THE SYNTAX OF COORDINATE STRUCTURE COMPLEXES

by

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ABSTRACT OF THE THESIS

The Syntax of Coordinate Structure Complexes

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Multiple Coordinate Complexes, coordinate structures consisting of three conjuncts and one coordinator, are interpretively distinct from coordinate structures with three conjuncts and two coordinators. Despite semantic observations by Borsley (2005) and Winter (2006) to this effect, there exists no principled structural account distinguishing the two types of Coordinate Structure Complex. In this thesis, I give a syntactic account of the difference between the two, an account that does not rely on structure or processes exclusive to coordinate structures.

Acknowledgments

I'd like to take this opportunity to acknowledge those who helped make this project a reality.

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I'd like to thank members of the Linguistics department at Rutgers University for feedback regarding this project during several departmental events. Feedback regarding this project was very valuable. I'd also like to thank the Linguistics department for providing a welcoming, intellectually stimulating environment in which I, and this project, were lucky to find a home.

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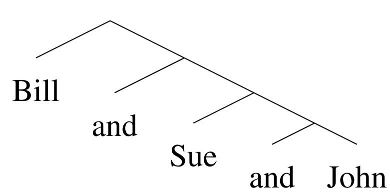
Chapter 1
Introduction

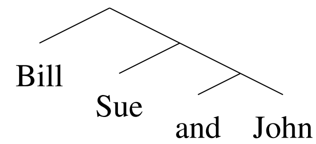
In this thesis, I propose that adopting previously proposed analyses of well-established syntactic phenomena can provide a syntactic account of the interpretive difference between two types of Coordinate Structure Complex. To be precise, I propose that adopting the Peak Novelty Condition as proposed by Safir (2010) accounts for the structure of a Multiple Coordinate Complex and, by doing so, illustrates that a Multiple Coordinate Complex has a distinct syntactic structure from that of a Repeated Coordinate Complex. In addition, adopting the Peak Novelty Condition helps explain the difference between coordination with coordinators like Mandarin Chinese “gen”, which may only conjoin nominals and coordinators like English “and”, which may join syntactic items belonging to any lexical category. I argue that Multiple Coordinate Complexes are not derived from Repeated Coordinate Complexes. Specifically, I argue no phonological or ellipsis–driven analysis accounts for the interpretive difference between the two.

1.1 Coordinate Structures

It has been commonly assumed in the literature on coordinate structures that (2) is derived from (1).

(1)



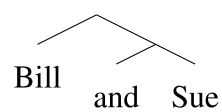
(2) 

Adopting terminology from Zhang (2010), I refer to the structure in (1) as a *Repeated Coordinate Complex* and will refer to the structure in (2) as a *Multiple Coordinate Complex*.

(3) Repeated Coordinate Complex — A coordinate structure consisting of $n-1$ coordinators for n conjuncts while $n>2$.

(4) Multiple Coordinate Complex — A coordinate structure consisting one coordinator for n conjuncts while $n>2$.

Both Repeated Coordinate Complexes and Multiple Coordinate Complexes stand in contrast to Coordinate Simplexes, illustrated in (5) and defined in (6).

(5) 

(6) Coordinate Simplex – A coordinate structure consisting of two conjuncts and one coordinator.

In Section 1.2, I argue against a phonological account which describes one complex as being derived from the other.

1.2 No Phonological Derivation

In this section, I argue against analyses that derive Multiple Coordinate Complexes from Repeated Coordinate Complexes by rejecting a similar analysis in Section 1.2.1. In Section 1.2.2, I entertain and reject an analysis in which Coordinate Structure Complexes are proposed to contain optionally pronounced coordinators, an analysis which claims to derive interpretations available to each from one underlying syntactic structure.

1.2.1 Conjunction Reduction

A common proposal, perhaps best known from Lakoff and Peters (1969), posits that (7) is derived from (8) by eliding identical material in the first conjunct from that in the second.

(7) John and Bill went to the movies.

(8) John went to the movies and Bill went to the movies.

The reading expressed in (9b) is not available to (7).

