on XP and the referential role of a DP which is not directly dominated by XP, hence involving a non local relation. This is illustrated by the following figures,

where X is I⁰, φ is an agreement feature, and DP represents a subject in specIP and in VP-adjoined position respectively.
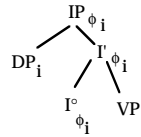
Spec-head agreement.   Agreement under c-command.
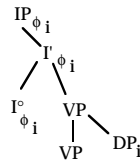
Agreement with an unrealized subject is agreement with the referential role of the lexical head of the unparsed subject in input. The lexical head is associated with a thematic role in the input which is left unassigned in the phrase marker. The unassigned thematic role percolates throughout the extended projection, until it reaches the IP node. The relation between the projected agreement features on IP and the percolated thematic role also in IP is as local as the relation between IP and the referential role of the DP in its specifier (if nodes dominate themselves the relation is formally identical). It follows that agreement between a null subject and a head I⁰ hosting the agreement feature φ qualifies as a spec-head configuration and thus satisfies both **A**GR$_\phi$ and **L**OOSE**A**GR$_\phi$.

A prediction of this analysis is that null subjects will always pattern with overt specIP subjects in languages carrying I⁰-agreement. Null subjects should thus always show the fullest agreement paradigm available in the language, even when the language allows for agreement loss.

To the best of my knowledge, the prediction is correct and no language with null subjects shows instances of null subjects with poorer agreement than that available to overt specIP subjects.

The case of Standard Arabic is particularly interesting, because this language places canonical, i.e. pragmatically neutral, subjects in specVP, where number agreement is lost. Yet, and as predicted by the above assumptions, Standard Arabic null subjects display full agreement, including number agreement, in full parallel with their overtly realized specIP counterparts (Fassi Fehri 1993). The relevant data are in (21) below. Compare the number-deficient postverbal subjects of (21a) with the full-agreement

specIP subjects in (21b), and then both with the null subject in (22), also showing full agreement.

(21a) Jaa?-at   l-banaatu.   (21b) L-banaat-u   ji?-na.
      Came-3Fs   the girls.Fpl.   The girls.Fpl   came-3Fpl.
      The girls came.   *The girls came.*

(22) Ji?-na.
      Came-3Fpl.
      They (f) came.

4.4.2.1. Evidence for Agreement through Thematic Assignment

Support for the analysis of agreement just proposed comes from the fact that agreement with null subjects is sensitive to information which can only be encoded lexically. Access to this information thus requires access to the unrealized item in input, as predicted by the above analysis.

Consider (23) below. The past participle agrees in number and gender with the subject.

(23) La tazza é cadut-a.
      The.Fs cup.Fs is.3s fallen.Fs.
      The cup has fallen.

Crucially, the fact that the word for *cup* is feminine is an idiosyncrasy of Italian, unrelated to any property of the referent denoted by *tazza* 'cup', which being inanimate, has no intrinsic gender. What interests us is that the null subject counterpart of (23), in (24) below, also shows obligatory gender agreement.

(24) E' cadut-a.
      Is.3s fallen.Fs.
      (The cup) has fallen.

The question is how agreement comes about in (24), given that it relates to a lexical property of the Italian noun *tazza.* Notice that no appeal to a previously mentioned discourse antecedent can be made, because (24) can be uttered in isolation, getting a

referent for its null subject through the deictic context. For example, one could utter (24) while pointing at a broken cup on the floor.

The analysis just given provides a simple answer to the above question. As (25) shows, the lexical element in the input is directly accessible through the thematic theta-role assigned to it, making agreement in gender possible (I am assuming that the referential role of a noun encodes all the syntactic properties of the lexical item, including its syntactic gender[5]).

(25) < cadere(x), x=tazza, --, T=pres.perfect>
       fall   cup

Further evidence for the role played by inputs in null subject agreement comes from the study of agreement with honorific pronouns. In many languages, including Italian, French, German, Hungarian, Tigrinya and many other (see Moravcsik 1978:361), it is possible to address the hearer with conventional pronominal forms that do not match the person, number, and gender of the hearer. For example, in Italian, a single hearer can be honorifically addressed with the second plural form *Voi* as well as the third person feminine singular form *Lei* rather than with the familiar second singular form *Tu*. The corresponding three sentences are listed below. Notice that Iº always agrees in person and number with the pronominal subject, rather than with the actual referent.

(26a)   Tu parler-ai ?   *Will you speak?*
        You.2s speak.Fut.2s ?

(26b)   Voi parler-ete?   *Will you speak?*
        You.2pl speak.Fut.2pl?

(26c)   Lei parler-á?   *Will you speak?*
        She.3Fs speak.Fut.3s?

Each of the sentences above has a subject less counterpart, which can also be used to address a single hearer. The agreement pattern is unchanged.

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[5] The theory of inputs should be refined in order to distinguish the root *tazza*, which comes with its gender specification, from the singular agreement marker *-a* in *tazz-a*. I leave this to further research.

(27a)   parler-ai ?   *Will you speak?*
        speak.Fut.2s?

(27b)   parler-ete?   *Will you speak?*
        speak.Fut.2pl?

(27c)   parler-á?   *Will you speak?*
        speak.Fut.3s?

How does the perfect match in agreement between the cases in (27) and those in (26) come about? If the subject of the examples in (27a) through (27c) were *pro*, the perfect match between (27) and (26) would be accidental. Even if *pro* were listed in the lexicon with all possible agreement specifications, what would warrant that precisely those *pro*'s with the same specifications of overt honorific pronominals can be used honorifically and not others? And if *pro* were instead licensed and interpreted through agreement-identification, as in Rizzi (1986), why is the honorific interpretation possible only when the agreement specifications match those of the overt honorific pronominals?

The analysis proposed here has a straightforward answer to this: if the idiosyncratic forms of honorific pronominals count as lexical elements and must therefore be specified in the input, then the pairwise match between (27) and (26) follows from the fact that the input of the sentences of each pair share the same thematic subject. For example, (26b) and (27b) would have the two inputs in (28a) and (28b). In either case, Iº simply agrees with the subject, and since this is identical in both cases, identical agreement obtains.

(28a)   <parlare(x), x=Voi, -- , T=future>
        speak   you,2pl

(28b)   <parlare(x), x=Voi$_{topic}$, -- , T=future>
        speak   you.2pl

In summary, conceiving agreement with null subjects as agreement with the referential role of the unrealized subject in input explains why null subjects are immune to agreement loss and also how lexically-based features are accessed in the case of honorifics. These arguments also show that a missing argument is better understood as an argumental item left structurally unrealized but still accessible in the input. Such

accessibility permits us to account for the properties of agreement just observed, which are either unaccounted for or at best accidental in the approaches favoring an independent *pro* subject.

4.4.3. Agreement with Expletives

Agreement with expletives occurs in some structures and not in others. For example, while the verb agrees with the English expletive *it* in the english sentence (29), in (30) it clearly agrees with the postverbal subject rather than with the expletive *there*.

(29) It seems that .....

(30a) There is a man in the garden.

(30b) There are three men in the garden.

The asymmetry does not depend on specific properties of *there*, and in fact can be replicated in German, where the expletive is invariant.

(31) Es scheint dass .....
      it seems that ...

(32) Es ist ein Mann im Garten.   vs.   Es sind drei Männer im Garten.
      There is a man in the garden.   vs.   *There are three men in the garden.*

The analysis of this asymmetry relies on the analysis of case-assignment, which is explained in detail in chapter 5. As I will show there, the difference between (29) and (30) concerns the assignment of nominative case, which is assigned to *it* in (29), but directly to *a man* in (30). Since agreement features on a case-assigning head are directly coindexed with the case-assignee, the agreement coindexation in (30) relates the nominative-assigning auxiliary *is* directly to the DP *a man*. Agreement thus occurs under c-command configuration, analogous to that between I° and postverbal subjects in Italian. Therefore, the same ranking conditions deriving unrestricted person and number agreement in Italian apply here, ranking $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{ps}}$ and $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{num}}$ above $\textbf{N}\textsc{o}\,\Phi\text{-F}\textsc{ts}$. Tableau T10 illustrates the derivation of (29). I assume that the morpheme *is* encodes person and number agreement at the same time. Candidate (a) hosts person and number agreement under a spec-head configuration between the verb and the referential role of the expletive pronoun, while candidate (b) lacks agreement.

The agreement candidate (a) is optimal because it satisfies the higher ranked constraints $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{num}}$, and $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{ps}}$ which (b) fails. Ranking of $\textbf{A}\text{GR}_{\text{num}}$ and $\textbf{A}\text{GR}_{\text{ps}}$ in any position does not change the outcome, since their pattern of failures matches that of the $\text{L}\textsc{oose}\textbf{A}\text{GR}$ constraints. For reasons of space I also omit the gender-related constraints $\textbf{A}\text{GR}_{\text{gen}}$, $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{gen}}$. They should be ranked lower than $\textbf{N}\textsc{o}\,\Phi\text{-F}\textsc{ts}$, yielding total lack of gender agreement. The exact same analysis applies of course to the German case, which is structurally identical to the English one.

T10. Analysis of (29):   {$\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{num}}$, $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{ps}}$} >> $\textbf{N}\textsc{o}\,\Phi\text{-F}\textsc{ts}$

<seem(,y),y=<...>,y=pres.focus,T=pres.>	L.A. num	L.A. ps	No Φ FTS	AGR num	AGR ps
a. ☞ spec-head agreement: *it seems that ...*			* *		
b. no-agreement: *it seem that ...*	*!	*		*	*

Let us now consider the derivation of the *there*-clause in (30), shown in T11. I will assume that the auxiliary form *are* encodes third person plural agreement.[6] The low position of the subject is assumed to be determined by a high ranked constraint targeting presentationally focused subjects, along the lines given in tableau T12, in chapter 3. As mentioned above, the agreement features are directly coindexed with the case-assigned subject, which I will assume to be in specVP. Nothing would change If the subject had actually raised to a leftward A' VP-adjoined position, in which case nominative case would be assigned to its trace in specVP position (see chapter 5).

The candidate with person and number agreement is shown in (a), with the agreement feature of the I° auxiliary, underlined, coindexed with the subject in specVP, also underlined. Candidate (b) has third person agreement but no number agreement, since *is* in English is singular. Finally, the candidate with no agreement is given in (c). As the tableau shows, candidate (a) beats both (b) and (c), because it satisfies the higher ranked constraints $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{num}}$ and $\text{L}\textsc{oose}\textbf{A}\text{GR}_{\text{ps}}$. Since they are failed by all

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[6] No visible person agreement occurs with English plurals, providing a *non uniform* paradigm (along the definition of Jaggli & Safir 1989). Assuming that *are* expresses person agreement is thus in contradiction with the assumption at the beginning of this chapter that agreement must always be overtly encoded. A weaker requirement would assume that agreement on a feature ϕ must be overtly encoded on at least one form of the paradigm, else no agreement occurs. Such weakened requirement is compatible with the analysis given so far.

competitors, the constraints $\text{A}_{\text{GR}_{\text{num}}}$, and $\text{A}_{\text{GR}_{\text{num}}}$ remain ininfluential and their rank undetermined.

T11. Analysis of (30): $\{\text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{num}}}, \text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{ps}}}\} >> \text{N}_{\text{O}} \Phi\text{-F}_{\text{TS}}$.

<seem(,y),y=man,y=pres.focus,T=pres.>	L.A. num	L.A. ps	NO Φ FTS	AGR num	AGR ps
a. ☞ c-com. ps,num agr:*there <u>are</u> 3 men* ...			**	*	*
b. c-command ps agr: *there <u>is</u> 3 men* ...	*!		*	*	*
c. no-agreement: *there be 3 men* ...	*!	*		*	*

As is well known, there are varieties of English where agreement in number in *there*-clauses does not occur (Baker 1989:359), and which would reject (30) in favor of (33) below:

(33)   There is three men in the garden.

These varieties of English provide the English equivalent of loss of number agreement under c-command. Their agreement pattern follows from the reranking of the constraints $\text{N}_{\text{O}} \Phi\text{-F}_{\text{TS}}$ on top of $\text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{num}}}$ and $\text{A}_{\text{GR}_{\text{num}}}$ on top of $\text{N}_{\text{O}} \Phi\text{-F}_{\text{TS}}$ (see table (13)). This is shown in T12, which lists the same candidates of T11, but has reranked the constraints. The candidate with no agreement is still blocked by the high ranked $\text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{ps}}}$. The remaining competitors, (a) and (b), fail the next constraint, $\text{A}_{\text{GR}_{\text{num}}}$, because their agreement relation is not sufficiently local. The next constraint, $\text{N}_{\text{O}} \Phi\text{-F}_{\text{TS}}$, is violated by both once, but one additional time by (a), leaving (b) as the optimal structure.

T12. Analysis of (33): $\{\text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{ps}}}, \text{A}_{\text{GR}_{\text{num}}}\} >> \text{N}_{\text{O}} \Phi\text{-F}_{\text{TS}} >> \text{L}_{\text{OOSE}}\text{A}_{\text{GR}_{\text{num}}}$

<be(x), x=pres. focus, x=<...>, T=pres.>	L.A. ps	AGR num	NO Φ FTS	L.A. num	AGR ps
a. c-com. ps,num agr:*there are 3 men* ...		*	* *!		*
b. ☞ c-command ps agr: *there <u>is</u> 3 men* ...		*	*	*	*
c. no-agreement: *there be 3 men* ...	*!	*		*	*

In conclusion, once coupled with the analysis of case developed in chapter 5, the analysis of agreement developed in this chapter straightforwardly accounts for

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agreement in there-insertion structures. In particular, no appeal is made to transmission of agreement features, which is instead necessary in a theory where agreement occurs only under a spec-head configuration (see for example Rizzi 1982, Safir 1985). Substitution of the expletive by the lower DP at LF, as in Chomsky (1986), would not require agreement transmission, but it is unclear how it would account for the case lacking agreement in (33).

4.4.4. Simultaneous Agreement on Multiple Heads

The theory of agreement presented so far is not specific to the I^{o} head, and extends to other instances of agreement. However, some adjustments are necessary, because simultaneous agreement on different heads of the same clause can involve distinct and even opposite sets of features. For example, in Italian, while I^{o} agrees in person but lacks agreement in gender, as shown in (34a) and (34b), the opposite holds for the past participle of passives and unaccusatives[7], which agrees in gender and number but lacks agreement in person, as shown in (34c) and (34d).

(34a) Luca.3Ms é.3s arrivat-o.Ms.   (34b) Maria.3Fs é.3s arrivat-a.Fs.
   Luca has arrived.   *Maria has arrived.*

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[7] An important issue that I leave open to further research is why past participles of transitive verbs show no agreement with in situ objects in Italian, but show agreement with object clitics, as shown by the two examples below adapted to Italian from Kayne (1987):

(1) *Luca ha dipinte le sedie.   (2)   Luca le ha dipinte.
   Luca has painted.Fpl the.Fpl chairs.pl.   Luca them.3Fpl has painted.Fpl .

An account of the above asymmetry that does not allow for the kind of long distance agreement allowed under specific circumstances in the O.T. analysis developed here, is provided in Kayne (1987). Under Kayne's analysis, the in situ object of (1) is too far from the lower agreement projection responsible for part-participle agreement (PPA) to trigger agreement, while the clitic in (2) can trigger it by leaving a trace in the specifier of the PPA projection while on its way to its final position. Notice however that the introduction of the VP-internal hypothesis by Koopman and Sportiche (1988) appears to reopen the issue of past-participle agreement even with respect to Kayne's analysis. In fact, the VP-internal subject of an unergative intransitive verb such as *cantare* 'to sing' could move through the specifier of the PPA while on its way to specIP, thus triggering agreement where no agreement should occur. Moreover, under Kayne's analysis agreement with the in situ subject of unaccusatives would appear to require the raising of a null expletive pronominal through the specifier of PPA. While the existence of null expletives has been a frequent assumption in Romance linguistics since Rizzi's (1982) work, they are not uncontroversial . Some of the associated problems will be reviewed in chapter 5.

(34c) Noi.1pl siamo.1pl arrivat-i.Mpl.   (34d) Voi.2pl siete.2pl arrivat-i.Mpl.
We boys have arrived.   *You (pl) have arrived.*

The proposal explored here is a further relativization of the agreement constraints, which are indexed with respect to heads. Thus, each constraint in the AGR_Φ and $LOOSEAGR_\Phi$ families doubles into a constraint for I^0, and one for the past-participle head (or more precisely, for the head hosting the morpheme that absorbs the external thematic role). The group of constraints so generated is listed in (35) (*infl* stands for I^0, and *pp* for past participle).

(35) Agreement constraints.	I^0	Past Participle Head
Person	$AGR_{ps,infl}$ $LOOSEAGR_{ps,infl}$	$AGR_{ps,pp}$ $LOOSEAGR_{ps,pp}$
Number	$AGR_{num,infl}$ $LOOSEAGR_{num,infl}$	$AGR_{num,pp}$ $LOOSEAGR_{num,pp}$
Gender	$AGR_{gen,infl}$ $LOOSEAGR_{gen,infl}$	$AGR_{gen,pp}$ $LOOSEAGR_{gen,pp}$

Ranking conditions will now have to be determined for each head. For example, the Italian agreement pattern for I^0 and for the past-participle of passives and unaccusatives is determined by the following ranking conditions:

(36) I^0 and past-participle agreement in Italian:
- I^0-agreement in person and number:
 $\{L.AGR_{num,infl}, L.AGR_{ps,infl}\} >> NO\ \Phi\text{-}FTS >> \{L.AGR_{gen,infl}, AGR_{gen,infl}\}$
- Past Participle agreement in number and gender:
 $\{L.AGR_{num,pp}, L.AGR_{gen,pp}\} >> NO\ \Phi\text{-}FTS >> \{L.AGR_{ps,pp}, AGR_{ps,pp}\}$

While the number of generated constraints may seem large, the way they are generated is fully systematic. The actual primitives of the analysis of agreement are limited in number and elementary in character, involving the following elements:

(i) the set of distinct agreement features;
(ii) the set of distinct agreeing heads (these need not be categorically distinct, but only be represented by distinct nodes in the phrase-structure representation).
(iii) a basic fundamental constraint favoring agreement, split into a stricter and a looser version (i.e. AGR and $LOOSEAGR$).
(iv) the constraint $NO\ \Phi\text{-}FTS$, against any agreement feature.

While relativization accounts for the independent patterns of agreement on different heads, the overall analysis captures the important generalization that agreement is invariant across syntactic structure: whatever head it concerns and whatever features it involves, agreement is always governed by the same fundamental mechanism: the interaction between AGR_ϕ and $LOOSEAGR_\phi$ with $NO\ \Phi\text{-}FTS$.

The analysis also predicts that the initial generalization motivating this theory of agreement, i.e. the primacy of spec-head agreement is not specific to agreement in I^0, and extends to any instance of agreement. To the best of my knowledge the prediction is correct.

Conversely, the same agreement classes that we observed for I^0-agreement exist for past participle agreement as well. The following examples illustrate cases of unrestricted agreement and agreement loss in past-participle agreement. The case for unrestricted agreement is exemplified by Italian, where agreement in unaccusative past participle is insensitive to the position of the subject. In accord with Kayne (1987), the past-participle of (37) has moved to an agreement projection higher than VP. Past participle agreement in gender and number may occur under a spec-head configuration involving the past-participle and the trace of the subject in the specifier of the past-participle projection.

(37) Alcune ragazze sono entrate dalla finestra.
     $[_{ip}$ [Alcune ragazze]$_i$ sono $[_{agr\text{-}pp}$ t$_i$ entrat$_k$-e $[_{vp}$ t$_k$ t$_i$ dalla finestra]]].
        Some.3Fpl girls.3Fpl are.3pl   entered.Fpl   from the window.
     Some girls entered from the window.

In (37b) below, the subject is in its original object position, where it is c-commanded by the past-participle (Belletti 1988). Nevertheless, agreement is preserved in gender and number.

(37b) Sono entrate alcune ragazze dalla finestra.

    [$_{ip}$ Sono [$_{agr-pp}$ entrat$_k$-e [$_{vp}$ t$_k$ [alcune ragazze]$_i$ dalla finestra].

      Are. 3pl   entered.Fpl   some.3Fpl girls.3Fpl from the window.

      There entered from the window some girls.

Past participle agreement loss in gender and number occurs in Conegliano (Saccon 1989). In (38a), the past participle agrees in gender and number with the trace left by the subject in the past participle specifier. However, when the subject remains in the lower object position, as in (38b), the past participle no longer agrees.

(38a)   Na tosa   la e   rivada.

      [$_{ip}$ Na tosa$_i$ la-e   [$_{pp}$ t$_i$ riv$_k$-ada   [$_{vp}$ t$_i$ t$_k$]]].

      A.3Fs girl.3Fs   cl.3Fs-is.3s   arrived.Fpl.

      A girl has arrived.

(38b)   El-e   rivá   na tosa.

      [$_{ip}$ El-e   [$_{pp}$ riv$_k$-á   [$_{vp}$ t$_k$ [na tosa]]]].

      cl.3Ms-is.3s arrived   a.3Fs girl.3Fs.

      There arrived a girl.

In Summary, we saw how relativizing the agreement constraints for the available agreement heads permits us to account for variation in the set of agreement features active on distinct heads within the same clause while maintaining a unified theory of agreement. The analysis also derives the fact that the Primacy of Spec-Head Agreement is not specific to I°.

4.5. Interaction between Agreement Constraints and other UG Constraints

In previous sections, we have examined reranking of the basic agreement constraints relative to each other. However, the agreement constraint AGR$_\phi$ also interacts with the ALIGNFOCUS constraint discussed in chapter 3, and is thus relevant for the analysis of the subject position. In particular, the interaction among these two constraints determines whether inversion is possible in languages with unrestricted agreement and/or agreement loss. Here, I will first examine in abstract terms each of the three

language-types previously identified agreementwise. Then I will provide a detailed analysis of Italian to illustrate the results arrived at abstractly.

4.5.1. Languages with Unrestricted Agreement

In languages with unrestricted agreement, i.e. with LOOSEAGR dominating NO Φ-FTS, the agreement component as a whole favors candidates with the subject in specIP position or unrealized. This is shown below. The tableau on the left lists candidates with the subject in different positions, with and without agreement. The column for AGR is provided separately, to represent the fact that AGR selects (a) and (b) as optimal independently of its ranking. If ranked highest, it does so directly, since all other forms violate it. If ranked lower than one or both the other constraints, it selects (a) and (b) as optimal because (c) and (d), the only additional candidates satisfying and thus surviving LOOSEAGR and NO Φ-FTS, violate AGR.

T13. Subject position in languages with unrestricted agreement.

<V(x),x=N,--,T=pres.perf.> (V and N lexical. N heads DP)	LOOSEAGR	NO Φ-FTS	AGR
a. ☞ DP$_i$ aux$_{+agr}$ [t$_i$ V]		*	
b. ☞ -- aux$_{+agr}$ [-- V]		*	
c. -- aux$_{+agr}$ [DP V]		*	*
d. -- aux$_{+agr}$ [t$_i$ V] DP$_i$]		*	*
e. DP$_i$ aux$_{-agr}$ [t$_i$ V]	*!		*
f. -- aux$_{-agr}$ [-- V]	*!		*
g. -- aux$_{-agr}$ [DP V]	*!		*
h. -- aux$_{-agr}$ [t$_i$ V] DP$_i$]	*!		*

It follows, that in this group of languages, focused related inversion can occur only if ALIGNFOCUS dominates AGR, or else AGR would make the candidate with the inverted subject suboptimal. This is shown schematically in the tableau below, restricted to the preverbal candidate in (a) and the inversion candidate in (b) (for the suboptimal status of null subjects in relation to inputs with focused thematic subjects see chapter 2).

T14. Focus-related inversion in languages with unrestricted agreement.

<V(x),x=N,--,T=pres.perf.>	ALIGNFOCUS	AGR
a. DP$_i$ aux$_{+agr}$ [t$_i$ V]	*!	
d. ☞ -- aux$_{+agr}$ [t$_i$ V] DP$_i$]		*

Hence, among languages with unrestricted agreement, only those where ALIGNFOCUS dominates AGR will show focus-related inversion. This is characterized in the condition below:

(39) Focus-related inversion in languages with unrestricted agreement:
ALIGNFOCUS >> AGR.

As for null subjects, the ranking of AGR relative to DROPTOPIC does not determine whether they are possible or not, because null subjects are indistinguishable from overt subjects agreementwise, as we saw in section 4.4.2. The optimal status of the null subject candidate thus depends only on the ranking of DROPTOPIC relative to SUBJECT and PARSE, as discussed in chapter 2.

4.5.2. Languages with Agreement Loss

Languages with agreement loss have AGR as the highest ranked constraint in the agreement system (see table (13) in section 4.2). Therefore, the situation is identical to that just examined for languages with unrestricted agreement. Taken collectively, the agreement constraints favor candidates with the subject in specIP or left unrealized

T15. Subject position in languages with agreement loss.

<V(x),x=N,--,T=pres.perf.>	AGR	NO Φ-FTS	LOOSEAGR
a. ☞ DP$_i$ aux$_{+agr}$ [t$_i$ V]		*	
b. ☞ -- aux$_{+agr}$ [-- V]		*	
c. -- aux$_{+agr}$ [DP V]	*!	*	
d. -- aux$_{+agr}$ [t$_i$ V] DP$_i$]	*!	*	
e. DP$_i$ aux$_{-agr}$ [t$_i$ V]	*!		*
f. -- aux$_{-agr}$ [-- V]	*!		*
g. -- aux$_{-agr}$ [DP V]	*!		*
h. -- aux$_{-agr}$ [t$_i$ V] DP$_i$]	*!		*

Here too, focus-related inversion will only be possible in languages where ALIGNFOCUS dominates AGR, for the same reasons given before.

(40) Focused inversion in languages with agreement loss:
ALIGNFOCUS >> AGR.

As in the former language group, the availability of null subjects does not hinge on the ranking of the agreement constraints, but only on the ranking of DROPTOPIC relative to SUBJECT and PARSE.

4.5.3. Languages Lacking Agreement

Languages with no agreement show no interaction between the agreement constraints and the constraints ALIGNFOCUS and DROPTOPIC. In fact, the high ranking of NO Φ-FTS makes candidates with agreement suboptimal, but says nothing about the position of the subject or its realization among the potential optimal candidates lacking agreement in (e)-(h), which violate the same constraints. This is shown in the tableau below. (The two lower constraints are separated by a dotted line indicating that their ranking relative to each other has no consequences on the selection of the optimal candidate.)

T16. Subject position in languages with unrestricted agreement.

<V(x),x=N,--,T=pres.perf.>	NO Φ-FTS	LOOSEAGR	AGR
a. DP$_i$ aux$_{+agr}$ [t$_i$ V]	*!		
b. -- aux$_{+agr}$ [-- V]	*!		
c. -- aux$_{+agr}$ [DP V]	*!		*
d. -- aux$_{+agr}$ [t$_i$ V] DP$_i$]	*!		*
e. ☞ DP$_i$ aux$_{-agr}$ [t$_i$ V]		*	*
f. ☞ -- aux$_{-agr}$ [-- V]		*	*
g. ☞ -- aux$_{-agr}$ [DP V]		*	*
h. ☞ -- aux$_{-agr}$ [t$_i$ V] DP$_i$]		*	*

It follows, that the ranking of NO Φ-FTS and the other agreement constraints relative to ALIGNFOCUS and DROPTOPIC has no bearing on the availability of inversion or subject non-realization.

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4.5.4. Feature Relativization: the Case of Italian

As we know from the previous sections, languages belong to one or the other agreement class only relative to specific features. For example, Italian has unrestricted agreement relative to person and number, but no-agreement relative to gender. The conditions on the interaction between AGR and ALIGNFOCUS must then be relativized to agreement features. Hence, the fact that Italian allows focus-triggered inversion translates into the requirement that AGR_{num} and AGR_{ps} are ranked lower than ALIGNFOCUS, while no ranking condition is set on AGR_{gen} in accord to what was said about languages with no-agreement.

(41) Conditions on the availability of focus-related inversion in Italian:

ALIGNFOCUS >> {AGR_{num}, AGR_{ps}}.

The effects of (41) are illustrated in the following tableau T17, showing a total ranking compatible with the above condition in (41) as well as with the ranking conditions responsible for the agreement pattern of Italian, repeated in (42) below.

(42) Italian agreement-pattern.

-Unrestricted agreement in number:　　LOOSEAGR_{num} >> NO Φ-FT
-Unrestricted agreement in person:　　LOOSEAGR_{ps} >> NO Φ-FTS
-No agreement in gender:　　　　　　　NO Φ-FTS >> {LOOSEAGR_{gen}, AGR_{gen}}

For the sake of simplicity, the tableau is restricted to candidates with the subject in preverbal position and in postverbal position, each is split into the 8 possible agreement combinations. The candidates with the prefix *preV* represent the preverbal candidate *[DP aux VP]*; the candidates prefixed with *Inv*, represent the inversion candidate *[aux VP DP]*. To improve legibility, the candidates are rearranged with the optimal one on top, with increasing divergence going downward from the optimal candidate.

The contrast between the inversion candidate in (a) and the preverbal candidate in (b) shows clearly how inversion may occur only if ALIGNFOCUS dominates both AGR_{num} and AGR_{ps}.

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T17. Focus-related inversion in Italian in relation to agreement.

<V(x), x=N, x=focus, T=pres.perfect>	L.A. num	L.A. ps	NOΦ FTS	L.A. gen	AGR gen	A.F.	AGR ps	AGR num
a. ☞ Inv: ps, num			* *	*	*		*	*
b. preV: ps, num			* *	*	*	*!		
c. preV: ps, gen, num			* *! *			*		
d. Inv: ps, gen, num			* *! *		*		*	*
e. Inv: num		*!	*	*	*		*	*
f. preV: num		*!	*	*	*	*	*	
g. preV: gen, num		*!	* *			*	*	
h. Inv: gen, num		*!	* *		*		*	*
i. Inv: ps	*!		*	*	*		*	*
j. preV: ps	*!		*	*	*	*		*
k. preV: ps, gen	*!		* *			*		*
l. Inv: ps, gen	*!		* *		*		*	*
m. Inv: none	*!	*			*	*	*	*
n. preV: none	*!	*		*	*	*	*	*
o. preV: gen	*!	*	*			*	*	*
p. Inv: gen	*!	*	*		*		*	*

In summary, this section has shown how the system of agreeing constraints coupled with the topic and focus related constraints identified in the previous sections, accurately predicts the position of the subject for different inputs as well as its agreement pattern. It was also shown that languages with unrestricted agreement or agreement loss with respect to some feature φ allow for focus-triggered inversion only if the constraint ALIGNFOCUS is ranked above $AGR_φ$. More generally, this will be true for any constraint C requiring the subject position to be elsewhere than in specIP. The effects of C will surface only in those languages where C dominates $AGR_φ$.

4.6. Conclusions

In this chapter we have seen how the presence and lack of agreement in different languages and under different agreement configurations follow from the O.T. interaction of three simple constraints, one against agreement, and two requiring it, one under a narrower and one under a broader domain. This investigation thus confirmed

the potential of O.T., already seen at work in the analysis of the expletive in chapter 3, of deriving apparent lexical properties by way of grammar rather than through lexical specification.

The analysis has also shown once more how deriving linguistic variation through constraint reranking is not in conflict with the derivation of linguistic universals. We may now add to the universals derived in chapters 2 and 3 the universal implication restricting agreement loss to non spec-head configurations, which was shown to follow from the same constraints responsible for crosslinguistic variation in agreement patterns.

Other results provided in this chapter concerned an analysis of agreement with postverbal subjects and with expletives which makes no reference to agreement transmission, and thus has no need to postulate a null expletive in null subject languages, in accord with the assumptions made in the previous chapters. Likewise, the chapter provided an analysis of agreement with null subjects which makes no reference to structurally realized empty pronominal subjects.

Last but not least, the agreement constraints identified here are expected to interact with the other constraints of UG. We have already briefly examined the interaction between the agreement constraints **A**GR and **A**LIGN**F**OCUS, and its role in determining the position of focused subjects. In the next chapter we will see how the interaction of **A**GR with the case-related constraint **C**ASE**G**OV provides a unified analysis for pattern of variation in case-assignment found both language-internally as well as crosslinguistically. In many ways, those analyses and the simplification of case-theory that they make possible are among the best evidence in support of an O.T. approach to agreement such as that developed on independent grounds in this chapter.

5. Optimal Case

This chapter develops a unified analysis of abstract case-assignment, which is reduced to a single constraint, CASEGOV, requiring that case be assigned under proper government. Linguistic variation in case-assignment configurations within and between languages will be shown to follow directly from the interaction between CASEGOV and the other constraints of UG, with no need to parametrize case theory, as in Koopman and Sportiche (1991), nor to stipulate special case-assignment configurations as in Rizzi's account of Italian aux-to-comp infinitivals (Rizzi, 1982).

Other important results in line with the claims made in previous chapters concern the status of subjects and expletives.

The analysis of case-assignment will confirm that there is no universal default subject position, but only optimal subject positions relative to an input and a grammar. This will be shown true even for canonical subjects, which for example take different positions in Italian and Standard Arabic in relation to the reranking of AGR relative to CASEGOV and STAY.

The analysis will also support the view of overt expletives developed by Grimshaw (1993, 1995) and Grimshaw and Samek-Lodovici (1995), tying their crosslinguistic distribution to the rank of FULL-INT in a given grammar (see chapter 2 and 3). The study of English and Arabic will in fact provide us with cases where expletive elements are determined by the low rank of FULL-INT with respect to CASEGOV.

The chapter is organized as follows. Section 5.1 argues for the need for a unified theory of case-assignment. Section 5.2 introduces the CASEGOV constraint, which is central to the analysis developed here. Section 5.3 derives case-assignment variation within Italian, accounting for case-assignment in declaratives with inverted and non-inverted subjects, and for case-assignment alternations contrasting gerundive aux-to-comp structures with declarative clauses and conditional subjunctives. Section 5.4 addresses crosslinguistic variation in finite clauses, contrasting Italian and Standard Arabic with respect to the position of canonical subjects. Section 5.5 addresses crosslinguistic variation in infinitival clauses with overt subjects, showing how in these structures Italian aux-to-comp, Portuguese agreement, and English case-assignment by

a preposition in C^o are all determined through constraint reranking. Finally, section 5.6 examines the evidence against analyses of case-assignment involving case and agreement transmission through a null expletive pro_{expl} element. Section 5.7 presents the conclusions.

5.1. The Need of a Unified Analysis of Case Assignment

The need for a unified analysis of case-assignment is effectively illustrated by the following three Italian sentences, which according to the linguistic literature assign nominative case to the overt subject in three distinct ways.

(1)   Marco ha vinto.
        Mark has won.

(2)   Ha vinto Marco
(3) $pro_{expl,i}$ [ha vinto Marco$_i$].
                has won Mark.
        It is Mark who won.

(4)   Avendo Marco vinto,
(5)   Avendo$_i$ [Marco t$_i$ [vinto]], ...
        Having Mark won, ...
        Mark having won,...

In particular, in sentence (1) case is assigned under a spec-head configuration. Sentence (2) instead has been analyzed as involving case transmission to the postverbal subject by a phonetically null expletive *pro$_{expl}$* or some equivalent element in specIP, as represented in (3) (Rizzi 1982, Chomsky 1982, 1986, Safir 1985, Burzio 1986). Finally, in sentence (4) the auxiliary *avere* assigns case into specIP from the C^o position, as in (5) (Rizzi, 1982).

Even more recent attempts to provide a unified theory of case-assignment do not straightforwardly account for (1), (2) and (4). For example, under the minimalist program (Chomsky 1992), the subject of (1) raises to specAgr$_s$ to check its strong nominative features. It is unclear how this analysis extends to the inversion structure in (2), if the strong features of the subject must be checked in specIP in the overt syntax. Appeal to case-transmission by a strong-featured expletive *pro$_{expl}$* is possible, but as we

will see in section 5.6, undesirable. Moreover, the minimalist analysis doesn't directly relate the analysis of (1) to that of (4). For example, a recent proposal by Longobardi (1996) which explains aux-to-comp movement in (4) by requiring that case-features be checked in the internal domain of the gerundive auxiliary in C^0, must then rely on the additional option of checking case through agreement in order to derive (1).

The data in (1), (2) and (4) seem problematic also for Bittner and Hale's (1996) analysis of case. For example, in Bittner and Hale's model nominative subjects are required to be governed by C^0 or a chain headed in C^0 (their *Case-Filter*). In (1), this requirement triggers raising of the subject into specIP position. It is unclear, however, how the same requirement can be satisfied by the inverted subject in (2) without appealing once again to a *pro_expl* element, with all the associated problems (see section 5.6). Analyzing the aux-to-comp construction in (4) is technically less problematic, given that the auxiliary in C^0 does govern the subject, but there is no obvious way to connect this analysis with that of (1) and (2).

Finally, Rizzi (1990) avoids the problems associated with the *pro_expl*-analysis of (2) by assuming that T^0 assigns case directly to the VP-adjoined subject. However, this solution does not extend to a case like (6) below, where the lower subject *nessuno* (nobody) is licensed by the subordinate neg-marker *non* of the subordinate clause, and is therefore too low to receive case directly from the matrix T^0, forcing us back to case-transmission by a raising *pro_expl*.