(9) John went to the movies and Bill went to the movies.

  a. John went to the movies and Bill went to the movies. They shared popcorn.

  b. John went to the movies and Bill went to the movies. John went to a theater in Piscataway and Bill went to a theater in New Brunswick.

Assuming the interpretive difference between (7) and (9) is pragmatic, the addition of reflexives or reciprocals to (7) shows that (10) cannot be derived from (11) and condemns the analysis which posits that one complex is phonologically derived from the other.

(10) John and Bill went to the movies together.

(11) * John went to the movies together and Bill went to the movies together.

The interpretive difference between (7) and (9) is highlighted when additional conjuncts are introduced.

(12) John and Bill and Sue went to the movies.

(13) John and Bill and Sue went to the movies together.

(14) John went to the movies and Bill went to the movies and Sue went to the movies.

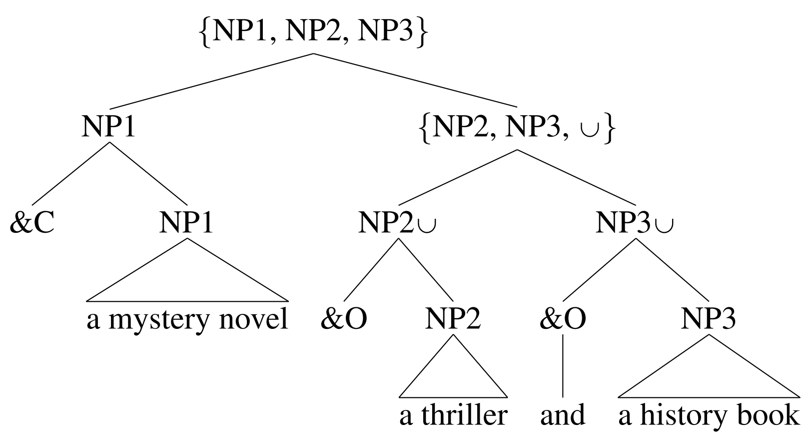
(15) * John went to the movies together and Bill went to the movies together and Sue went to the movies together.

The interpretive difference between (7) and (9) and between (12) and (14) cannot be captured by simply positing a shared underlying structure. I present more evidence to this effect in Section 2.

1.2.2 al-Khalaf (2015)

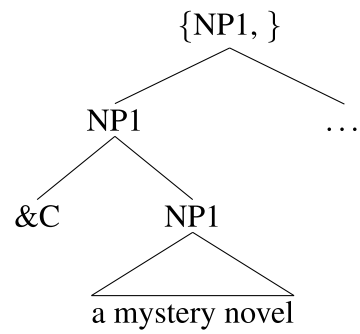
In her dissertation, al Khalaf (2015) attempts to account for agreement phenomena in coordinate structures by positing that the linear order of coordinates, not the hierarchal order of conjuncts, accounts for agreement phenomena found cross-linguistically. In this section, I describe how al-Khalaf's analysis, reliant on a process termed "Set Label", fails to predict an observed interpretive difference between each Coordinate Structure Complex. Instead, al-Khalaf's analysis relies on a conceptually ill-motivated idea of phonological optionality to explain the difference between complexes, despite the fact one complex contains interpretations unavailable to the other. Set Label applies in the structure below to generate a coordinate structure with the label *NP*.

(16)



al-Khalaf argues that the label of a coordinate structure can be derived based on the order in which conjuncts are merged with each other. Trivially, the structure in (16) will be assigned a nominal label, as every conjunct is an NP. When items that differ in category and featural specification are coordinated, al-Khalaf's proposal makes some interesting predictions, not immediately relevant to the current discussion. Relevant to al-Khalaf's analysis is the fact that conjuncts are merged left-to-right according to their linear order in the syntactic structure, instead of from the bottom to the top, according to their hierarchal order. (17) shows a partial coordinate structure, built via Set Label, after the first conjunct has been merged but before additional conjuncts have entered the syntax.