(6) $pro_{expl,i}$ sembra [t_i non aver votato nessuno$_i$].
              seems   not to-have voted anybody.
    It seems that nobody voted.

In contrast, viewing variation in case-assignment configurations in terms of constraint interaction will make it possible to reduce the theory of case-assignment to one universal simple constraint requiring that the case-assigner properly governs the case-assignee. This constraint is introduced in the next section.

5.2. Abstract Case Assignment in OT: the Case-Filter and CASEGOV

In analogy with the analysis of agreement developed in chapter 4, I will consider structural case a relation holding between a case-assigning head and the referential role of a potential nominal constituent, where the latter term refers to expletives and

nominal arguments, whether parsed as overt DPs or left unparsed. I will represent case-assignment as a coindexation between the case-assigner and the case-assignee. For expletive and overt argumental DPs, the case-assignee is the referential role of the constituent, and is accessible on the DP node, which therefore constitutes the target of the case coindexation. For unparsed nominal arguments, the case-assignee is the unassigned thematic role associated with the nominal argument in input, in parallel with the analysis of agreement (see section 4.4.2 on agreement with null subjects).

The syntactic configuration of a case coindexation is determined by the final position of the case-assigner and case-assignee, i.e. on the position of the heads of their respective chains. When the nominal constituent is a chain, the case coindexation occurs between the case-assigner and the highest A-position in the chain, where A-positions are defined operationally as any position which can host the antecedent of a reflexive or reciprocal, as in Bittner and Hale (1996). A-positions relevant for this analysis are the specIP position, the specVP position, and the position of *in situ* objects.

What has been said so far leaves the case-relation unconstrained with respect to two important aspects. The first concerns the existence of case-assignment: so far, nothing prevents the case coindexation from being absent, thus allowing for case-unmarked DPs. The second aspect concerns the existence of linguistic constraints on the syntactic configuration of the case-assignment coindexation. *Absence* vs. *presence* of case-assignment, and *configuration* of case-assignment are here separate issues. The first issue is regulated by the inviolable Case-Filter, defined below, which rejects as ungrammatical any structure where the referential role of a potential nominal constituent is not case-marked.

(7)   Case Filter: Coindex the referential role R of a potential nominal constituent with a case-assigner H.

The Case-Filter belongs to the filtering component of GEN: any structure violating the Case-Filter is excluded from the candidate set.

As for the second issue, I propose that case coindexation is governed by CASEGOV, a constraint requiring a case-assignee to be locally properly governed by its case-assigner.

(8a) **C**ASE**G**OV: A case-assignee is locally properly governed by its case-assigner. Failed if the case-assignee is not locally properly governed by its case-assigner.

(8b) Local proper government: X^0 locally proper-governs YP if:
- (i)   YP is the sister of X^0, or
- (ii) YP is in the specifier position of X^0's sister.

CASE**G**OV is   violated when the case-assignee is not the complement of the case-assigner or the specifier of the complement. For example, in the structure below the case-assigner X^0 would satisfy **C**ASE**G**OV when case-marking YP or ZP, but it would violate it when case-marking UP, WP, or VP.

(9) Case-assignment configurations:
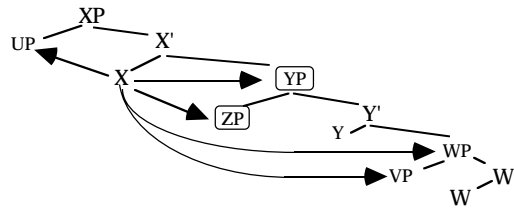
The idea that case-assignment occurs under government dates back to Rouveret & Vergnaud (1980), Chomsky (1981) and Aoun & Sportiche (1983). Case-assignment under proper government has also been proposed by Koopman and Sportiche (1991), but as a parametric option internal to case theory (see also the analyses of VSO languages involving case-assignment into specVP proposed by Chung & McCloskey 1987, McCloskey 1991, an by Fassi Fehri for Standard Arabic, 1993). These authors maintain that there are two independent parameters for case-assignment configurations:

(i)   ± assignment-through-spec-head-agreement.
(ii)   ± assignment-under-proper-government.

Languages, and even specific structures within a language, are marked for one or the other value with respect to each feature. The analysis proposed here simplifies the theory of case assignment, proposing proper government as the only condition

governing case-assignment. All linguistic variation follows from the interaction between **C**ASE**G**OV and the other constraints.

Case-assignment under c-command is also entailed by the recent proposal by Bittner and Hale (1996). What is specific to the analysis developed here is the status of the case requirement: **C**ASE**G**OV is a violable constraint. Whether violating **C**ASE**G**OV makes a structure *S* ungrammatical depends only on how *S* fares relative to its competitors. Indeed, in some cases, violating **C**ASE**G**OV may open up the opportunity of satisfying higher ranked constraints, making *S* more harmonic than any other competitor, including those satisfying **C**ASE**G**OV.

Finally, the proposal is complementary to and can thus be seen as an integration of Legendre, Raymond and Smolensky 1993's analysis of case-typology, which does not examine the issue of case-assignment configuration.

5.2.1. Generating Case Assignment Coindexations

How do competing case-coindexations come about? Non controversially, I assume that only Tense, Verbs and Prepositions are case-assigners, and that the case they assign is specified in the lexicon; in particular, finite tense can assign nominative case and transitive verbs can assign accusative case.

As stated before, the configuration of the case coindexation is determined by the final positions of the case-assigner and of the case-assignee. However, the mapping between case-assigners and case-assignees, i.e. what is coindexed with what, is determined by the position of the foot of their respective chains.. In particular, I assume that a case-assignee X selects as its case-assiger that case-assigner Y whose chain-foot c-commands and is closest to X's own chain-foot. For example, consider the input in (10), with two case-assigners, V^0 and T^0, and the structure in (11), where the finite verb has raised and where therefore I^0 contains at once the nominative and the accusative case-assigners.

(10)   < meet(x,y), (x=John , y=Mary), --, T=present>
(11)   [$_{IP}$ John$_i$ met$_{v,nom,acc}$ [t_i t_v Mary]].

The only legitimate coindexation for this structure is the one where the object is coindexed with V^0 and the subject with T^0, as in (12a) below. In fact, the case-assigner whose chain-foot c-commands and is closest to the object chain-foot is that of the accusative case-assigner V^0. In contrast, (12b) is not a legitimate coindexation for (11),

since neither the object nor the subject is coindexed with the closest case-assigner in the sense specified above.

(12a) $[_{IP}$ John$_{i, nom}$ met$_{v, nom, acc}$ $[t_i$ t_v Mary$_{acc}]]$.

(12b) $[_{IP}$ John$_{i, acc}$ met$_{v, nom, acc}$ $[t_i$ t_v Mary$_{nom}]]$.

Since the foot of the object always selects the verb as its closer case-assigner, the above definition ensures that in transitive structures, nominative case will always be coindexed with the thematic subject, and accusative case with the thematic object[1]. Intransitives, passives and unaccusatives structures involve only one case-assigner and one case-assignee. Therefore the mapping is trivial, since there is only one possible case-coindexation relating the case-assigner and ther case-assignee.

The assumption on the case-coindexation mapping just discussed does not prevent GEN from building distinct candidates with respect to the syntactic configuration under which a specific coindexation occurs. For example, variation in the position of the subject provides case-assignment configurations which fare differently with respect to **C**ASE**G**OV. This is shown in (13) below. While candidate (13a) satisfies **C**ASE**G**OV, candidate (13b) does not, because the specIP subject is not properly governed by I⁰.

(13a) $[_{IP}$ -- has$_{nom}$ [John$_{i, nom}$ met$_{acc}$ Mary$_{acc}]]$.

(13b) $[_{IP}$ John$_{i, nom}$ has$_{nom}$ [t_i met$_{acc}$ Mary$_{acc}]]$.

5.2.2. Candidates with specVP Subjects and with Expletives

I am assuming a simplified version of clause structure, distinguishing only between the VP, IP and CP projections. In particular, I treat the tense operator always as part of the I⁰ head, and therefore able to proper govern a subject in specVP. Therefore, in a candidate like (14) below, the tense operator is part of the auxiliary *has* and assigns case to the specVP subject under proper government, thus satisfying **C**ASE**G**OV.

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[1] Ideally, GEN should be free to build all possible coindexations, and the the fact that nominative always gets assigned to thematic subjects in transitives structures should follow from the constraints of UG. Indeed, it almost follows from the constraints given here. The only problematic case is precisely the pair shown in (12), where **C**ASE**G**OV is violated twice by each structure, and no locality criterium seems to distinguish one structure from the other.

(14) $[_{IP}$ -- has $[_{VP}$ John sung]].

An alternative view of clause structure would decompose IP into a plurality of functional projections. For example, following Belletti's (1990) reanalysis of Pollock's (1989) proposal, one could distinguish between a lower Tense and a higher Agreement projection. Consequently, one could distinguish between a candidate like (15a) where the subject remains in specVP and one like (15b) where the subject raises into specTP position. Candidate (15a) violates **C**ASE**G**OV but spares a **S**TAY violation on the part of the subject, while (15b) satisfies **C**ASE**G**OV but violates **S**TAY.

(15a) $[_{AgrP}$ -- has$_i$ $[_{TP}$ John$_k$ t_i $[_{VP}$ t_k sung]]].

(15b) $[_{AgrP}$ -- has$_i$ $[_{TP}$ -- t_i $[_{VP}$ John sung]]].

Which representation to choose depends among other things on whether inflectional features such as tense are independent syntactic nodes to which the verb must move, as in Pollock (1989) and Belletti (1990), or whether the lexicon makes available fully inflected verbs and auxiliaries, as for example in Chomsky (1992), Williams (1994) and Grimshaw (1995). Since using the candidates in (15) instead of the one in (14) does not affect the analyses in this chapter, I will use the simpler candidate in (14) and leave this topic open to further investigation. As the reader may check, whenever candidate (14) is suboptimal, the candidates in (15) are also suboptimal, and whenever (14) is optimal, either (15a) or (15b) is optimal, depending on the ranking of **C**ASE**G**OV and **S**TAY[2]. This is easily shown by substituting (15a) and (15b) in all tableaus with candidate (14) and then checking their status relative to the other candidates.

A second class of candidates generated by GEN deserving some clarification is that allowing for an expletive in specIP position together with a lower subject DP, like for example that in (16) below.

(16) There are three men in the garden.

---

[2] This holds also for the various "versions" of (14) and (15) whose invariant characteristic is to have the subject following I⁰ but preceding the object in transitives constructions. These "versions" may involve a finite verb in I⁰, or a gerundive or infinitival auxiliary, or the presence vs. lack of agreement features on I⁰, or finally an expletive subject in specIP.

Here, we have two DPs and one case-assigner: how is the case-filter satisfied? Faithfulness to an O.T. perspective would suggest that the case filter itself is a violable constraint, and that this is a structure where it is violated (Grimshaw, p.c.). For the time being however, I will resort to the classic proposal that views the expletive and the DP as coindexed together and sharing case. This coindexation applies only to overt expletives, since in the analysis developed here no null expletive is possible.

Notice also that in (16) case is directly assigned to the DP *three men*, which is the nominal constituent properly governed by the case-assigner T⁰, and then shared with the coindexed expletive *there*. Since the agreement features are coindexed with the nominative case-assignee, agreement occurs directly with the subject DP *three men*, explaining why agreement occurs with the lower subject in these constructions (see also chapter 4, section 4.4.3).

5.2.3. Inputs with Non-finite Tense

Descriptively speaking, there are two type of structures involving non finite tense. The first type allows for an overt subject, as in Italian aux-to-comp gerundives and infinitivals, and in English infinitivals involving a prepositional case-assigner, as in *for John to go*. To account for these case, I assume that GEN can freely generate candidates with case-assigning auxiliaries, as in the Italian case, or case-assigning prepositions, as in the English case. These structures compete with each other, and which structure is grammatical is determined by the constraint hierarchy of each language. A detailed analysis is given in section 5.5.

The second type of infinitival structures has no overt subject, and include all structures traditionally analyzed as involving a *PRO* subject. I will not provide an analysis of this second type of infinitivals, since the investigation of the related phenomena of *control* and *impersonal PRO* would take me too far afield. Let me however briefly suggest two possible lines of analysis within the framework developed so far.

The first analysis views infinitivals as topic-referring subjects. Ideally, the analysis of null subjects in finite and non finite clauses should be fully parallel, possibly building on the analyses and intuitions laid out either in Borer (1989) or in Huang (1989). A more modest solution would assume the existence of a constraint **C**ONTROL requiring that a subject be left unrealized whenever the conditions for control obtain, including for example the presence of non finite tense as well as coreference between a controller and the controllee. Languages with **C**ONTROL sufficiently high in the constraint hierarchy

would show infinitivals of this kind. A problematic aspect of this analysis is that the subject of the infinitivals would have to be assigned case, against the standard analysis of infinitivals as non case-assigning syntactic contexts (but see Sigurdsson 1991 for evidence for a case marked PRO).

Alternatively, subjectless infinitivals could be treated as lacking an input specification for their subject. The input for the clause *to go* would then look like *<go(x), x=--, --, T=non finite>*. The thematic role for the subject would still require an interpretation, but this would have to be attained either through a controlling antecedent or impersonally, through context. Since no subject is specified, no referential role is associated to the theta role, and therefore the theta role does not need to be assigned case. A problematic aspect, however, concerns the newly introduced possibility of leaving the theta roles unassigned also in inputs with finite tense.

5.2.4. Constraints Conflicting with CASEGOV

Before concluding this section, let us consider the constraints that may directly conflict with **C**ASE**G**OV. These include any constraint that requires a case-assigned argument to occur elsewhere than in the position required by **C**ASE**G**OV, as for example **S**UBJECT, which may force raising of a constituent to the specIP position. The constraint **A**GR and **S**TAY also belongs to this list: **A**GR because it favors the occurrence of an overt subject in the specifier of IP, where it is not properly governed by the nominative case-assigner; **S**TAY because it may oppose a movement step required to establish an appropriate case-assignment configuration (see the analysis of aux-to-comp structures in the next section). The definitions of these constraints follow below.

-**S**UBJECT: The highest A-specifier of a clause must be structurally realized.
  Failed when the highest A-specifier of a clause is left structurally unrealized.

- **A**GR$_\phi$: A head H should host spec-head agreement between an agreement feature ϕ and the referential role of a potential nominal constituent.
  Failed when no spec-head agreement occurs on H relative to ϕ.

- **S**TAY (Grimshaw 1993, 1995): Traces are not allowed.
  Failed by traces.

Other constraints that will be relevant in specific derivations are **F**ULL-**I**NT, **A**LIGN**F**OCUS, **D**ROP**T**OPIC, **P**ARSE, **O**B**H**D, **O**P**S**PEC and **E**CP, all introduced in previous

chapters. I also assume the existence of a constraint -T/-AGR which penalizes the occurrence of agreement on a head hosting non-finite tense, as in infinitivals and gerundives. This constraint captures the well known fact that many languages with agreement show no agreement in infinitivals and gerundives. What in Principles and Parameters analysis is assumed to be a lexical specification is thus here formalized as a constraint of UG.

- T/-AGR: A head hosting non finite tense cannot host agreement features.
  Violated when a head hosting finite tense hosts agreement features.

5.3. Nominative Case in Italian Clauses

This section contains the analysis of nominative case-assignment in Italian. In particular, I will derive: (i) the specIP position of subjects in declaratives, (ii) aux-to-comp structures in gerundives and infinitival constructions, (iii) aux-to-comp order in conditional subjunctives, which will be shown not to involve actual aux-to-comp movement, (iv) the alternation between overt complementizers and aux-to-comp linear order in conditional subjunctives, and (v) the lack of such alternation in gerundives and infinitivals.

All these structures will be shown to be fully predicted from the interaction of CASEGOV with the other constraints of UG.

In particular, the following constraint hierarchy emerges as the underlying grammar of Italian, determining all the syntactic structures listed above, with each ranking relation of (17) supported by one or more of the derivations examined in the next subsections.

(17) {A.F.,PARSE, OBHD, OPSPEC, -T/-A}>>AGR >>CASEGOV >>SUBJ.>>STAY

In the following analysis, I will restrict my examples to intransitives. However, the analysis extends straightforwardly to transitives as well. The few specific candidates that arise only in the case of transitive constructions will be examined in section 5.3.3. I will also restrict myself to present perfect tense, where the auxiliary is overt. All the derivations below hold also for the auxiliaryless present and past tenses, under the assumption that in Italian the verb raises from V° to I°, as is standardly assumed, see for example Belletti (1990), and Vikner (1995). As the reader may check, V° to I° movement

would only add an additional violation of STAY to all competing candidates, not affecting the overall outcome of any tableau.

The relevant candidates are represented by the structures in (a)-(d) below: (a) has the subject in specIP, (b) has the subject in specVP, (c) has the subject in specIP and the auxiliary moved to C°. Candidate (d), with the subject in the rightward VP-adjoined A'-position, is casewise equivalent to candidate (b), with nominative case assigned to the trace in specVP, as explained in section 5.3.2 below. I will examine this candidate only when its analysis diverges from that of candidate (b). Other specific candidates will be introduced where relevant, always listed under a letter different from (a)-(d).

(18) Competing candidates. Case-assigner and case-assignee are in bold.

a. **Luca**$_k$ **ha** [t$_k$ riso] *Luca has laughed.*	b. -- **ha** [**Luca** riso]
c. **ha**$_i$ [**Luca**$_k$ t$_i$ [t$_k$ riso]]	d. -- **ha** [[**t**$_k$ riso] Luca$_k$]

For reasons of space and clarity of exposition, I will also feel free to omit specific constraints from a tableau whenever they are satisfied by all candidates being listed. In such cases in fact, a constraint makes no distinction among the given candidates, and its inclusion is therefore uninformative.

5.3.1. The Aux-to-comp Alternation

Let us first examine tensed declaratives with canonical subjects, i.e. unfocused and non topic-referring subjects. The optimal status of the candidate with a preverbal subject in specIP in (a) below is possible only if AGR outranks CASEGOV. In fact, since T is tensed, the constraint -T/-AGR is vacuously satisfied by any structure. Agreement can then occur, complying with the agreement system of Italian examined in chapter 4. But AGR and CASEGOV conflict, because AGR requires the subject to occur in specIP to establish a spec-head agreement configuration, as in (a), while CASEGOV requires it to be properly governed by the case-assigner, as in (b) and (d). The optimal status of (a) shows that violating AGR is fatal for (b) and (c). Therefore, AGR must be higher ranked than CASEGOV. This argument relies on the assumption that CASEGOV in turn dominates SUBJECT and STAY, which will be shown true in the next tableau for STAY and in section 5.3.3 for SUBJECT.

T1. Declaratives with neutral subjects: **A**GR >> **C**ASE**G**OV

<rid(x), x=Luca, -, T=pres perf.>	-**T**/-**A**	**A**GR	**C.G.**	**S**UBJ	**S**TAY
a. ☞ **Luca**$_k$ **ha** [t$_k$ riso] *Luca has laughed*			*		*
b. -- **ha** [**Luca** riso]		*!		*	
c. **ha**$_i$ [**Luca**$_k$ t$_i$ [t$_k$ riso]]		*!			* *

The same constraint ranking selects the aux-to-comp structure in (c) as optimal when tense is non finite, provided that the non finite auxiliary is the assigner of nominative case (this is here simply assumed, but is later derived in section 5.5).

Tableau T2 provides the analysis for gerundives with canonical subjects (aux-to-comp in non-gerundive infinitivals is fully analogous). Since T is non-finite, -**T**/-**A**GR is now violated by any structure with agreement. Its higher rank relative to **A**GR, shown by the comparison between (e) and (a) which tie on all other constraints, makes structures with agreement such as the one in (e) suboptimal, restricting the search for the optimal candidate to the agreementless structures in (a) through (c), which are the agreementless counterparts of the structures just examined in T1. Since these structures violate all **A**GR, the selection of the optimal candidate is passed on to the lower constraints. The optimal status of (c) vs. (a) shows that **C**ASE**G**OV outranks **S**TAY, else (a) would surface as optimal. Similarly, the suboptimal status of (c) shows that **S**UBJECT outranks **S**TAY, else (b) and not (c) would be the optimal structure.

T2. Gerundive aux-to-comp with neutral subjects: -**T**/-**A**GR >> **A**GR,
{**C**ASE**G**OV ,**S**UBJECT}>>**S**TAY

<rid(x), x=Luca,--,T=comp.gerundive>	-**T**/-**A**.	**A**GR	**C.G.**	**S**UBJ³	**S**TAY
a. **Luca**$_k$ **avendo** [t$_k$ riso] *L. having laughed*		*	*!		*
b. -- **avendo** [**Luca** riso]		*		*!	
c. ☞ **avendo**$_i$ [**Luca**$_k$ t$_i$ [t$_k$ riso]]		*			* *
e. **Luca**$_k$ **avendo**+φ$_{agr}$ [t$_k$ riso]	*!		*		*

---

[3] I am assuming that the specifier of CP is not an A-position even when C⁰ is filled by a raising auxiliary. Therefore **S**UBJECT is sensitive only to the filling of the specIP position, which is filled in (a), (c) and (d), but not in (b).

The O.T. analysis achieves a unification of the analysis of declaratives and aux-to-comp structures. Aux-to-comp occurs in order to satisfy **C**ASE**G**OV whenever **A**GR does not block it. Rather than being governed by completely independent case-assignment requirements, as in Rizzi (1982), the different patterns are tied to the conflict between the agreement and case-assignment constraints, and to the lack of agreement in structures with non finite tense.

A similar intuition, relating word order to the relation between case-assignment and agreement, has been independently pursued by Longobardi (1996), who develops a minimalist theory of case where case features must be checked within the internal domain of the case checking head, hence under c-command, except when they are verified through agreement. As in the above O.T. analysis, Longobardi predicts the alternation between declaratives and gerundives examined here, and further observes how this alternation is just one case of a more general behavior described by Greenberg Universal 33 (1966,94) stating that "when number agreement between the noun and the verb is suspended and the rule is based on order, the case is always one in which the verb precedes and the verb is in the singular". This generalization is predicted by both analyses. In the OT analysis, the verb precedes the subject in order to case-assign it in accord with **C**ASE**G**OV when agreement is absent because T is non finite, or when **A**GR is lower ranked than **C**ASE**G**OV, as in the analysis of Standard Arabic in section 5.4.

Notice that Longobardi's minimalist analysis specifies one condition on case-checking, but then relies also on the additional option of checking case through agreement in the case of declaratives. No such addition is necessary in the O.T. approach, where **C**ASE**G**OV and **A**GR are left free to conflict with each other, and the grammatical structure is always the one that makes the overall structure optimal with respect to the given input and constraint hierarchy of evaluation.

A second result of the analysis in T2 above concerns the distinction between the structures in (b) and (c), which have the same linear order. This distinction was not relevant at the time of Rizzi's analysis, but it is relevant today after the advent of the VP-internal-subject hypothesis (Koopman & Sportiche 1988, 1991) and the proposals linking VSO order to case-assignment into specVP (Chung & McCloskey 1987, McCloskey 1991, Koopman and Sportiche 1991, Fassi Fehri 1993). These analyses raise the question whether in the gerundive and infinitival structures under discussion the subject occupies the specVP position. Rizzi's original argument for aux-to-comp

movement is not sufficient to settle the issue, because it is entirely based on the analysis of the complementizer-auxiliary alternation in conditional subjunctives. But gerundives and infinitivals do not show an alternation with C⁰, and therefore their subjects could in principle be case-assigned in specVP. The parallel word order of aux-to-comp and subjunctives could have different causes. The proposal presented here achieves the needed distinction, and confirms Rizzi's original aux-to-comp analysis.

5.3.1.1. Aux-to-comp in Subjunctives

The analysis of non-finite aux-to-comp in the previous section would not be complete without addressing the analysis of aux-to-comp in conditional subjunctive clauses, examined by Rizzi (1982). The OT analysis given for gerundives and infinitivals does not extend to those structures whose tense is finite and which present agreement in number and person, much like declaratives. However, conditionals are distinguished from indicative declaratives by the presence of an operator in their highest specifier. That this is the case is proven by the licensing of a negative polarity item (NPI) like *alcunché* 'anything' in object position. In the conditional in (19), the NPI is licensed by the operator, while in the declarative in (20) the NPI is unlicensed and therefore ungrammatical .

(19) [Op avesse Marco detto alcunché],, l'avrebbero azzittito.
       Had Mark said anything,, (they) would have silenced him.

(20) *Marco ha detto alcunché prima che lo azzittissero.
        Mark said anything before they silenced him.

The analysis of conditional subjunctives follows once we assume that the conditional operator is part of the input and is thus subject to PARSE. Grimshaw's (1993, 1995) analysis of English conditional inversion then extends to the Italian case. We have only to take into consideration the constraints introduced by Grimshaw (1993, 1995) in her analysis of English inversion, which include OBHD (Obligatory Heads), violated by non-overt heads, and OP-SPEC, requiring operators to occur in specifier position. These two constraints are vacuosly satisfied by the candidates of all the analyses seen so far, and their omission from the preceeding tableaus is thus unproblematic.

The derivation of conditional subjunctives is given in tableaus T3 and T4. Tableau T3 contains the candidates (a)-(d), each parsing the conditional operator just examined in

its highest available specifier position: in specCP in (a) and (b), and in specIP in (c) and (d). All candidates thus satisfy both PARSE and OP-SPEC. They also all satisfy -T/-AGR, since they involve finite tense, and SUBJECT, which is either filled by a subject or by the operator. These constraints are therefore omitted from the tableau.

Candidate (a) is suboptimal because the head of the CP is left empty, violating OBHD. This violation is fatal to (a), showing that OBHD outranks AGR, otherwise (a) would be the optimal candidate, since all other candidates fail AGR[4]. Of the remaining candidates, (c) and (d) are suboptimal relative to (b), because they violate STAY, which (b) satisfies. Candidate (b) is thus optimal.

T3. Conditional subjunctive with neutral subject: ObHd >> AGR

<rid(x),x=L.,-,T=compound subjun., Op>	ObHd	AGR	C.G.	SUBJ	STAY
a. Op e [**Luca**_k **avesse** [t_k riso]] *Luca had laughed*	*!		*		*
b. ☞ Op **avesse** [**Luca** riso]		*			
c. Op **avesse**_i [**Luca**_k t_i [t_k riso]]		*			*!*
d. Op **avesse** [[t_k riso] **Luca**_k]		*			*!

Let us now consider two additional candidates for the same competition: the candidate in (e), which does not parse the operator and therefore violates PARSE, and candidate (f), with the operator in adjoined position, violating OP-SPEC. Let them compete with the optimal form (b) of the preceding tableau T3. The constraint ObHd is satisfied by all three candidates and omitted. As tableau T4 shows, (e) and (f) are suboptimal only if PARSE and OP-SPEC are ranked above AGR, with which they conflict.

T4. Conditional Subjunctive with neutral subject: {PARSE, OP-SPEC} >> AGR

<rid(x), x=L., -,T=compound subjun, Op>	OP-SP	PARSE	AGR	C.G.	SUBJ	STAY
b. ☞ Op **avesse** [**Luca** riso]			*			
e. [**Luca**_k **avesse** [t_k riso]]		*!		*		*
f. **Luca**_k **avesse** [[t_k riso] Op]	*!			*		*

---

[4] Remember that agreement coindexes the agreement features to the nominative assignee. Candidate (b) thus fails AGR even if the subject is in specIP, because its agreement coindexation occurs under c-command, from C⁰ to specIP.

The optimal candidate (b) has no aux-to-comp. How are then the alternations between the auxiliary and the complementizer *if* that motivated Rizzi's original proposal accounted for? We only need to assume that the complementizer *if* is part of the input, and the optimal candidate changes accordingly. This assumption is plausible, since *if* is associated with a specific lexical conceptual structure, and therefore cannot be the kind of semantically empty complementizer freely generated by GEN discussed by Grimshaw in her work (1993, 1995).

Consider tableau T5 below. The complementizer is now overt, therefore **O**BH**D** is no longer violated. The ranking **A**GR>>**C**ASE**G**OV, motivated in the previous section, now selects structure (a) as optimal, because **A**GR is violated by (b), (c) and (d) but not by (a). (The tableau does not contain **P**ARSE, and **O** P-**S**PEC, whose role in the analysis is identical to that they had in the previous case. The constraint -**T**∕-**A**GR is also omitted because it is always vacuously satisfied).

T5. Conditional subjunctive with neutral subject and Cº: **A**GR >> **C**ASE**G**OV

<rid(x),x=L.,-,T=compound subj,Cº=se,Op>	ObHd	AGR	C.G.	SUBJ	STAY
a. ☞ Op se [**Luca**ₖ **avesse** [tₖ riso]] *if Luca had laughed*			*		*
b. Op se [-- **avesse** [**Luca** riso]]		*!		*	
c. Op se [**avesse**ᵢ [**Luca**ₖ tᵢ [tₖ riso]]		*!			**
d. Op se [-- **avesse** [[tₖ riso]**Luca**ₖ]]		*!		*	*

5.3.1.2. Lack of Complementizers in Gerundives

As mentioned earlier, unlike conditional subjunctives, gerundives and infinitivals do not show an alternation between aux-to-comp and an overt complementizer. This, too, follows from the analysis presented here. But first let me summarize the relevant facts.

Conditional subjunctives allow for the complementizer alternation illustrated in (21) below and just analyzed in tableaus T3, T4 and T5 above.

(21a) With Cº: Se Luca avesse riso,... *If Luca had laughed,...*
(21b) Without Cº: Avesse Luca riso,... *Had Luca laughed,...*

In contrast, under no syntactic context an infinitive or gerundive complement with an overt subject may be introduced by an overt complementizer, independently of the position of the subject. For instance, a verb like *ritenere* (believe), may take infinitival complements with overt subjects, but these can only occur in complementizerless aux-to-comp structures, as in (22).

(22) Ritengo [aver Luca parlato abbastanza]. *I believe Luca spoke enough.*

In particular, an overt complementizer such as *di* 'of' is ungrammatical independently of the position of the subject, as shown in (23a) and (23b), although the same complementizer can introduce subjectless infinitival complements, as shown in (24).

(23a) *Ritengo di aver Luca parlato abbastanza.
(23b) *Ritengo di Luca aver parlato abbastanza.
(24) Ritengo di aver parlato abbastanza. I believe of to-have spoken enough. *I believe I spoke enough.*

Following a similar proposal in Grimshaw (1993, 1995), I maintain that the difference between conditional subjunctives and gerundives and infinitivals with overt subjects follows from the role of the complementizer: the complementizer *se* 'if' used in the conditional subjunctive has its own semantic import, and is thus part of the input. The subjunctive conditionals in (30a) and (30b), repeated below, are therefore the optimal structures of two distinct inputs, as we saw in the previous section.

(25) inputs without Cº: Avesse Luca riso. (see tableaus T3 and T4) *Had Luca laughed.*
(26) inputs with Cº=se: Se Luca avesse riso. (see tableau T5) *If Luca had laughed.*

In contrast, the complementizer *di* contributes no semantic content and is freely supplied by GEN. Structures with *di* are thus in competition with structures without *di*. In the tableau below, structures (a)-(c) lacking the complementizer *di*, are contrasted with those in (a') and (b'), with the complementizer *di*. No such correspondent exists for

(c), since C⁰ is already occupied by the auxiliary. The optimal candidate is the aux-to-comp structure, because though it violates **S**TAY the most, it satisfies the higher ranked constraints **C**ASE**G**OV, failed by (a) and (a'), and **S**UBJECT, failed by (b) and (b'). The lack of a complementizer alternation for gerundives and infinitivals with subjects is thus derived.

T6. Non-finite aux-to-comp with neutral subjects and C⁰:

    {**S**UBJECT, **C**ASE**G**OV} >>**S**TAY

<rid(x), x=Luca,--, T=comp. non fin.>	ObHd	-T/-A	AGR	C.G.	SUBJ	STAY
a. [**Luca**_k **aver** [t_k riso]] *Luca to-have laughed*			*	*!		*
b. [-- **aver** [**Luca** riso]			*		*!	
c. ☞ [**aver**_i [**Luca**_k t_i [t_k riso]]]			*			**
a'. di [**Luca**_k **aver** [t_k riso]]			*	*!		*
b'. di [-- **aver** [**Luca** riso]]			*		*!	

       The above analyses follow closely the analysis given in Grimshaw (1993,1995) for optional *that* in extraction-contexts and for the alternation between complementizer and auxiliary inversion in conditionals. They thus constitute independent evidence for Grimshaw's analysis and are themselves strengthened in return by Grimshaw's independent analysis.

5.3.2. Subject Inversion

     Finally, let us look at subject inversion. As we know from preceding chapters, when the subject is focus-marked, it occurs in a rightward VP-adjoined A' position, as in candidate (d) below. Nominative case is assigned to the highest A-position of the subject chain, and therefore it is directly assigned to the subject trace in specVP. We already know that the availability of structural focus in Italian is due to the higher rank of **A**LIGN**F**OCUS relative to **S**UBJECT, which is also sufficient to account for the suboptimal status of the aux-to-comp structure in (c) below, since on all other constraints (c) performs like or worse than (d).

     The suboptimal status of (b) tells us that **A**LIGN**F**OCUS also outranks **S**TAY, otherwise (b) would win over (d), because these are the constraints on which (b) and (d) conflict. This result is consistent with and confirms on independent grounds the higher ranking

of **A**LIGN**F**OCUS over **S**UBJECT and of **S**UBJECT over **S**TAY, which by transitivity entails precisely the higher ranking of **A**LIGN**F**OCUS over **S**TAY.

     The suboptimal status of (a) tells us that **A**LIGN**F**OCUS also outranks **A**GR. In fact, were **A**GR to outrank **A**LIGN**F**OCUS, (d) would lose to (a), given that we already know that the remaining constraints **C**ASE**G**OV and **S**TAY, violated by (a), are ranked below **A**GR.

T7. Inversion of focused subjects: **A**LIGN**F**OCUS >> {**S**UBJECT, **A**GR, **C**ASE**G**OV}

<rid(x), x=Luca, x=focus, T=pres.perf.>	A. F.	-T/-A	AGR	C.G.	SUBJ	STAY
a. [**Luca**_k **ha** [t_k riso]] *Luca to-have laughed*	*!			*		*
b. [-- **ha** [**Luca** riso]	*!		*	*		
c. [**ha**_i [**Luca**_k t_i [t_k riso]]]	*!		*			**
d. ☞ [-- **ha** [[t_k riso] Luca_k]]			*		*	*

     With the analysis of subject inversion, the goal of a unified analysis of case-patterns in declaratives, aux-to-comp and inversion structures has been met. This result shows how once the constraints of grammar are allowed to interact, the explanation of each single component of the grammar is greatly simplified. Subject inversion is exemplary in this respect: once the constraint on focus is allowed to interact with the constraint governing case-assignment, the apparently deviant case-pattern found in inversion-structures receives a principled explanation with no recourse to a dummy *pro_expl* element, nor to structure specific case-assignment devices.

5.3.3. Transitives

     All the tableaus analyzed so far extend straightforwardly to inputs with transitive verbs, where the verb assigns accusative case to the object. If the object is raised to an A'-position, the case-assignee is the trace left behind. However, transitives make available some additional candidates which have not been yet considered. They are examined in this section.

     A candidate which is legitimate only in association with inputs with transitive verbs is the one where the subject remains in specVP, where it is assigned nominative case, and the object raises into specIP position, where it is assigned accusative case. This candidate, listed always under (e) in the following tableaus, is always suboptimal.

The first case concerns declaratives. As we know from the derivation of intransitives, the optimal candidate is the one with a specIP subject in (a). In (e), agreement occurs with the nominative subject in specVP, under a non spec-head configuration. Therefore, candidate (e) fails the higher ranked constraint AGR, and is thus suboptimal.

T8. Transitive declaratives: AGR >> CASEGOV

<ved(x,y),(x=Luca,y=Ugo),--,T=pres.perf.>	AGR	C.G.	SUBJ	STAY
a. ☞ [**Luca**$_{nom,k}$ **ha** [t$_k$ visto Ugo$_{acc}$]] *Luca have seen Ugo*		*		*
e. [Ugo$_{acc,k}$ **ha** [**Luca**$_{nom}$ visto t$_k$]]	*!			*

Candidate (e) loses also against the aux-to-comp optimal structure of gerundives and infinitivals. Here AGR is not a factor, since it is violated by both structures by pressure from -**T**/-**A**GR. However, while the aux-to-comp structure satisfies **C**ASE**G**OV, the competitor in (e) fails it, because the accusative case is not assigned under proper government, and given the higher rank of **C**ASE**G**OV with respect to **S**TAY, (e) is suboptimal. Nor can the violation of **C**ASE**G**OV be eliminated by raising the past participle on top of the object, as in (f), since this movement would move through the I⁰ head, and thus violate the **E**CP constraint introduced in chapter 3. This violation is in addition to the violations of AGR and STAY, which (f) shares with (c), and therefore is sufficient to make (f) suboptimal independently of the ranking of the **E**CP constraint.