(17)



Despite many non-standard assumptions, I will focus on the distinction al-Khalaf makes between coordinators and on the claim that every conjunct in a coordinate structure has an accompanying coordinator.

al-Khalaf distinguishes between two types of coordinator, *Open Coordinators* and *Closed Coordinators*, abbreviated as '&O' and '&C' in Example (16). In English, al-Khalaf claims initial coordinators are never pronounced (always Closed (&C)), while Open Coordinators are optionally pronounced in some environments and necessarily pronounced in others. In (16), the Open Coordinator that is a sister to NP2 is optionally pronounced. If pronounced, the Repeated Coordinate Complex is derived. If left unpronounced, the Multiple Coordinate Complex is derived.

(18) a mystery novel, and a thriller, and a history book RCC

(19) a mystery novel, a thriller, and a history book MCC

However, an Open Coordinator that is a sister to the last conjunct in English, NP3 in (16), must be pronounced.

(20) a mystery novel, and a thriller, and a history book

(21) a mystery novel, a thriller, and a history book

(22) * a mystery novel, and a thriller, a history book

(23) * a mystery novel, a thriller, a history book

To make sense of the proposal discussed in al Khalaf (2015), it is important to keep in mind every conjunct either has an open or closed accompanying coordinator.

“Note that in English, one can optionally pronounce any open coordinator, but not any closed one. The general preference is to only pronounce the final one.” al Khalaf (2015):18

Throughout this work, I will argue that no such “optionality” exists in the syntax of coordinate structures, a claim that relies on the distinct interpretive differences between (24) and (25).

(24) “A mystery novel, a thriller, and a history book”

(25) “A mystery novel, and a thriller, and a history book”

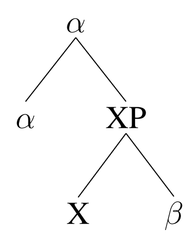
In Sections 2.1 and 2.2, I will show that there exists an interpretative difference between structures in which the “optional” coordinator is overt and structures in which the same coordinator is absent, without adopting a proposal in which syntactic items are optionally pronounced. In Section 3, I will propose a structural difference to accompany the interpretive difference and will claim that Merge, with necessary and existing modifications to the Extension Condition, can already account for the differences between Repeated Coordinate Complexes and Multiple Coordinate Complexes.

1.3 The Syntactic Status of a Conjunct

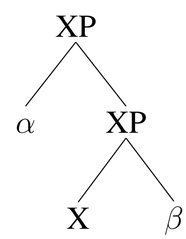
Despite the volume of literature on the subject, no consensus exists regarding the nature of the syntactic relation between a conjunct and its coordinators. In this section, I refer to arguments by Zhang (2010) to argue that conjuncts are best analyzed as specifiers and complements to a coordinator, not adjuncts. I return to this topic in Section 4 in which I argue that a proposal, to be made in Section 3, further supports this analysis.

Analyses of Coordinate Structures that involve adjunction are common. In (26), XP is adjoined to α and, in (27), α to XP.

(26)



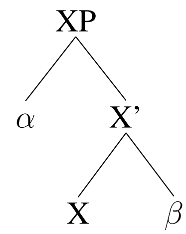
(27)



Instead of adopting either adjunction analysis, Zhang (2010) adopts an analysis in which the External Conjunct, α in both previous examples, is in a specifier-complement relation with β, the Internal Conjunct, described in (28).[1]

(28)

[1]Zhang refers to α, β, and “X” as the “External Conjunct”, the “Internal Conjunct”, and the coordinator of a coordinate structure, respectively. I address the significance of these terms in Section 4.



Zhang's claim is motivated by evidence which points to a disparity between adjuncts and conjuncts and to a disparity between how adjuncts and conjuncts interact with coordinators. One piece of evidence comes from the distribution of adverbial clefts.

(29) It was before Jane arrived that Tom left. McCawley 1988a: 267

(30) * It was and Jane arrived that Tom left.

Adverbial clauses may be clefted independently of the modified clause (29) while conjuncts may not (30).

In addition, coordinators interact with internal conjuncts in a way they don't with External Conjuncts. Moltmann (1992) has claimed that the following two types of interactions between coordinators and internal conjuncts are predicted to be impossible if an internal conjunct is adjoined to a coordinator, or vice versa. Heads in various languages (Papago) may raise from inside an internal conjunct to the position of the coordinator. If the raised head was in an adjunct, movement would not be possible. The following examples from Zhang (2010):26–27 illustrate this fact.

(31) Uwi o cipkan
woman is working
'The woman is working'

(32) uwi o cipkan n ani kos
woman is working am I sleeping
'The woman is working and I am sleeping.'

In example (31), Papago's canonical word order is observed (Subject–Aux–Verb). When two of these clauses are conjoined, as illustrated in example (32), the auxiliary verb in the second conjunct precedes the subject in the second conjunct. Zoerner (1995) presents an argument, recalled by Zhang, example (32) that the auxiliary is moving to the position of the coordinator, making the second conjunct a complement "...since head movement may neither launch from nor land in an adjunct" Zhang (2010):27.

Additionally, floating quantifiers in languages like Mandarin Chinese argue for the coordinator to be in a head-complement relation with the internal conjunct. Examples from Zhang (2010):27–28.

(33) Baoyu yao tiaowu **ke(shi)** wo yao hui-jia
Baoyu want dance but I want return-home
'Baoyu wants to dance but I want to go home.'

(34) Baoyu yao tiaowu wo **ke(shi)** yao hui-jia
Baoyu want dance I but want return-home
'Baoyu wants to dance but I want to go home.'

Zhang claims the coordinator "ke(shi)" is a floating coordinator, based on examples (33) and (34). If the coordinator and internal conjunct are sisters, in a head-complement relation, no dependency relation between the two would be possible.

For an in depth analysis of Zhang's arguments, I refer the reader to Zhang (2010), Sections 2.3.2, 2.3.3, and 2.3.4, respectively.

1.4 Assumptions

In this section, I assume some additional claims about coordinate structures. I assume the following,

- Coordinate structures are binary branching, asymmetric structures.
- Coordinate structures are built like any other syntactic structure.
- Both phrases and full clauses may be coordinated. Coordination is not strictly clausal.

- Ungrammatical derivations are generated alongside grammatical derivations but are filtered out at various interfaces.

Some of these assumptions are made by the nature of the framework I am approaching this topic from, a minimalist framework. Other assumptions are made following overwhelming consensus in the literature.

Throughout this proposal, I argue that Repeated Coordinate Complexes and Multiple Coordinate Complexes are interpretively and syntactically distinct. In Chapter 2, I present evidence from Borsley (2005) and Winter (2006) to argue that Multiple Coordinate Complexes and Repeated Coordinate Complexes have distinct readings. In Chapter 3, I adopt the Peak Novelty Condition as described in Safir (2015) and claim it motivates a structural account of Multiple Coordinate Complexes. In Chapter 4, I describe how adopting Penultimate Merge and making an adjustment to a previous proposal by Zhang (2010) accounts for the difference between coordinators, cross-linguistically, and provides additional evidence against a derivation of coordinate structure via adjunction. In addition, adopting the Peak Novelty Condition captures the relation between a coordinator and that coordinator's External Conjunct. In Chapter 5, I outline two potential solutions to an immediate semantic question.

Chapter 2
Different Interpretations

In Chapter 1, I argued against an analysis of Coordinate Structure Complexes in which Multiple Coordinate Complexes are derived from Repeated Coordinate Complexes via an ellipsis process. (35) cannot be derived from (36) by any ellipsis account, as the second is ungrammatical while the former is not.

(35) John and Bill went to the movies together.

(36) * John went to the movies together and Bill went to the movies together.

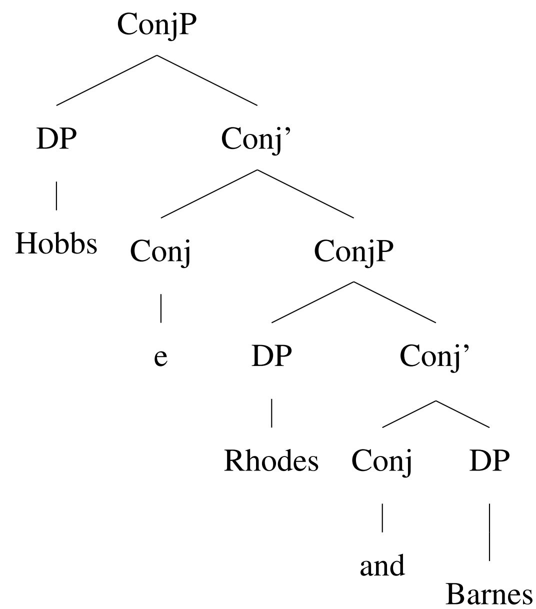
Specifically, analyses like that discussed earlier derive the difference between Multiple Coordinate Complex and Repeated Coordinate Complex by positing optionally pronounced coordinators assume that both Repeated Coordinate Complexes and Multiple Coordinate Complexes are derived from one underlying structure.