T9. Transitive gerundives: **C**ASE**G**OV >> **S**TAY

<ved(x,y),(x=Luca,y=Ugo),--,T=comp. gerundive>	-T/-A	AGR	C.G.	SUBJ	STAY	ECP
c. ☞ avendo$_i$ [**Luca**$_{nom,k}$ t$_i$ [t$_k$ visto Ugo$_{acc}$]] *having Luca seen Ugo*		*			* *	
e. [Ugo$_{acc,k}$ **avendo** [**Luca**$_{nom}$ visto t$_k$]]		*	*!		*	
f. visto$_s$ [Ugo$_{acc,k}$ **avendo** [**Luca**$_{nom}$ t$_s$ t$_k$]]		*			* *	*!

Finally, we have to consider the competition between (e) and the optimal structure of postverbal focused subjects, shown in (d) below. Here the competing candidate (e) provides a filler for the specIP position, satisfying **S**UBJECT, but the raised object no

longer gets case under proper government, failing **C**ASE**G**OV. The higher rank of **C**ASE**G**OV vs. **S**UBJECT thus accounts for the suboptimal status of (e).

T10. Focused subjects in transitive declaratives: **C**ASE**G**OV>>**S**UBJECT

<ved(x,y),(x=Luca,y=Ugo),--,T=pres.perf.>	AGR	C.G.	SUBJ	STAY
d. ☞ [-- **ha** [t$_{nom,k}$ visto Ugo$_{acc}$] **Luca**$_k$] *Luca have seen Ugo*	*		*	*
e. [Ugo$_{acc,i}$ **ha** [t$_{nom,k}$ visto t$_i$] **Luca**$_k$]	*	*!		*

The above analyses can easily be extended to the conditional subjunctive structures previously examined, with no change in the suboptimal status of candidate (e).

5.3.4. Null Subjects

The above analyses did not consider candidates with null subjects. Their analysis casewise is parallel to their agreement analysis, provided in section 4.4.2. The thematic role associated with the unparsed nominal argument in input is also associated with its referential role, and must be assigned case to satisfy the case filter. The thematic role is free to percolate to the IP node and the case coindexation that it establishes with the case-assigner depends on its final position in the extended projection. For example, compare the null subject candidate in (b) with the one having an overt subject in (a) for an input with finite tense and a topic-referring subject. The unassigned theta role associated with the referential role of the input's thematic subject percolates in the extended projection until it reaches the IP node. As explained in section 4.4.2, the coindexation between I⁰ and the teta role in IP satisfies AGR, but it does not satisfy **C**ASE**G**OV, because the theta role is not properly governed by the auxiliary in I⁰. The null subject candidate is thus equivalent to candidates with overt preverbal subjects. Its optimal status follows from the higher ranking of **D**ROP**T**OPIC relative to **S**UBJECT, as already seen in chapter 2.

T11. Declaratives with neutral subjects: **D**ROP**T**OPIC >> {**P**ARSE, **S**UBJECT}

| <rid(x), x=Luca$_{top}$, -,T=pres. perf.>	**D**R.**T**OP	**P**ARSE	AGR	C.G.	**S**UBJ	**S**TAY
a. **Luca**$_k$ **ha** [t$_k$ riso] *Luca has l aughed*	*!			*		*
b. ☞ -- **ha** [-- riso]		*		*	*	

5.3.5. Summary

This section provided a unified analysis for the complex pattern of case-assignment configurations displayed by Italian, thus addressing one of the goals of this chapter. The analysis appeals to very simple and known constraints, such as case-assignment under local proper government, spec-head agreement in finite tense contexts and lack of agreement in infinitivals. With these notions and by exploiting constraint interaction, it was possible to derive case-assignment alternations in declaratives, and aux-to-comp constructions. The analysis was then extended to subject inversion structures, to the complementizer/inversion alternation in conditionals, and to the lack of a similar alternation in gerundives and infinitivals. These latter analyses also provided independent evidence for comparable analyses proposed in Grimshaw (1993, 1995) for contentful and contentless complementizers in English and for the alternations they give rise to.

More importantly, this analysis showed how the position of the subject is a function of the overall harmony of the clause relative to the constraint-hierarchy of the language, depending on the ranking of specific constraints relative to each other, as well as the particular input at issue.

The final ranking emerging from the analyses in this and the previous chapter identifying (a portion of) the grammar of Italian follows below:

(27) Italian.
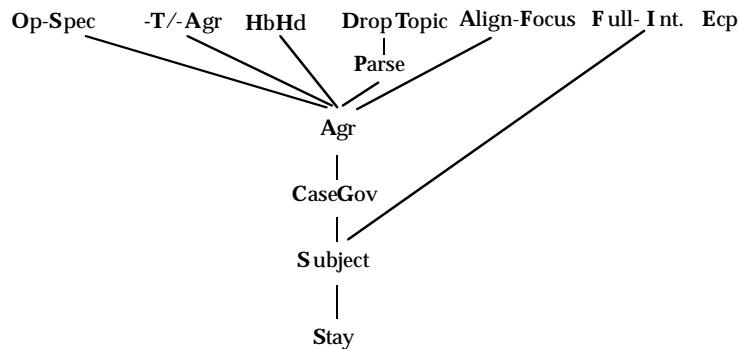
5.4. Case Assignment in Arabic Declaratives

Under Optimality Theory, crosslinguistic typology arises from constraint-reranking. This section shows how the Arabic basic pattern of nominative and accusative assignment follows from the reranking of AGR and STAY and from their interaction with CASEGOV and FULL-INT.

Arabic shows a complex pattern of case-assignment to subjects which depends on the location of the subject relative to the verb, and on the matrix vs. complement status of the clause. The basic generalizations are illustrated below, as described in Fassi Fehri's (1993) study of Arabic Syntax, and Khalaily's (1993) analysis of Standard Arabic complementizers.

In matrix clauses, the subject is always nominative, independently of its position. Agreement is in person, gender and number with preverbal-subjects and only in person and gender with postverbal-subjects, as shown in (28).

(28a) SpecVP subjects: Darab-at/*-na   ?al-banaat-u   Zayd-an.
                        Hit-pst-3fs/3fp   the-girls-Nom   Zayd-Acc.
                        The girls hit Zayd.

(28b) SpecIP subjects: L-banaat-u   Darab-na/*-at   l-?awlaad-a.
                        The-girls-Nom hit-pst-3fp/3fs   the-boys-Acc.
                        The girls hit the boys.

In complement clauses introduced by the complementizer *?anna*, preverbal subjects are in the accusative, postverbal subjects are in the nominative and an obligatory expletive *hu* occurs in preverbal position. As in matrix clauses, agreement is in person, gender and number with preverbal-subjects and only in person and gender with postverbal-subjects.

(29a) SpecVP subjects: ... ?anna hu   Darab-at l-banaat-u   l?awlaad-a.
                         ... That it-3ms hit-pst-3fs the-girls-Nom the-boys-Acc.
                         ... *That the girls hit the boys.*

(29b) SpecIP subjects: ... ?anna l-banaat-a   Darab-na/*-at   l?awlaad-a.
                         ... That the-girls-Acc   hit-pst-3fp/3fs the-boys-Acc.
                         ... *That the girls hit the boys.*

The agreement pattern of Standard Arabic was already analyzed in chapter 4. What interests us here is only that Standard Arabic has agreement, and therefore we expect the interaction between AGR and CASEGOV to play an important role. Here, I will show that the specVP position of canonical subjects arises when AGR and SUBJECT are reranked lower than CASEGOV and STAY.

Moreover, Standard Arabic casts light on the rank of FULL-INT with respect to CASEGOV. Both Italian and Standard Arabic rank it higher than SUBJECT, and therefore lack expletive subjects in matrix declaratives. However, expletive subjects do arise in Standard Arabic in subordinate clauses introduced by the case assigning complementizer *?anna*. They will be shown to follow from the higher rank taken by CASEGOV over FULL-INT. The same inference cannot be made in Italian because it lacks case-assigning complementizers.

In the following analysis, I will omit the constraint -T/-AGR, which is vacuously satisfied by all candidates, which have all finite tense. As before, I will assume that nominative case is assigned by Tº, and accusative case by Vº. In accord with Fassi Fehri (1993), I also assume that the verb moves into Iº, where it linearly follows a subject in specIP but precedes a subject in specVP position.

5.4.1. Arabic Nominative Postverbal Subjects

Tableau T12 below derives the specVP position of matrix subjects. This is due to the higher ranking that Standard Arabic assigns to CASEGOV and STAY relative to AGR and SUBJECT.

Consider the candidates in T12 below. Candidate (a) has the subject in specVP and does not realize the specIP position. Candidate (b) raises the subject into specIP. Candidate (c) realizes specIP through the expletive element *hu*. Finally, candidate (e) realizes specIP by raising the object into this position (the letters indexing the candidates are the same as for the corresponding candidates considered in the analysis of Italian). All candidates violate CASEGOV at least once, due to accusative case-assignment by Vº in Iº to the object, which never occurs under proper government because Vº is in Iº position, too high to satisfy CASEGOV. In the following discussion I will omit references to this violation, which is nevertheless represented in the tableus.

The optimal syntactic analysis of matrix canonical subjects is in (a). The contrast between (a) and (b) shows that SUBJECT and AGR are lower ranked than either CASEGOV or STAY, else (b) would be the optimal candidate. The rank of AGR will remain only partially determined, while SUBJECT will be shown to be ranked lower than both constraints. In fact, the higher rank of STAY with respect to SUBJECT is already apparent from the contrast between (a) and (e), since under the reverse ranking (e) would be optimal.

Finally, the suboptimal status of (c) shows that SUBJECT is also ranked lower than FULL-INT, else (c) would override (a) and be selected as optimal.

T12. Matrix postverbal subjects: {STAY, FULL INT} >> SUBJECT
[CASEGOV or STAY] >>AGR

<drb(x,y), (x=banaat, y=Zayd), -- , T=past>	C.G.	STAY	F. I.	SUBJ	AGR
a. ☞ -- [V-Tº]i [vp Snom ti Oacc]	*	*		*	*
b. Sk,nom [V-Tº]i [vp tk ti Oacc]	* *!	* *			
c. hu [V-Tº]i [vp Snom ti Oacc]	*	*	*!		*
e. Os,acc [V-Tº]i [vp Snom ti ts]	*	* *!			*

In complement clauses introduced by the case-assigner *?anna*, the grammatical form shows a nominative-marked subject in postverbal specVP position, with an accusative-marked expletive in specIP, as in candidate (c). The expletive picks up the accusative case assigned by Cº, in accord with Fassi Fehri's (1993) analysis of Arabic expletives as case-catchers[5] (the expletive is assigned its own case from the complementizer and therefore need not be coindexed with the subject).

The comparison of (c) with (a) shows that CASEGOV outranks FULL-INT. In fact, we already know from the analysis in T12 that FULL-INT outranks SUBJECT, and therefore the violation of SUBJECT cannot be the cause of the suboptimal status of (a). The only other violation of (a) unmatched by an analogous violation in (c) is that of CASEGOV. Candidate (a) violates CASEGOV one more time than (c) because the case-assigner *?anna* is necessarily coindexed with the subject in specVP and thus does not assign its case under proper government (I am assuming that stacked case-assignment is

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[5] Arabic expletives inflect for number and gender, but not for case. For the expletive *hu* in accusative contexts, see chapter 2 of Fessi Fehri's book. For a rare example of expletive *hu* in nominative contexts, see footnote 51, p.94.

unproblematic: the morphologically realized case is the one assigned from the closestcase-assigner). The suboptimal status of (a) then shows that CASEGOV outranks FULL-INT, which is violated by (c) but satisfied by (a). Moreover, since FULL-INT outranks SUBJECT, CASEGOV MUST outrank SUBJECT as well, confirming the previously anticipated lower rank of SUBJECT relative to both CASEGOV and STAY.

The higher rank of CASEGOV relative to FULL-INT is also sufficient to derive the suboptimal status of (e), leaving undetermined the rank of STAY relative to FULL-INT. The same ranking, together with the lower rank of AGR relative to one or both of the constraints CASEGOV and STAY also explains the suboptimal status of (b), which violates both CASEGOV and STAY.

T13. Complement postverbal subjects: CASEGOV >> {FULL INT, SUBJECT},
[CASEGOV or STAY] >>AGR

<drb(x,y), (x=banaat, y=Zayd), --,T=past>	C.G.	STAY	F. I.	SUBJ	AGR
a. C° -- [V-I°]$_i$ [$_{vp}$ S$_{nom, acc}$ t$_i$ O$_{acc}$]	**!	*		*	*
b. C° S$_{k,acc,nom}$ [V-I°]$_i$ [$_{vp}$ t$_k$ t$_i$ O$_{acc}$]	**!	**			
c. ☞ C° hu$_{acc}$ [V-I°]$_i$ [$_{vp}$ S$_{nom}$ t$_i$ O$_{acc}$]	*	*	*		*
e. C° O$_{s,acc}$ [V-T°]$_i$ [$_{vp}$ S$_{nom}$ t$_i$ t$_s$]	**!	**			*

A candidate not considered in tableau T14 is the one with an expletive in specVP:

(30) C° S$_{acc}$ [V-I°]$_i$ [$_{vp}$ hu t$_i$ O$_{acc}$].

However, (30) is not a legitimate candidate because it violates Local Theta-Assignment. In fact, specVP should be occupied by the trace of the subject. Substituting the trace with the expletive amounts to preventing theta-assignment to the subject DP.

Before turning to preverbal subjects, it's worth examining complement-clauses introduced by the complementizer *?an* (that), which unlike *?anna* does not assign accusative case. As expected, no expletive occurs, confirming the analysis just given.

(31) ?araad-at   Yasmin-u [**?an** ta-Drib-a   l-banaat-u   Zayd-an].
   Wanted-3fs Y.-Nom   that 3fs-hit-subj the-girls-Nom Z.-Acc.
   Yasmin wanted that the girls hit Zayd.

The subordinate clause of (31) is analyzed in tableau T14 below, which parallels that of matrix clauses in T12 above. Here too, the lower rank of SUBJECT and AGR relative to CASEGOV and STAY explains the suboptimal status of (b) and (e), while the lower rank of SUBJECT relative to FULL-INT explains the suboptimal status of (c).

T14. Complement postverbal subjects with *?an* : {STAY, FULL INT} >> SUBJECT,
[CASEGOV or STAY] >>AGR

<drb(x,y), (x=banaat, y=Zayd), -- ,T=past>	C.G.	STAY	F. I.	SUBJ	AGR
a. ☞ C -- [V-I°]$_i$ [$_{vp}$ S$_{nom}$ t$_i$ O$_{acc}$]	*	*		*	*
b. C S$_{k,nom}$ [V-I°]$_i$ [$_{vp}$ t$_k$ t$_i$ O$_{acc}$]	**!	**			
c. C hu [V-I°]$_i$ [$_{vp}$ S$_{nom}$ t$_i$ O$_{acc}$]	*	*	*!		*
e. C O$_{s,acc}$ [V-T°]$_i$ [$_{vp}$ S$_{nom}$ t$_i$ t$_s$]	*	**!			*

5.4.1.1. Arabic Preverbal Subjects

How do structures with preverbal subjects come about? I maintain that Standard Arabic preverbal subjects are functionally marked, and are required to occur in preverbal position by a constraint ALIGN-F demanding leftward alignment of functionally marked constituents. This is in line with the observation by Fassi Fehri (1993) and by traditional Arabic grammarians (Khalaily p.c.), that preverbal subjects are not "pragmatically neutral" the way postverbal subjects are. There is ample evidence of the marked interpretation associated with preverbal subjects, even if it remains difficult to pinpoint its precise character, perhaps because more than one function is associated with this position. Fassi Fehri discusses the following two semantic differences in relation to the unmarked postverbal subjects (all examples below are provided in their original form and translation from Fassi Fehri, 1993):

(i) Contrastive Focus. According to Fassi Fehri (1993, ex129, p57), preverbal pronominals are "licensed by focus interpretation", as in the example below:

(32) Huwa jaa?-a.
   He   came.
   (It is) he (who) came.

(ii) Specific Interpretation. Unlike postverbal subjects, preverbal subjects cannot be pure non-specific indefinites. Thus, the following preverbal subject must refer to a specific cow (Fassi Fehri (1993), ex31 p28):

(33) Baqarat-un   takallam-at.
     Cow-nom   spoke-3sf.
     A cow has spoken.

I will simply assume that arguments marked as *f* are required by ALIGN-F to fill the specIP position, where *f* stand for a marker for specificity or contrastive focus. This analysis of the preverbal/postverbal asymmetry is in line with the analysis of Italian focused postverbal subjects developed in chapter 3 and in Grimshaw and Samek-Lodovici (1995a,b). Notice that similar assumptions would be needed also within a minimalist approach, where strong vs. weak features would have to be associated to distinct discourse functions in order to account for the preverbal/postverbal subject alternation.

Let us start the analysis of preverbal subjects with matrix clauses. The optimal candidate (b) in T15 below, the only one with the subject in specIP, satisfies ALIGN-F, but violates CASEGOV twice, because both the subject and the object are not case assigned under proper government. Moreover, it violates STAY twice, because both the subject and the verb move. It follows that ALIGN-F outranks both CASEGOV and STAY, else candidate (a) would be optimal, since it violates CASEGOV and STAY only once. The same ranking is sufficient to explain the suboptimal status of candidates (c) and (e) as well. (The status of SUBJECT and AGR is irrelevant in the comparison, since they have been shown to be lower ranked than one or both of the constraints CASEGOV and STAY).

T15. Matrix preverbal subjects: ALIGN-F >> {CASEGOV , STAY}

| $<$drb(x,y), (x=banaat, y=Zayd), -- ,T=past$>$	AL-F	C.G.	STAY	F. I.	SUBJ	AGR
a. -- [V-I⁰]i [vp Snom ti Oacc]	*!	*	*		*	*
b. ☞ Sk,nom [V-I⁰]i [vp tk ti Oacc]		**	**			
c. hu [V-I⁰]i [vp Snom ti Oacc]	*!	*	*	*		*
e. Os,acc [V-T⁰]i [vp Snom ti ts]	*!	*	**			*

Turning to clauses introduced by the accusative-assigner C⁰ *?anna*, once again structures (a), (c), and (e) are suboptimal because they violate the constraint ALIGN-F. Candidates (c) fares better than (b) relative to CASEGOV and STAY, but these constraints are ranked lower than ALIGN-F, which (b) violates. Likewise, (a) fares better than (b) on STAY, but it too violates the higher ranked constraint ALIGN-F. Finally, (e) is harmonically bound by the optimal (b), since it violates the same constraints violated by (b), plus ALIGN-F and AGR .