In this chapter, I show, using observations by Borsley (2005) and Winter (2006), that interpretive differences exist between Multiple Coordinate Complexes and Repeated Coordinate Complexes. I continue to argue for an structural analysis of Coordinate Structure Complexes in which distinct interpretations have distinct syntactic representations.

2.1 Borsley (2005)

Borsley (2005) argues against an analysis of Coordinate Structure Complexes adopted by Kayne (1994) and Johannessen (1998) in which a Coordinate Structure Complex has the structure found in (37).

(37)



Many of the examples that follow rely on Borsley’s intuition that the second and third conjunct do not form a coordinate structure. A structure like (37), identical save for the presence of an additional coordinator, would allow the second and third conjuncts to compose a coordinate structure. In the examples from Borsley (2005) that follow, it becomes clear that readings available to Multiple Coordinate Complexes are a proper subset of those readings available to Repeated Coordinate Complexes. For reference, a Multiple Coordinate Complex is shown in (38a), while a Repeated Coordinate Complex is shown in (38b).

(38) a. Hobbs, Rhodes and Barnes.

b. Hobbs, and Rhodes and Barnes.

2.1.1 Introduction by “both”

(39) a. both Hobbs and Rhodes

b. both Hobbs and Rhodes and Barnes

c. * both Hobbs, Rhodes and Barnes

(39a) and (39b) show that “both” may precede a Coordinate Simplex and a Repeated

Coordinate Complex. In (39c), "both" may not precede a Multiple Coordinate Complex. Borsley claims the ungrammatical result is due to the fact that the second and third conjuncts do not form a coordinate structure of their own in Multiple Coordinate Complexes.

2.1.2 "each" and "together"

(40) Hobbs and Rhodes lifted the rock.

a. Hobbs and Rhodes each lifted the rock.

b. Hobbs and Rhodes lifted the rock together.

(41) Hobbs and Rhodes and Barnes lifted the rock.

(42) a. Hobbs and Rhodes and Barnes each lifted the rock.

b. Hobbs and Rhodes and Barnes lifted the rock together.

c. Hobbs and Rhodes lifted the rock together and Barnes lifted it on his own.

d. Hobbs lifted the rock on his own and Rhodes and Barnes lifted it together.

(43) Hobbs, Rhodes and Barnes lifted the rock.

A Coordinate Simplex may be followed by "each" or "together", shown in (40a) and (40b). Repeated Coordinate Complexes with group readings are available ((42a), (42b)), as are pair readings ((42c), (42d)). However, only the Multiple Coordinate Complex reading only has the reading found in (42a) and (42b), the readings in which the three individuals lift the rock separately, (42a), and the reading in which the individuals lift the rock together, (42b). No pair readings are available.

2.1.3 Gapping

(44) Alice drank a martini, and Jane a beer.

(45) Tom ate a hamburger, and Alice drank a martini, and Jane a beer.

(46) * Tom ate a hamburger, Alice drank a martini, and Jane a beer.

In these examples, the verb in third conjunct has been deleted under identity with verb in second conjunct in both (45) and (46). However, (46) is ungrammatical. Borsley ascribes the source of this ungrammaticality to the absence of a coordinate structure between the second and third conjunct in a Multiple Coordinate Complex. (45) is grammatical because the same conjuncts do form a coordinate structure.

2.1.4 Respectively

(47) The two girls were seen by Hobbs and Rhodes, respectively.

(48) The two girls were seen by Hobbs and Rhodes and Barnes, respectively.

(49) # The two girls were seen by Hobbs, Rhodes and Barnes, respectively.

(47) and (48) are grammatical under a collective reading, while (49) is semantically strange. Again, Borsley ascribes the judgment regarding (49) to the fact that the second and third conjunct do not form a coordinate structure.

Borsley observes a parallel between interpretations available to Coordinate Simplexes and Repeated Coordinate Complexes. The interpretations unavailable to Repeated Coordinate Complexes are unavailable because the second and third conjunct do not form a coordinate structure; crucially, in a Multiple Coordinate Complex, the second conjunct is not being selected by a coordinator higher in the structure. In a Repeated Coordinate Complex, a coordinator higher in the structure exists to take a Coordinate Simplex, consisting of the second and third conjunct, as a conjunct of its own.

2.2 Winter (2006)

Observations by Winter (2006) show that Repeated Coordinate Complexes have "'mixed' distribute-collective interpretation(s)" while Multiple Coordinate Complexes often only have distributive interpretations.

2.2.1 Collective DP conjunctions

(50) a. Dylan and Simon and Garfunkel wrote many hits in the 60s.

b. Dylan, Simon and Garfunkel wrote many hits in the 60s.

Readings available to (50a) are unavailable to (50b), while every reading available to (50b) is available to (50a). The two most salient readings available to (50a) include readings in which three individuals collaborate on hits, and another (more natural) reading in which the famous writing duo wrote hits (Simon and Garfunkel) and Dylan wrote hits (of his own). (50b) only has the reading in which three individuals wrote hits separately or three individuals wrote hits together (as some sort of supergroup) but the readings in which Simon and Garfunkel write hits, together but excluding Dylan, are unavailable.

2.2.2 Wide Scope Conjunction

(51) Here you're not allowed to dance and (to) stamp your feet.

(52) a. Here you're not allowed to sing aloud and dance and stamp your feet.

b. Here you're not allowed to sing aloud, dance and stamp your feet.

(51) can mean,

- You cannot do one thing but you can do the other.
- You cannot do two things.

(52a) can mean,

- You cannot do two things but you may do a third.
- You cannot do three things.

(52b) may only mean,

- You cannot do three things

In these following examples, Winter describes two types of interpretations related to scope. Narrow Scope interpretations are those in which one thing may not be done but not to the exclusion of the other. Wide Scope interpretations are those in which every thing in the conjunction must not be done.

Following the observed pattern, the Coordinate Simplex (51) and the Repeated Coordinate Complex (52a) allow both Narrow Scope and Wide Scope interpretations. (52b), and other Multiple Coordinate Complexes like it, may only mean,

- In regards to things *n*, you cannot do *n*.

2.2.3 Wide Scope Disjunction

(53) John is looking for a maid or a cook.

(54) a. John is looking for a partner or a maid or a cook (but I don't know which).

b. John is looking for a partner, a maid or a cook (but I don't know which).

There exist two readings for (53),

- John is looking a maid or a cook and would be satisfied with one person who did both.
- John is looking a maid or a cook and wouldn't entertain the idea of one person doing both (helped by appending (but I don't know which).

A reading available to a Repeated Coordinate Complex, (54a),

- John is looking for a partner or (a maid or a cook).

is not available to a Multiple Coordinate Complex, (54b),

- John is looking for a partner, a maid, or a cook (but I don't know which).

These examples show that Repeated Coordinate Complexes and Coordinate Simplexes pattern together in regards to available readings.

2.2.4 Adverbs of alternation and VP conjunction

(55) a. Mary alternately looks relaxed and tired and exhausted.

b. ? Mary alternately looks relaxed, tired and exhausted.

(55a) may alternate between two states or three, while (55b) may only alternate between three states. (55b) is odd for the same reason (39c) is bad; "both" expects to scope over two items while "repeatedly" looks to alternate between two states. In a Multiple Coordinate Complex in which the second and third conjunct cannot form a coordinate structure, conjuncts cannot form a pair. In (55a), a Repeated Coordinate Complex, "relaxed and tired" or "tired and exhausted" can be contrasted against the third and first conjunct, respectively. No such reading is available for (55b) or (56b).

(56) a. John's swagger alternately bemused and irritated and infuriated his soldiers.

b. ? John's swagger alternately bemused, irritated and infuriated his soldiers.