T16. Complement preverbal subjects: ALIGN-F>>CASEGOV

$<$drb(x,y), (x=banaat, y=Zayd), -- ,T=past$>$	AL-F	C.G.	STAY	F. I.	SUBJ	AGR
a. C⁰ -- [V-I⁰]i [vp Snom,acc ti Oacc]	*!	*	*		*	*
b. ☞ C⁰ Sk,acc,nom [V-I⁰]i [vp tk ti Oacc]		*	**			
c. C⁰ huacc [V-I⁰]i [vp Snom ti Oacc]	*!		*	*		*
e. C⁰ Os,acc [V-T⁰]i [vp Snom ti ts]	*!	*	**			*

The ranking relations deriving the pattern of Standard Arabic are summarized in the following chart.

(34) Standard Arabic:
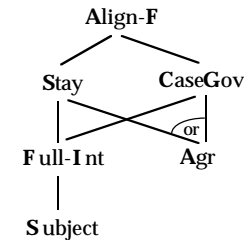
5.4.2. Summary

Concluding the analysis of postverbal subjects in Arabic, let me stress its most interesting aspects.

First of all it provides another case where crosslinguistic variation follows from the reranking of independently motivated UG constraints. In particular, the reranking of CASEGOV and STAY relative to AGR and SUBJECT affects the position of canonical subjects in matrix and subordinate clauses in Italian and Standard Arabic. The analysis

also supports the constraint on case-assignment proposed in this chapter. In particular, CASEGOV determines the specIP expletive of complements introduced by *?anna* in Standard Arabic and, possibly, also the specVP position of Standard Arabic subjects, in case STAY were eventually shown to be lower ranked than AGR.

The analysis also provides us with a case where expletives are motivated by case-assignment requirements rather than by the need to structurally realize the subject position on pressure of SUBJECT. In fact, this latter kind of expletive is ungrammatical in Arabic, as shows the suboptimal status of the expletive candidate (c) in matrix clauses (see tableau T12). This difference in the grammatical role of expletives is expected under an optimality framework. Like epenthesis in phonology, expletives are possible whenever a constraint that can be satisfied through an expletive element is ranked higher than FULL-INT, and more harmonic structures are not available. The crosslinguistic distribution of expletives is thus governed by the grammar of each language. Predictably, languages where FULL-INT is dominated by different constraints use expletives in different syntactic contexts.

5.5. Infinitival Clauses with Overt Subjects Crosslinguistically

In the previous two sections, we saw how differences in the syntax of declarative structures in Italian and Standard Arabic follow from the reranking of UG constraints. The goal of this section is to further support this claim by showing how the reranking of the same constraints also determines crosslinguistic variation in the syntax of infinitival clauses with overt subjects. In particular, the analysis will show how the following three infinitival structures from Italian, Portuguese and English are distinct optimal forms of the same underlying input, and that the differences with respect to agreement and to the source of abstract case follow from the grammar of each language.[6]

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[6] I am here abstracting from issues of productivity, which distinguish the less productive Portuguese and Italian structures from the English one. On this issue, see the insights of Raposo (1987) and Rizzi (1982).

(35a)   Ritengo [**aver Gianni** giá approvato la proposta].
I believe [to-have John already approved the proposal].
I believe John to have already approved the proposal.

(35b)   E impossivel [**o João ter** aprovado essa proposta].
(It) is impossible the John to-have-3sg approved that proposal.
It is impossible that John has approved that proposal.

(35c)   [**For John** to have approved the proposal] would have been insane.

The input shared by the above infinitival structures specifies that T is non finite. In the analysis of Italian I assumed that non finite T of gerundives and infinitivals could assign nominative case. Here, I would like to analyze this case-assignment capability as determined by grammar, and thus as a result of competition. Let us assume that the nominative case feature is actually provided by GEN. This can be associated to the non finite tense operator T of the infinitival, but it can also be associated to other elements. In particular, it can be associated to an expletive preposition in C⁰. Therefore, among the possible candidates for an input with a thematic subject and non finite tense like (36) are those in (37a) and (37b). In (37a), the case feature is associated with the non-finite T in I⁰, providing the auxiliary with case-assignment power. In (37b), the case feature is associated to the preposition P in C⁰, which thus functions as case assigner.[7]

(36) $<V(x), x=N, -- , T=$ compound non finite$>$
(37a) DP_k Aux_{case} [t_k PastParticiple].
(37b) [$_{cp}$ P_{case} [DP_k Aux [t_k PastParticiple]]].

For each structure in (37) there are two correspondent candidates, one with auxiliary agreement and one without. Moreover, the subject may raise to specIP, as in all structures in (37), but it may also remain in specVP. Furthermore, the auxiliary may itself raise to C⁰. All the possible relevant candidates are shown below, starting with

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[7] Here, I do not examine the consequences of letting GEN always freely assign a case feature, including cases where the input has a finite tense operator. Notice however that such an option is compatible with the derivations made so far, since in structures with finite tense the optional additional case features would create additional violations of CASEGOV, FULL-INT or OBHD except when assigned to T⁰, hence with no effect on the selection of the optimal structure.

those lacking agreement. Presence of agreement is represented by an underlined auxiliary.

$$(38a) \quad\quad - \quad Aux_{case} \quad [\, DP_k \quad PastParticiple \,].$$

$$(38b) \quad\quad DP_k \quad Aux_{case} \quad [\, t_k \quad PastParticiple \,].$$

$$(38c) \quad [_{cp} \ Aux_{i,case} \ [DP_k \quad t_i \quad [\, t_k \quad PastParticiple \,]]].$$

$$(38d) \quad [_{cp} \ P_{case} \quad [\ -- \quad Aux \quad [\, DP_k \quad PastParticiple \,]]].$$

$$(38e) \quad [_{cp} \ P_{case} \quad [\, DP_k \ Aux \quad [\, t_k \quad PastParticiple \,]]].$$

$$(38f) \quad\quad - \quad \underline{Aux}_{case} \quad [\, DP_k \quad PastParticiple \,].$$

$$(38g) \quad\quad DP_k \quad \underline{Aux}_{case} \quad [\, t_k \quad PastParticiple \,].$$

$$(38h) \quad [_{cp} \ \underline{Aux}_{i,case} \ [DP_k \quad t_i \quad [\, t_k \quad PastParticiple \,]]].$$

$$(38i) \quad [_{cp} \ P_{case} \quad [\ -- \quad \underline{Aux} \quad [\, DP_k \quad PastParticiple \,]]].$$

$$(38j) \quad [_{cp} \ P_{case} \quad [\, DP_k \ \underline{Aux} \quad [\, t_k \quad PastParticiple \,]]].$$

What structure is eventually selected as optimal should follow from the grammar of each specific language, where each grammar is a reranking of the same UG constraints. In particular, the grammar of Italian should select (38c) as optimal, i.e. aux-to-comp structures lacking agreement, as already partially shown in section 5.3. The grammar of Portuguese should select as optimal (38g), with an agreeing infinitival auxiliary and a preverbal subject. And the grammar of English should select (38e), with case assigned to the specIP subject from a preposition in C⁰.

Let us start with Italian, whose derivation is shown in tableau T17. The suboptimal status of candidates (a) and (b) in relation to the optimal candidate aux-to-comp structure in (c) has been examined in section 5.3, and follows from the higher rank of CASEGOV and SUBJECT vs. STAY. The agreementfull counterparts of (a)-(c) in (f)-(h) are suboptimal because they violate -T/-AGR, which (c) satisfies. In fact, T/-AGR is ranked higher than AGR, as was shown already in section 5.3, and AGR is the highest constraint violated by (c). In particular, it is this ranking that eliminates candidate (g), and which we will find reversed in Portuguese grammar, where (g) is the optimal candidate.

T17. Infinitivals with overt subjects in Italian.

⟨V(x), x=N, -,T=compound non finite⟩	F.I.	-T/-A	AGR	C.G.	SUBJ	STAY
a. -- Aux_{case} [DP_k PP]			*		*!	
b. DP_k Aux_{case} [t_k PP]			*	*!		*
c. ☞ [_{cp} Aux_{i,case} [DP_k t_i [t_k PP]]]			*			* *
d. [_{cp} P_{case} [-- Aux [DP_k PP]]]	*!		*	*	*	
e. [_{cp} P_{case} [DP_k Aux [t_k PP]]]	*!		*			*
f. -- Aux_{case} [DP_k PP]		*!	*		*	
g. DP_k Aux_{case} [t_k PP]		*!		*		*
h. [_{cp} Aux_{i,case} [DP_k t_i [t_k PP]]]		*!	*			* *
i. [_{cp} P_{case} [-- Aux [DP_k PP]]]	*!	*	*	*	*	
j. [_{cp} P_{case} [DP_k Aux [t_k PP]]]	*!	*				*

The remaining suboptimal candidates (d), (e), (i) and (j) all involve a preposition in C⁰. This preposition is acting as an expletive, providing a head for an otherwise empty position, much like *do* does in Grimshaw's (1995) analysis of English do-support (see also Brisson (1994) for an analysis of *of-insertion* based on comparable assumptions). The intrinsic lexical conceptual structure of the preposition is not interpreted, violating FULL-INT. While the suboptimal status of (d), (i) and (j) could be due to their other violations, failing FULL-INT is the only violation responsible for the suboptimal status of (e). In fact, a comparison between (e) and (c) shows that FULL-INT is ranked higher than STAY, else (e) would beat (c), which violates STAY one less time. Precisely the reranking of these two constraints will be responsible for deriving (e) as the optimal candidate selected by English.

This concludes the discussion of Italian. We have seen how the suboptimal status of most competing candidates follows from ranking relations that have been independently motivated in the analysis of Italian in section 5.3, and which are now confirmed by this derivation. The remaining candidates were eliminated because of their failing FULL-INT, which was shown to be higher ranked than STAY. This too confirms a previously found ranking. In fact, FULL-INT was shown to outrank SUBJECT in chapter 2, and SUBJECT was shown to outrank STAY in section 5.3, and therefore by transitivity FULL-INT could only outrank STAY.

Let us now turn to Portuguese, which selects as optimal the infinitival construction with agreement and specIP subject in (g). The new optimal form follows from the reranking of AGR over -T/-AGR. Only under this ranking can candidate (g) beat the agreementless candidate (b), which otherwise shares the same set of violations. The same ranking is responsible for the suboptimal status of the agreementless aux-to-comp candidate in (c), which is optimal in Italian. In fact, violating AGR is fatal to all the candidates lacking agreement features in (a)-(e), because AGR is a higher constraint than -T/-AGR, which is the highest constraint violated by (g). The higher rank of AGR vs. -T/-AGR is also responsible for the suboptimal status of candidates (f) and (h), which host an agreement coindexation, but not under a spec-head configuration, thus violating AGR.

T18. Infinitivals with overt subjects in Portuguese.

$\langle V(x)$, x=N, -,T=compound non finite$\rangle$	F.I.	AGR	-T/-A	C.G.	SUBJ	STAY
a. -- Aux_{case} [DP_k PP]		*!			*	
b. DP_k Aux_{case} [t_k PP]		*!		*		*
c. [$_{cp}$ $Aux_{i,case}$ [DP_k t_i [t_k PP]]]		*!				**
d. [$_{cp}$ P_{case} [-- Aux [DP_k PP]]]	*!	*		*	*	
e. [$_{cp}$ P_{case} [DP_k Aux [t_k PP]]]	*!	*				*
f. -- $\underline{Aux}_{case}$ [DP_k PP]		*!	*		*	
g. ☞ DP_k $\underline{Aux}_{case}$ [t_k PP]			*	*		*
h. [$_{cp}$ $\underline{Aux}_{i,case}$ [DP_k t_i [t_k PP]]]		*!	*			**
i. [$_{cp}$ P_{case} [-- $\underline{Aux}$ [DP_k PP]]]	*!	*	*	*	*	
j. [$_{cp}$ P_{case} [DP_k $\underline{Aux}$ [t_k PP]]]	*!		*			*

The fact that candidates (d), (e), and (i) also violate FULL-INT, which I kept in the same position of the precedent tableau to facilitate comparison, is not sufficient to tell us anything about the ranking of this constraint. However, nothing prevents it from having the high ranking shown above and therefore sharing responsibility for the suboptimal status of (d), (e) and (i). In any event, FULL-INT must be ranked higher than CASEGOV. It is in fact violated by (j), which shares with (g) the violations of -T/-AGR and STAY. Hence, (g)'s optimal status can be maintained only if its violation of CASEGOV is lower ranked than the violations of FULL-INT by (j).

This concludes the discussion of Portuguese, whose optimal candidate was shown to follow by reranking -T/-AGR above AGR. The fact that all other ranking relations are

similar to those of Italian also ensures the similarity of Portuguese with Italian in the syntax of tensed declaratives. In fact, when T is tensed, -T/-AGR is vacuosly satisfied by any candidate. Hence its reranking with AGR has no consequences, and the Portuguese constraint hierarchy thus provides the same results examined in 5.3 for tensed clauses in Italian.

Finally, let us turn to English, whose grammar selects the P-in-C° candidate in (e). The candidates with agreement in (f)-(j) are all suboptimal because they fail -T/-AGR, which in English outranks AGR, as in Italian, otherwise the structurally similar but agreementfull (j) would be the optimal candidate, rather than the agreementless (e).

Of the remaining candidates, the suboptimal status of (a) confirms on independent grounds the lower rank of FULL-INT with respect to SUBJECT, else (a) would be more harmonic than (e). This ranking had already been indicated as the cause of the presence of overt subject expletivs in English in chapter 2 (see also Grimshaw and Samek-Lodovici 1995).

The analysis also indicates that FULL-INT must be ranked lower than CASEGOV and STAY, or else candidates (c) and (b) would win over the optimal (e). The same ranking also accounts for the suboptimal status of (d), which violates both CASEGOV and SUBJECT.

T19. Infinitivals with overt subjects in English.

$\langle V(x)$, x=N, -,T=compound non finite$\rangle$	-T/-A	AGR	C.G.	SUBJ	STAY	F.I.
a. -- Aux_{case} [DP_k PP]		*		*!		
b. DP_k Aux_{case} [t_k PP]		*	*!		*	
c. [$_{cp}$ $Aux_{i,case}$ [DP_k t_i [t_k PP]]]		*			*! *	
d. [$_{cp}$ P_{case} [-- Aux [DP_k PP]]]		*	*!	*		*
e. ☞ [$_{cp}$ P_{case} [DP_k Aux [t_k PP]]]		*			*	*
f. -- $\underline{Aux}_{case}$ [DP_k PP]	*!	*		*		
g. DP_k $\underline{Aux}_{case}$ [t_k PP]	*!		*		*	
h. [$_{cp}$ $\underline{Aux}_{i,case}$ [DP_k t_i [t_k PP]]]	*!	*			**	
i. [$_{cp}$ P_{case} [-- $\underline{Aux}$ [DP_k PP]]]	*!	*	*	*		*
j. [$_{cp}$ P_{case} [DP_k $\underline{Aux}$ [t_k PP]]]	*!				*	*

English can license an overt subject in an infinitival also by ECM, in which case the preposition in C° is unneeded, since case is directly assigned by the governing verb.

This shows that the preposition of infinitivals is indeed pleonastic. The presence of the ECM verb makes it possible to assign case to the subject without violating FULL-INT, making the candidate with the preposition suboptimal. As the tableau below shows, in this case the structure with the DP in specIP position case-assigned by the ECM verb and with no case-feature on the auxiliary, in (k) below, wins over candidate (e), the best of the previously examined candidates. In fact, even if case-assignment by an ECM verb were optional and therefore (e) did not violate CASEGOV by long distance case-assignment by the ECM-verb, (e) would in any case violate FULL-INT, which (k) satisfies, and thus (e) ends up harmonically bound by (k).

T20. Infinitivals with overt subjects as complements of ECM verbs in English.

<V(x), x=N, -,T=compound non finite>	-T/-A	AGR	C.G.	SUBJ	STAY	F.I.
e. ECM-V$_{(acc)}$ [$_{cp}$ P$_{acc}$ [DP$_k$ Aux [t$_k$ PP]]]		*	(*!)		*	*!
k. ☞ ECM-V$_{acc}$ [$_{ip}$ DP$_k$ Aux [t$_k$ PP]]		*			*	

Summing up, we have seen how the reranking of FULL-INT below STAY accounts for the structure of English infinitivals with overt subjects, while still deriving the optimal status of ECM constructions.

The latter remarks conclude the derivation of infinitival constructions involving overt nominals. We have seen how reranking of a finite set of universal constraints independently motivated by the previous analyses accounts for the differences between Italian, Portuguese and English with respect to infinitivals with overt nominal subjects, while confirming on independent ground many of the constraint rankings argued for in the previous chapters, as well as in Grimshaw (1993, 1995), and in Grimshaw and Samek-Lodovici (1995a,b).

5.6. Evidence against pro$_{expl}$

An account of case-assignment to inverted subjects that has gained significant attention in the linguistic literature is the *pro$_{expl}$*-analysis, variants of which have been proposed in Rizzi (1982), Chomsky's (1982, 1986), Safir (1985) and Burzio (1986)[8]. Here I

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[8] In particular, in Rizzi (1982) a pronominal I⁰ absorbing nominative case binds an empty category in specIP and can transmit its case to the lower DP. In Chomsky (1982, 1986), a CHAIN links together *pro$_{expl}$* and the lower DP. The case-assigned element of the CHAIN is *pro$_{expl}$*; which licenses the lower DP through the CHAIN relation. In Burzio (1986), which follows closely Rizzi's analysis, case-transmission

will refer to Chomsky's original *pro$_{expl}$*-analysis where the phonetically null expletive *pro$_{expl}$* forms a chain with the lower subject. The *pro$_{expl}$* element is assigned case in specIP and then transmits it to the lower subject through the chain, as in (39) below.

(39) *pro$_{expl}$,*$_i$ ha parlato Gianni$_i$.
　　　　　has spoken John.
　　It is John who spoke.

Besides constituting an alternative proposal to the one developed in this chapter, the *pro$_{expl}$*-analysis deserves attention because it constitutes the main motivation for the *pro$_{expl}$* element, whose existence would call into question the violations of the SUBJECT constraint relevant for the analysis of null subjects given in chapter 2 and 3 (see for example section 2.3). In this section I will therefore concentrate on the *pro$_{expl}$*-analysis, considering the evidence against it and showing how the same problems do not apply to the OT analysis of subject inversion proposed in this dissertation. The issue of how these results extend to *there*-insertion structures is addressed at the end of the section.

5.6.1. Problem 1: Unexpected Binding Failures

According to Chomsky (1986), the case marked position of a chain spanning over A-positions is also the chain head, and therefore also the position determining the binding scope of the argument represented by the chain. Therefore, we expect *pro$_{expl}$* to head a *pro$_{expl}$*-chain and bind an anaphor in its scope. This prediction is not borne out, calling into question the existence of *pro$_{expl}$*.