2.2.5 DP-internal conjunction

(57) that/the/a friend and colleague/officer and gentleman

(58) a. I met yesterday that biographer and friend and colleague of Richard.

b. I met yesterday that biographer, friend and colleague of Richard.

(59) a. This amount of one thousand dollars will go to a poet and novelist and playwright.

b. This amount of one thousand dollars will go to a poet, novelist and playwright.

Repeated Coordinate Complexes, (57), (58a), and (59a), allow readings in which two individuals are being referred to, alongside readings in which one person and three people are being referred to. Multiple Coordinate Complexes, (58b) and (59b), do not allow readings in which two people are being referred to.

2.2.6 "Left-subordinating" *and*

(60) You drink another can of beer and I'm leaving.

(61) a. ? You drink another can of beer, Bill eats more pretzels, and I'm leaving.

b. You drink another can of beer and Bill eats more pretzels, and I'm leaving.

(62) Big Louis sees you with the loot and he puts out a contract on you.

(63) a. ? Big Louis sees you with the loot, you look guilty, and he puts out a contract on you.

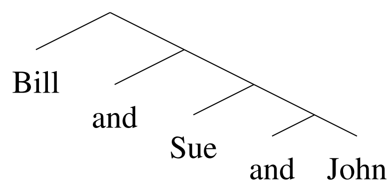
b. Big Louis sees you with the loot and you look guilty, and he puts out a contract on you.

In these examples, the coordinator can be thought of as a kind of conditional. The Multiple Coordinate Complexes, (61a) and (63a), are semantically odd as one of the conditionals is missing. In contrast, Repeated Coordinate Complexes, (61b) and (63b), are fine because the second and third conjunct form a coordinate structure.

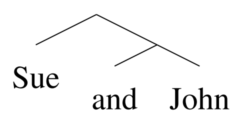
2.3 A Coordinate Parallel

In Section 2, I have shown that interpretive differences exist between Repeated Coordinate Complexes and Multiple Coordinate Complexes. In addition, I have shown that a parallel exists between readings available to Coordinate Simplexes and Repeated Coordinate Complexes. If Repeated Coordinate Complexes are composed of Coordinate Simplexes, as alluded to earlier, this should hardly come as a surprise. Therefore, I propose that the interpretive parallel between Coordinate Simplexes (65) and Repeated Coordinate Complexes (64) is due to the fact that Repeated Coordinate Complexes, described in (1), are derived and interpreted like Coordinate Simplexes, the difference between the former and the latter being that the former takes the latter as a conjunct.

(64)



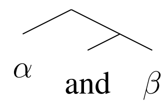
(65)



In subsequent sections, I claim the syntactic processes responsible for the construction of coordinate structures are not concerned with the lexical category of their conjuncts; this is a responsibility left to the semantic component. The aforementioned syntactic processes are only concerned with putting coordinates in a relationship to their coordinator(s) such that the result is a licit coordinate structure, a licit coordinate structure being a structure in which conjuncts are merged within the realm of syntactic space considered the coordinate structure. It is true that coordinators are not simply "glue"; coordinators have a dramatic effect on the interpretations salient to a construction. However, for the sake of syntax, it seems that the processes behind structure building are not immediately concerned with the semantic nature of a given coordinator. The syntactic processes involved with construction a coordinate structure are concerned with the categorical features of a coordinator (if any are present) and with how many conjuncts that coordinator takes, a subject discussed in the subsequent section.

I propose the syntactic boundary of a coordinate structure is delineated by the Internal Conjunct and External Conjunct, α and β respectively, in the structures below,

(66)



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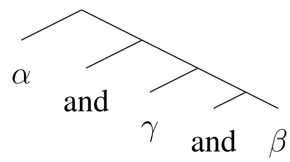
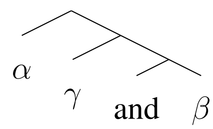


(68)



Everything between α and β in (66), (67), and (68) (trivially 'and' in (66)) is part of the coordinate structure. (67) is derived via two steps: the composition of a coordinate simplex γ and β, γ being the upper boundary of this coordinate simplex and β being the lower boundary. As this coordinate simplex is taken as an argument in a Repeated Coordinate Complex in the next step, the upper boundary becomes α while the lower boundary remains β. This process can continue, insofar as a licit coordinator is used.