Consider (40) below. Here, the inverted subject *nessuno* 'anybody' lies within the subordinate clause, since it must be licensed under c-command by the neg-marker *non*, which is also internal to the subordinate clause. According to the *pro$_{expl}$* analysis, the embedded subject is co-indexed with a raising *pro$_{expl}$*, which is assigned case in the matrix specIP. The *pro$_{expl}$* element should thus be able to bind the matrix anaphor *se stesso* (himself). Unexpectedly, it does not, and the sentence is ungrammatical.

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follows from the chain-relation established between the expletive and the lower DP. In Safir (1985), I⁰ assigns nominative case to a phonologically silent subject clitic. The clitic then transmits case to the lower DP. Some adjustments may be necessary to adapt the following discussion to each theory. For example, for all theories where a null clitic plays the role of *pro$_{expl}$* (i.e. where the clitic, rather than the empty category in specIP, is responsible for case-transmission), the discussion should be interpreted as if applying to the chain *(clitic, DP)* rather then to the chain *(pro$_{expl}$, DP)*.

(40) *Sembrava a se stesso non guadagnare abbastanza nessuno.
[$_{IP}$ pro$_{i,expl}$ sembrava [a se-stesso$_i$] [$_{IP}$ t$_i$ non guadagnare abbastanza nessuno$_i$].
              seemed   to himself   not to-earn   enough   anybody.
     Nobody seemed to himself to earn enough

In contrast, when the subject is itself in the matrix subject position it is able to bind the anaphoric argument, as shown in (41) (the omission of the neg-marker in (41) is necessary to keep the interpretation invariant, since Italian negative polarity items do not neg-concord with a neg-marker in I⁰ when occurring in specIP position (Zanuttini, 1991)).

(41) Nessuno sembrava a se stesso guadagnare abbastanza.
     Nobody seemed   to himself to-earn   enough.
     Nobody seemed to himself to earn enough.

Notice that once the anaphor is omitted from sentence (40), we get a perfectly grammatical structure, as shown in (42) below. This confirms that the problem with (40) is indeed related to failure of anaphoric binding on the part of the hypothetical *pro$_{expl}$*.

(42) Sembrava [non guadagnare abbastanza nessuno].
[$_{IP}$ pro$_{i,expl}$ sembrava [$_{IP}$ t$_i$ non guadagnare abbastanza nessuno$_i$].
           seemed   not to-earn   enough   anybody.
     Nobody seemed to earn enough.

To rescue the *pro$_{expl}$*-analysis, it could be claimed that *pro$_{expl}$* is always incapable of binding, due to an intrinsic impossibility of bearing φ-features and, therefore, referentiality, as proposed by Burzio (1986). The *pro$_{expl}$*-chain would then be headed by the lower DP, with the c-commanding domain of the lower DP as its binding scope, thus deriving the ungrammaticality of (40).

There are two strong reasons to doubt of the adequacy of this analysis. To begin with, it contradicts the tenet that traces left behind by NP-movement are anaphoric: how can the raising *pro$_{expl}$* successfully bind its own anaphoric trace in (42), if it cannot function as a binder? Moreover, it appears incompatible with the function played by *pro$_{expl}$* with respect to agreement. As Burzio (1986) and Chomsky (1982) note, the φ-features of the lower DP should be transmitted to the *pro$_{expl}$* in specIP position, in order to trigger

agreement with I⁰, which in these analyses can occur only with elements in specIP. But we just said that *pro$_{expl}$* cannot bear φ-features. Consider (43) below, where the matrix verb agrees in number with the DP in the subordinate clause (its low position is proven by the possibility of being interpreted within the scope of the neg-marker of the subordinate clause).

(43) Questa volta, sembrano non aver votato molti elettori.
     [Questa volta] [pro$_{i,expl}$ sembrano [t$_i$ non aver votato [molti elettori]$_i$]].
     This time,   seem-pl   not to-have voted many voters.
     This time, few voters seem to have voted.

The *pro$_{expl}$* element is subject to contradictory requirements, being unable to host φ-features and non-referential on one hand, while capable of encoding transmitted φ-features for the purpose of agreement.

A second way to rescue *pro$_{expl}$* is to consider whether the ungrammaticality of (40) is caused by a syntactically odd location of the anaphor. This is already implausible, given the grammaticality of (41), where the anaphor occurs in the same structural location. Moreover, any alternative placement of the anaphor in (40) fails to produce a grammatical sentence, as (44a)-(44c) show.

(44a) ***a se stesso**, sembrava [non guadagnare abbastanza nessuno].
(44b) *sembrava **a se stesso** [non guadagnare abbastanza nessuno].
(44c) *sembrava [non guadagnare abbastanza nessuno] **a se stesso**.

The above discussion calls strongly into question the plausibility of the *pro$_{expl}$*-analysis, which fails on its own premises by predicting as grammatical the severely ungrammatical sentence (40) above. As we saw, any attempt to refine the analysis so that (40) would follow leads to contradictions or untenable assumptions. In particular, stipulating that *pro$_{expl}$* cannot bind an overt anaphor makes it a mystery how the same *pro$_{expl}$* can trigger agreement with I⁰ and how it can function as a raising DP binding its own traces.

The same problems do not affect the OT analysis developed in this dissertation. Since *pro$_{expl}$* does not exist, the ungrammaticality of (40) follows straightforwardly from the fact that the matrix anaphor lacks a c-commanding binder in its clause. At the same

time, the case and agreement coindexations relate directly to the lower DP of (43), with no need of a mediating pro_{expl} element; see for example the analyses of inverted subjects with respect to agreement in section 4.2 and 4.4.1 in chapter 4, and with respect to case in this chapter, in section 5.3.2.

5.6.2. Problem 2: Unexpected Binding Non-Failures

The former section uncovered the problems caused by pro_{expl} in its capacity of anaphoric-binder. A more well known binding problem is created by the coindexing between pro_{expl} and the lower inverted subject, which if left unqualified would violate condition C of Binding Theory. This problem is solved in different ways by different authors, but all solutions involve a revision of Binding Theory. Let me summarize the major proposals: Rizzi (1982) solves the problem by stating that any DP getting its theta-role by a binding-element does not violate condition C. Chomsky adopts binding-neutral superscripting (Chomsky 1982:chap5, also Chomsky and Jaeggli 1981). Safir (1985) assumes that indefinites escape condition C at S-structure, while VP-adjoined definites are allowed to be contra-indexed and therefore not bound by the correspondent case-transmitting clitic. Finally, Burzio (1986:chap2.3) assumes that Binding Theory holds true only for argumental binders, and expletives do not qualify as such, as seen in the previous section. Burzio also provides conditions on case-transmission, which he assimilates to binding relations by stating that binding by non-argumental binders (e.g. pro_{expl}) must occur within the governing category of the bindee.

The central problem of all these analyses is that the pro_{expl}-analysis leads to a qualification of Binding Theory which would otherwise be unnecessary. Furthermore, all these characterizations of the pro_{expl}-analysis don't rescue it from the problems discussed in the preceding section. Once again, since the OT analysis developed here lacks a pro_{expl} element, no comparable violation of condition C arises in connection with inverted subjects.

5.6.3. Problem 3: Crosslinguistic Inertia of pro_{expl}

The last argument against the pro_{expl}-analysis, due to Weerman (1989:212), disputes the very existence of pro_{expl} by noticing its incapability of participating in V2 structures. Weerman notices how in Icelandic the same hypothetical pro_{expl} filling the subject position of the subordinate clause in (45) should also trigger V2-movement into C° in a

sentence like (46), by moving into specCP in matrix clauses. In contrast, (46) is ungrammatical, while overt expletives are grammatical, as in (47).

(45)   ... aδ pro_{expl} snjóar.
       ...that   is-snowing.
       ...that it is snowing.

(46)   * pro_{expl} snjóar.
              is-snowing.
         It is snowing.

(47)   Φaδ snjóar.
       It   is-snowing.
       It is snowing.

Weerman notices that this failure on the part of pro_{expl} is all the more unexpected in a language like Icelandic, where "virtually any subject, even subject-clitics, can be preposed [into specCP]". His conclusion, in line with the arguments presented in this section and the assumptions made in this dissertation, is that there is no pro_{expl} in (45), and that something that doesn't exist cannot be preposed.

Notice that while the data in (45)-(47) are problematic for the pro_{expl}-analysis, they are compatible with an OT account. Under an OT perspective, (45) follows from the higher ranking of FULL-INT over SUBJECT, which makes placing an overt expletive in specIP position a worse violation than leaving the position unrealized (see section 2.2.3 in chapter 2 for the correspondent case in Italian). Why is then an overt expletive obligatory in V2 sentences? This requires an OT analysis of V2 which goes beyond the goals of this work, but we could hypothesize the existence of a constraint V2 requiring matrix clauses to occur with a CP projection with a filled specifier. V2-languages would then be languages where V2 and OBHD are ranked higher than STAY, forcing V2-movement into C°. Any V2-language ranking V2 higher than FULL-INT would also require an overt expletive specCP filler whenever no other element is available, which is precisely the case of (47).

5.6.4. Summary

This section started by considering the evidence against the existence of a pro_{expl} element, because such an element calls into question the assumption that structures with null subjects lack a structural realization of the subject position, which in turn underlies an effective use of the SUBJECT constraint in the analyses of topic-referring and focused subjects developed in chapters 2 and 3. The above discussion showed how positing pro_{expl} is problematic in relation to binding theory, because pro_{expl} would have to be at once "intrinsically non-referential" as to not qualify as a binder for coindexed anaphors and referential subjects, but also "sufficiently referential" as to bind its own traces and to mediate case and agreement with coindexed referential subjects. By contrast, the above discussion showed how all these problems disappear as soon as no pro_{expl} element is posited, with the position occupied by pro_{expl} analyzed as structurally unrealized, and case and agreement direct coindexed with the relevant subject. The discussion thus strengthened the hypothesis that null subjects have no structural realization.

A second result of the above discussion concerns the grammatical status of chains connecting overt expletive and referential subjects, such as the one in (48) below.

(48) There$_i$ seemed t_i to be [three men]$_i$ in the garden.

With respect to binding, these chains suffer from the same problems just examined in connection with pro_{expl}-chains, as shown by the contrast between (49) and (50), parallel to that between (40) and (41) above.

(49) *There seemed to each other to be two men in the garden (at the same time).
(50)   Two men seemed to each other to be in the garden (at the same time).

It would thus be desirable to achieve an analysis of case and agreement in (48) with no reference to an expletive-DP chain, even more so now that we know that no such assumption is needed to account for inversion in null subject languages. The OT analysis presented here achieves this goal in relation to agreement, which directly targets the lower subject, with no need to transmit any agreement feature (section 4.4.3 on chapter 4). However, it still allows for the equivalent of case-transmission in relation to case, since the expletive is assumed to be case-licensed through its coindexation with

the lower subject, which is the item directly targeted by the case-coindexation (section 5.2). A possible improvement in this direction would be to make the now inviolable case-filter a violable constraint like all others. Sentence (48) would then be a structure where the need to satisfy the higher ranked constraint SUBJECT leads to the insertion of an expletive, which besides violating FULL-INT also violates the constraint CASE-FILTER. I leave this suggestion open to further research.

5.7. Conclusions

The analysis of abstract case-assignment developed in this chapter confirmed and extended many of the general results of the previous chapters, all related to the OT perspective on syntax at the core of this work.

To begin with, using constraint-violability, it was possible to formulate a unified theory of abstract case-assignment, shifting the burden of linguistic variation to the interaction between grammatical components, which is governed by the general abstract principles of constraint interaction (Prince & Smolensky 1993). This is a kind of interaction that is not available if grammatical requirements are inviolable. It is for this reason that many analyses of the Principles and Parameters tradition have to incorporate the theoretical devices responsible for linguistic variation inside specific components of grammar rather than outside it (cf. parametric case-assignment in Koopman & Sportiche 1991, Chung & McCloskey 1987, McCloskey 1991, and Fassi Fehri 1993, or structure specific case-assignment in Rizzi 1982).

Second, as in the OT analyses of previous chapters we saw how the same constraints responsible for linguistic variation within a specific language also determine variation across languages, favoring a theory where linguistic requirements are universal and linguistic variation follows from their interaction, rather than from parameter whose values are valid only within specific language groups. In particular, we saw how the interaction between CASEGOV, AGR, -T/-AGR, SUBJECT, STAY, FULL-INT, just to mention some of the most relevant constraints, determines the structural paradigms of declaratives, declaratives with inverted subjects, aux-to-comp infinitivals and subjunctives in Italian. Simple rerankings of the same constraints determines specVP subjects in Standard Arabic declaratives, case-related expletives in Standard Arabic

subordinate clauses introduced by *?anna*, as well as the distinct paradigms of infinitival constructions with overt subjects found in Italian, Portuguese and English.

The above analyses also contributed to our understanding of the syntax of subjects, which turns out to be affected by a variety of UG constraints. in particular, the ranking of CASEGOV and AGR determines whether the canonical subject of a declarative will remain in specVP and follow the verb or raise into specIP and precede it. At the same time, the relative ranking of CASEGOV, AGR, -T/-AGR and FULL-INT determines whether overt subjects of infinitival constructions are assigned case under proper government by a raised auxiliary, as in Italian, by an expletive preposition, as in English, or under a spec-head relation by an agreeing I⁰ as in Portuguese.

Finally, we saw that expletive elements can be required for case reasons, either to absorb a discharged case under the appropriate configuration, as in Standard Arabic *?anna*-subordinates, or functioning as case-assigners to provide case under the appropriate configuration, as in the analysis of the preposition *for* in English infinitivals. These analyses confirm the extension of the notion of *expletive* to any uninterpreted epenthetic element inserted only to satisfy a linguistic constraint ranked higher than FULL-INT (Grimshaw 1993, 1995, Grimshaw and Samek-Lodovici 1995). The array of expletive elements is as varied as the constraints that may conflict with FULL-INT. This is particularly visible in English, where FULL-INT is ranked low in the hierarchy, as shown in section 5.5. Consequently, we find a variety of expletive elements. Prepositional expletives inserted to satisfy CASEGOV, such as the preposition *for* in infinitival constructions (section 5.5) and *of* in nominal phrases (Brisson 1994), nominal expletives satisfying SUBJECT, as English *it* (section 2.2.3), and verbal expletives satisfying OBHD, such as *do* (Grimshaw 1993, 1995).

6. Discussion

The hypothesis at the core of this dissertation is that deriving crosslinguistic variation from the interaction of violable conflicting constraints through an OT approach to syntax would add to the deductive structure of linguistic explanations and simplify the analysis of specific syntactic modules.

The OT analysis of the syntax of subjects met these expectations. The interaction between a small set of universal constraints was shown to determine major aspects of the language-internal and crosslinguistic distribution of (i) null subjects, (ii) focused subject, (iii) canonical subjects, and (iv) expletives. In particular, the analysis accounted for and related together a variety of syntactic paradigms both language-internally and crosslinguistically, involving subjects in distinct positions, under distinct case-assignment configurations, in finite and non finite clauses, and associated or not associated with agreement.

In line with the above hypothesis, the analysis also led to a unified theory of case-assignment encoded in the universal constraint CASEGOV. It also brought forth a new account of null subjecthood and subject inversion, eliminating the need for a lexically based prodrop parameter. Moreover, it provided a new perspective on syntactic variation within and across languages, on language universals, and on lexical inventories. These issues are discussed in the following sections, which will also include a limited comparison between OT and the Principles and Parameters and Minimalist frameworks.

This work also developed a more detailed and complete optimality theoretic syntax, built on the insights offered by pioneering works in this area, such as Legendre, Raymond & Smolensky (1993), Grimshaw (1993, 1995), Grimshaw & Samek-Lodovici (1995a,b), Speas (1994), Brisson (1994), Legendre, Wilson, Smolensky, Homer & Raymond (1995), Sells, Rickford and Wasow (1995), Müller (1995), Babko-Malaya (1995), Bakovic (1995), Ferguson (1995), Kurafuji (1995).

6.1. Null Subjecthood and Subject Inversion

The OT analysis of null and inverted subjects presented in this wok was triggered by an empirical investigation of the role of topichood and structural contrastive focus. In particular, null subjects were shown to be required whenever the subject antecedent has

topic status. This requirement joins and refines previous findings in Calabrese (1982, 1985, 1990), Di Eugenio (1990, 1995), Cardinaletti and Starke (1994), and Montalbetti (1984). Moreover, the data from Italian, Greek, Hebrew and Chinese suggest that this dependence holds crosslinguistically.

Similarly, a substantial class of instances of subject inversion in Italian were shown to be cases of structural focus, following from a general syntactic requirement on contrastively focused constituents. This result, too, joins a number of studies tying constituents in specific syntactic positions to a focused interpretation. For Romance, see for example Antinucci and Cinque (1977), Calabrese (1982, 1985, 1990), Bonet (1990), Belletti (1988), Belletti and Shlonsky (1994), Saccon (1993), Samek-Lodovici (1993, 1994, 1995). Outside Romance, see Kiss (1981,1987,1990), Horvath (1986), Brody (1990), Ortiz de Urbina, (1989), Tuller (1992), Thorne (1994), Aboh (1995), Diesing (1992), Culicover (1986), Shlonsky (1987), Rochemont (1986), Rochemont and Culicover (1989), Bresnan (1993), Levin and Rappaport (1995).

These results showed that null and inverted subjects are not in free variation with their overt preverbal counterparts, and therefore that the notion of null subjects as optional and the related notion of *free inversion* are misleading generalizations.

Capitalizing on this observation, null subjecthood and subject inversion have been analyzed as dictated by grammar, depending on the interaction between the constraints DROPTOPIC and ALIGNFOCUS with the independently needed constraints SUBJECT and PARSE. The details of the analysis are in chapter 2 and 3 (see also Grimshaw and Samek-Lodovici 1995a,b).

What interests us here is that under this analysis the constraint hierarchy of each language univocally determines what kind of subject —null, overt or inverted— is optimal in each given case. The analysis thus accounts for the proper distribution of each kind of subject in each language. Hence, the interaction of the above constraints derives at once both the distribution of null and inverted subjects within a language (e.g. the alternation between overt and null subjects in Italian), as well as their crosslinguistic distribution (e.g. the contrast between Italian and English on the availability of null subjects).

As discussed in section 2.3, the same is not true for classical analyses of the Principles and Parameters approach, where the crosslinguistic distribution of null subjecthood and subject inversion is explained through the prodrop parameter. Since no version of this parameter can also account for the language-internal distribution of null and inverted

subjects, this would have to be derived independently, by appealing to the Principles and Parameters correspondents of **D**ROP**T**OPIC and **A**LIGN**F**OCUS, and therefore missing the goal of a unified account for the language-internal and crosslinguistic distribution of null and inverted subjects.

6.2. Variation within a Language Mirrors Variation Across Languages

In OT, crosslinguistic variation occurs when two conflicting constraints are reranked relative to each other. This analysis makes an interesting prediction: given two conflicting constraints C1 and C2, there are two groups of languages where C1 will be satisfied and its effect visible. The first is constituted of all those languages where C1 outranks C2 (assuming of course that higher ranked constraints do not conflict with C1). The second and less obvious group is constituted of languages with the reverse ranking C2>>C1: in these languages C1 has a chance to be satisfied whenever the higher ranked constraint C2 is either vacuously satisfied by all competing candidates, and therefore not conflicting with C1, or it is violated by pressure of a higher constraint compatible with the satisfaction of C1. In more intuitive terms, this means that linguistic variations across languages and within a single language mirror each other, and are determined by the satisfaction of the same constraints.

This prediction was repeatedly confirmed by the analyses in this dissertation.

A particularly clear example is given by the overt structural realization of thematic subjects required by the constraint **P**ARSE. As we saw in chapter 2, overt subjects are obligatory in English, where **P**ARSE outranks **D**ROP**T**OPIC. As expected, they are obligatory also in Italian where the reverse ranking holds. However, in Italian they are obligatory only when **D**ROP**T**OPIC is vacuously satisfied, i.e. only for subjects which are not topic-referring. The alternation between null and overt subjects that we find between Italian and English and caused by constraint reranking is thus also found within Italian itself between topic-referring and non topic-referring subjects.

Other cases examined in this work and illustrating this prediction are the following:

(i) As seen in chapter 3, in Italian **A**LIGN**F**OCUS is ranked higher than **S**UBJECT, and therefore structural focus in VP-adjoined position affects subjects and objects. English has the reverse ranking, and therefore structural focus can affect only objects of transitive verbs, which escape the **S**UBJECT requirement, because they are not optimal

fillers of the subject position.[1] The same alternation observed between Italian and English on focused subjects can thus be observed within English itself between subjects and objects.

(ii) The ranking of the focus constraints $\mathbf{AF}_{right}$ and $\mathbf{AF}_{left}$, specifying opposite adjunction edges, determines the crosslinguistic alternation opposing languages with rightward structural focus, such as Italian, to languages with leftward structural focus, such as Kanakuru and other Chadic languages. However, as section 3.3 showed, the same alternation occurs within Kanakuru itself: whenever $\mathbf{AF}_{left}$ is violated on pressure of higher constraints, the satisfaction of the lower constraint $\mathbf{AF}_{right}$ becomes possible and rightward focusing is attested.

(iii) As seen in chapter 5, the ranking between **C**ASE**G**OV and **A**GR and **S**UBJECT determines crosslinguistic variation in the position of the nominative case-assigner with respect to the position of the subject. When **C**ASE**G**OV is ranked highest, as it possibly is in Standard Arabic, the subject is c-commanded by its case-assigner, but when **A**GR is highest, as in Italian, the subject c-commands the case-assigner. However, even in Italian we find cases where the subject is c-commanded by its case-assigner. This occurs in gerundives and infinitivals with overt subjects, where **A**GR is violated on pressure from the higher constraint -**T**/-**A**GR, giving **C**ASE**G**OV a chance to be satisfied.

The typological prediction just examined relating together linguistic variation on the crosslinguistic and language-internal dimensions, is not available in the Principles and Parameters model, where crosslinguistic variation is modeled by using parameters. Unlike OT constraints, parameter values are inherently non universal, since by definition they hold for some languages and not for others. A parameter thus predicts a partition between languages with the value X and languages with the value Y. However, X and Y need not be related with each other, and therefore the prediction

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1 The suboptimal status of objects as fillers of the subject position in transitive verbs follows from the higher rank of **A**GR vs. **C**ASE**G**OV, as shown in the derivation below. The analogous derivation for Italian is discussed in section 5.3.3.

T1. Transitive declaratives: **A**GR >> **C**ASE**G**OV

<see(x,y),(x=John,y=Bill),--,T=pres.perf.>	AGR	C.G.	SUBJ	STAY
a. ☞ [John_nom,k **has** [t_k seen Bill_acc]]		*		*
b. [Bill_acc,k **has** [John_nom seen t_k]]	*!			*

intrinsic to the OT analysis just examined does not follow as inevitably from the Principles and Parameters approach.

6.3. Language Universals

If on one hand language variation is decomposed in its universal components through constraint-reranking, on the other hand OT is geared to predict linguistic universals in all areas where UG constraints do not conflict.

For example, the analysis proposed in this dissertation predicts that on a crosslinguistic perspective the set of syntactic structures involving canonical subjects is a subset of that involving non canonical subjects. The reason is that canonical subjects vacuously satisfy the constraints targeting focused or topic-referring constituents such as DROPTOPIC and ALIGNFOCUS. Therefore, their syntax is determined by a smaller set of constraints, which in turn reduces the degree of syntactic variation determined through constraint reranking. Indeed, we saw in the previous chapters how syntactic variation on canonical subjects is restricted to their occurring in specVP or in specIP depending on the ranking of SUBJECT and AGR relative to CASEGOV or STAY. In contrast, non canonical subjects can occur in the above positions, but can also be left unrealized, as with Italian topic-referring subjects, or forced into specific positions, as focused subjects in Italian.

Language universals may also arise from the language partition determined by the possible rankings of a set of constraints. This was the case with the agreement constraints, whose possible rankings excluded the case of a language where agreement under c-command is possible while spec-head agreement is not possible, thus accounting for the implication examined in chapter 4 that agreement under c-command always implies spec-head agreement.

Other universals arise from the identification of language grammars with constraint hierarchies, and from the corollary that constraint hierarchies are invariant across the distinct syntactic structures of a language. It is this requirement that underlies the prediction of the language universal banning overt expletives in null subject languages examined in section 2.2.4. In fact, null subjects are possible only if FULL-INT is ranked above SUBJECT, else the subject position would be realized by an expletive. But, once this ranking is established, it must hold throughout the syntactic structures of the language, thus disallowing overt expletives also in prototypical expletive contexts, such as those involving raising verbs.

A final but important kind of universal following from the OT analysis concerns the lexicon. As pointed out by Prince and Smolensky's analysis of phonological inventories (1993), in principle the OT approach makes it possible to derive by way of grammar what often appears as a language specific lexical inventory. If this hypothesis were correct, the lexicon could turn out to be a language invariant component of UG (except, of course, for phonological specifications). This dissertation takes some steps in this direction. For example, the availability of null subjects is derived from the interaction between DROPTOPIC and the other constraints of UG, and thus need not assume the availability of a [+pronominal] inflectional head I⁰ specific only to null subject languages.

Another example involves the distribution of expletives. Along the lines of Grimshaw's analysis of *do*-support (1993, 1995), the distinct distributions of expletive elements in Italian, English and Standard Arabic were all shown to be determined by grammar (chapter 2 and 3; see also Grimshaw and Samek-Lodovici 1995b). The impression that languages differ in their expletive inventories occurs because grammars select distinct optimal structures, some with and some without expletive elements. Nevertheless, the pronominal inventory supplying the expletive elements is actually invariant across the three languages. A similar analysis underlies the analysis of agreement in chapter 4, with agreement features freely supplied by GEN, but with their availability on syntactic structures governed by grammar through the interaction of the agreement constraints.

6.4. Constraint Violability and Ranking in Minimalism

A full comparison between the Minimalist Program (Chomsky 1995, 1993) and OT goes beyond the goals of this work. The more limited goal of this section is to facilitate such comparison by identifying some points of convergence and divergence between the two formalisms. In particular, I will show how the notions of constraint violability and constraint hierarchy, at the core of the OT framework, play an important role also in the Minimalism framework.

The best way to show this is to look at Minimalism through OT glasses, a possibility granted by the shared transderivational nature of both systems. Consider the economy principle *Last Resort*, which states that "a step in the derivation is legitimate only if it is

necessary to convergence" (Chomsky 1993:32). An important application of this principle concerns movement. Movement is costly, and *Last Resort* ensures that it cannot occur freely. However, if it is necessary to feature checking, and therefore to convergence, it can occur nevertheless. This is equivalent to saying that a requirement against movement is violated in order to satisfy the requirement on feature checking. Like OT, Minimalism thus uses the notion that a syntactic requirement can be violated in order to satisfy other higher-ordered syntactic requirements.

In OT terms, this insight can be formalized by stating that the constraint against movement STAY is ranked lower than the constraint on convergence Feature Checking. Consider for example the three derivations in the first column of the tableau below: in (a) the subject moves from specVP into specIP to check its case and agreement features, in (b) the subject remains in specVP, and in (c) it moves into specIP and beyond. When more movement than is necessary for convergence occurs, as in (c), the derivation is excluded by the presence of the more economical derivation in (a), which has one less STAY violation. When too little movement occurs, as in (b), the higher Feature Checking constraint is violated, and the derivation is once again excluded by the existence of derivation (a), which constitutes a more economical derivation because it satisfies the higher ranked Feature Checking constraint.

T1. Movement in Minimalism: Feature Checking >> STAY

$<V(x),x=N,--,T=pres.perf.>$	Feature Checking	STAY
a. ☞ [$_{IP}$ DP$_i$ Aux [$_{VP}$ t$_i$ V]]		*
b. [$_{IP}$ -- Aux [$_{VP}$ DP$_i$ V]]	*!	
c. DP$_i$ [$_{IP}$ t$_i$ Aux [$_{VP}$ t$_i$ V]]		*!*

An interesting aspect of the OT formalization in T1 is that the ungrammatical status of the structures in (b) and (c) follows from the same cause: the existence of the less costly optimal derivation in (a). In Minimalism, on the other hand, only derivation (c) is excluded through *Last Resort* on the basis of the existence of the more economical derivation in (a). In fact, derivation (b) is ungrammatical only because its unchecked features make it a non convergent derivation. By making the notions of constraint violability and constraint-ranking explicit, the above OT analysis thus derives in a unified way what is now derived on separate grounds in Minimalism.

The existence within Minimalism of the notions of constraint violability and constraint ranking becomes more evident when economy principles conflict with each other. One such case occurs when economy of movement through *Last Resort* coexists with Cardinaletti and Starke's *economy of representation* principle (Cardinaletti and Starke, 1994. See also section 2.3.2). As these authors notice, *economy of representation* is in tension with *Last Resort*. In fact, structurally minimal constituents satisfy *economy of representation* but require multiple movement operations, against *Last Resort*, whereas structurally complex constituents satisfy *Last Resort* through minimal movement, but violate *economy of representation*. As Cardinaletti and Starke point out, ranking the principles with respect to each other would solve the problem. In fact, this would seem not only possible, but necessary, if we wish to keep the principles unchanged and apply them at the same grammatical level. Notice that this solution is possible precisely because both principles already incorporate in their definition the notion that a syntactic requirement —here the requirement to avoid movement or that to avoid structure— can be violated in order to satisfy some higher ordered one. In other words, it is the intrinsic violability of the economy principles of Minimalism that makes constraint ranking conceivable even within Minimalism.

Cardinaletti and Starke choose to avoid constraint ranking, and apply the principle of *economy of representation* at a syntactic level prior to that of *Last Resort*. In other words, they use serial ordering through syntactic levels to get the same result that would be attained by ranking *Last Resort* lower than *economy of representation*. There are, however, two open issues related to the serial ordering solution. The first is whether this solution is general enough to solve any future case of conflicting economy principles, or whether some conflicts will inevitably require a solution in terms of constraint ranking of the OT kind. The second concerns the motivation underlying the serial ordering solution in this particular case. There does not appear to be independent evidence for preferring it over the constraint ranking solution. On the contrary, the constraint ranking solution would appeal to notions of constraint violability and constraint ranking that appear, as argued above, to be already part of the framework, even if not explicitly formalized as such.

Finally, still looking at minimalism through OT glasses, we can also identify a clear difference between the two frameworks with respect to the availability of constraint reranking. In OT, constraint reranking determines crosslinguistic variation. In Minimalism, the hierarchy of grammatical requirements is fixed once and for all, and the source of crosslinguistic variation is rooted in the lexicon, in the language specific distinction between items with strong and items with weak checking features. I leave a

detailed assessment of the empirical and theoretical consequences of this difference to further research.

Appendix A

The following is a semantic derivation for a sentence involving the focus sensitive adverb *only*. The derivation is based on a Cresswellian intensional logic, where intension is built-in in the denotation of all logic constants. It also assumes the truth-conditional meaning of sentential *only* shown below (see Rooth 1985).

(1) $\lambda p \ [\ \forall q \ (\ (q \ \& \ C(q)) => q=p \ ) \ ]$ - type: <t,t>

The denotation of *only* is a function from propositions to truth-values, such that given a proposition p, the function yields true just in case for any proposition q which is true and is a member of the focus denotation of the scope of *only*, it is true that proposition q is equal to p. In other words, no proposition other than p can be under consideration and true, where p is eventually the proposition truth-conditionally denoted by the VP node. The variable C in (1) is assigned to the focus denotation of the sister VP node. In this way, the focus denotation of the VP node is brought to the foreground and affects the entire truth-conditional meaning of the sentence (see Rooth 1985, 1992 for a detailed discussion of the system and its formalization).

Derivation (4) derives the interpretation of (2), for which I assume the syntactic structure in (3). The main simplification concerns the subject VP-internal trace, which is not considered in the semantic derivation. Its inclusion would not affect the derivation in any relevant way.

(2)   Ha soltanto cantato Bill.
       Has.3s only sung Bill.
       It was only Bill who sang.

(3)
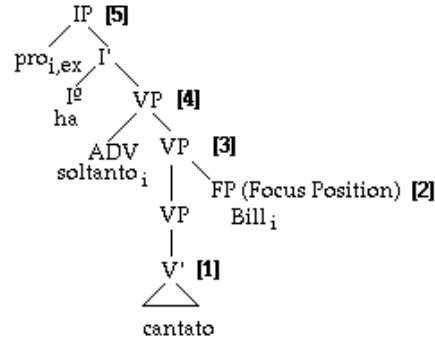
(4) Node: Truth-conditional denotation: Focus-denotation:

1.   sing'   λP [P=sing']
2.   bill   λx[x=x]
3.   sing'(bill)   λu[∃y [u= sing'(y)]]
4. (a) λp [∀q ((q & C(q)) => q=p)] (sing'(bill));
       where C=λu[∃y [u= sing'(y)]]
   (b) ∀q ((q & λu[∃y [u= sing'(y)]](q)) => q=sing'(bill))
   (c) ∀q ((q & ∃y [q= sing'(y)]) => q=sing'(bill))
5.   ∀q ((q & ∃y [q= sing'(y)]) => q=sing'(bill))

   For any proposition q, if q is true and, for some individual y in the context q asserts the singing of y, then q is the proposition sing'(bill), i.e. the proposition that Bill sang. Notice that contrastive focus of the subject in focus position is essential for a formal semantic derivation of the interpretation of (2).

Appendix B

   For the agreement patterns of Italian, Standard Arabic and Conegliano, see the detailed descriptions in sections 4.1.

   • Moroccan Arabic.

   The following examples, from Fassi Fehri (1993), show that number agreement is independent of the subject position in Moroccan Arabic. For person and gender agreement, I rely on Fassi Fehri's analysis of Moroccan Arabic as a language with unrestricted agreement.

   The examples in (1a) and (1b) show that plural morphology is grammatical with preverbal as well as postverbal subjects. Sentence (1c) shows further that lack of number agreement causes ungrammaticality.

(1a) L-ulad ja-w.	(1b) Ja-w l-ulad.	(1c) *Ja l-ulad.
The boys came-pl.	Came-pl the boys.	Came the-boys.
The boys came.	*The boys came.*	

   • French.

   The following example shows loss of number agreement with inverted subjects.

(2)   Il   arriverá   tres hommes.
       cl.3s   arrive-FUT-3s   three men.3pl.
       There will arrive three men.

   • Fiorentino, Trentino (Brandi and Cordin 1989).

   Subject in specIP must occur with an obligatory clitic expressing gender, person and number agreement, in (3a).

(3a)   La Maria la parla.
       The.3Fs Mary.3Fs cl.3Fs speaks.
       Mary speaks.

The agreement clitic is obligatorily missing when the subject is in postverbal VP-adjoined position. Compare (3b) with (3c). (The VP-adjoined position of postverbal subjects is proposed by Brandi and Cordin on the basis of the scope interactions that they have with sentential negation 1989:138, fn8).

(3b) Gl'é venuto la Maria
      There is.3s come.3Ms te.3Fs Mary.3Fs.
      Mary arrived.

(3c) *L'é venuta la Maria.
       cl.3Fs is.3s come.3Fs The.3Fs Mary.3Fs.
       Mary arrived.

The loss in number and gender agreement is particularly clear when the inverted subject is plural and marked Feminine: only person agreement is maintained in (4a), while number and gender agreement is not possible, as shown in (4b).

(4a) Gl'é venuto delle ragazze.
      There is.3s come.3Ms some.3Fpl girls.3Fpl.
      There arrived some girls.

(4b) *Le son venute delle ragazze.
       cl.3Fpl are.3pl come.3Fpl some.3Fpl girls.3Fpl.
       There arrived some girls.

The agreement-pattern of Trentino closely resembles that of Fiorentino, except for the absence of the overt locative clitic *gli* in inversion structures. See Brandi and Cordin (1989).

   • Conegliano (Saccon 1993).
Loss of gender agreement has already been illustrated in section 4.1. The following example shows loss of agreement in number.

(5)   El a caminá milioni de persone, in te sto' marciapié.
      Expl.3Ms has.3s walked millions.Mpl of persons, on this sidewalk.
      There walked millions of people, on this sidewalk.

   • Fassan, Genoese, Ampezzan, Romagnol (Haiman and Benincá 1992).
The following examples from Haiman and Benincá (1992:193) show loss of gender agreement.

(6a) Fassan: L   e   venu   la vivano.
                  He.Ms is   come.Ms   the witch.Fs.
                  The witch has arrived.

(6b) Genoese: U   vene   a Katajning.
                  He.Ms come.3s   the Catherine.
                  Catherine arrives.

(6c) Ampezzan: Agnere   l   e sta ra sagra   inz el nosc paes.
                  Yesterday he.Ms is been the feast.Fs in the our county.
                  Yesterday, there was a party in our county.

(6d) Romagnol: E   chenta   una turtureina.
                  He.Ms sings   a turtledove.Fs.
                  A turtledove is singing.

   • Chinese (Lu, 1994).
Postverbal subjects in Chinese are restricted to a few unaccusative verbs and existential sentences, where they do not display agreement. The following examples are taken from Lu (1994).

(7)   Zhe xueqi   lai   le   sange   xin laoshi.
      This semester   come   ASP three-CL   new teacher.
      Three new teachers came (to this school) this semester.

(8)   Nabian   you   sange ren.
      There   have   three man.
      There are three men.

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