(68) is derived via two steps. Crucially, neither step increases the upper boundary, in contrast to (67) The coordinate simplex [α [and β]] is built and the respective boundaries are set. Intermediate conjuncts, (γ) in (68), are merged into the syntactic space that houses the coordinate structure, between (α) and (β). Where the upper boundary is extended in (67) by merging items to the top, the boundaries of a coordinate structure are expanded, in a sense, by the injection of a coordinate.

In Chapter (3), an analysis motivated by the Peak Novelty Condition, as described by Safir (2010), will account for the derivation of a Multiple Coordinate Complex without relying on conceptually unmotivated syntactic processes or construction specific structure.

Chapter 3

Penultimate Merge and Multiple Coordinate Complexes

In this chapter, I motivate a derivation of Multiple Coordinate Complexes by adopting the Peak Novelty Condition and the syntactic process Penultimate Merge, licensed by the Peak Novelty Condition. In addition, I will discuss a proposal by Richards (1997) which partially inspired the analysis of Multiple Coordinate Complexes described in this paper.

I begin this section by discussing Richards (1997) in which obligatory multiple interrogative movement in languages like Bulgarian is described as movement to multiple specifiers. I then describe the Peak Novelty Condition, outlined in Safir (2010), and explain why Penultimate Merge is expected given our definition of Merge. Finally, I describe how Penultimate Merge generates a syntactic structure for Multiple Coordinate Complexes, a structure distinct from that for Repeated Coordinate Complexes. I end the section by describing how Penultimate Merge captures the interpretive differences between complexes in a principled way.

3.1 Richards (1997)

Languages like Bulgarian contrast with languages like English and Japanese in regards to multiple interrogatives. Bulgarian obligatorily moves WH items from their base generated position to a specifier position specified for WH features. In this regard, Bulgarian differs from Japanese, which mandates that WH items remain in their base generated position. When multiple WH items are base generated, Bulgarian requires that every WH item be raised. In this regard, Bulgarian differs from English, which requires that just one WH item must move to a specifier position specified for WH features.

In addition, WH movement in Bulgarian requires that the C-Command relation established in situ be preserved post-movement.

(69) Koj$_i$ kogo$_j$ ---$_i$ vizda ---$_j$?
who whom sees
'Who sees whom?'

(70) * Kogo$_j$ koj$_i$ ---$_i$ vizda ---$_j$?
whom who sees
'Whom sees who?'

To account for the facts observed Bulgarian WH movement, Richards proposes that, to satisfy Shortest Move, lower WH items are moved to specifier positions immediately underneath the matrix specifier position via a process Richards calls "Tucking-In". Movement to this additional specifier, crucially underneath the occupied, higher specifier position, satisfies Shortest Move. As a consequence, the requirement that WH items move out of their base generated positions without reversing the C-Command relation established in-situ is satisfied. In this tucked-in position, these moved WH items will not be selected by probes for processes like Agree.

Inspired by the idea of merging items to a position underneath a Undominated Node, I will propose that a Multiple Coordinate Complex is derived by merging conjuncts to what is, descriptively, the same position WH items are tucked-in (to) in multiple interrogative constructions in languages like Bulgarian.

3.2 Safir (2010)

As noted in Safir (2015), operations like tucking in or Late Merge violate the Extension Condition. Assuming that the Extension Condition ought to be softened, Safir proposes the Peak Novelty Condition and predicts that adopting this condition licenses a kind of Merge that accounts for Tucking-In effects and Late Merge effects.

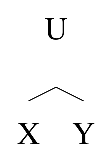
(71) Peak Novelty Condition: After every instance of Merge, M_i, the undominated node U of the resulting structure immediately dominates a node that U did not immediately dominate before M_i.

In this section, I'll describe the motivation behind adopting the PNC and, from the PNC, Penultimate Merge. In addition, I will discuss how Penultimate Merge can account for tucking-in effects, as described in Section 3.1 and will allude to how it accounts for the derivation of Multiple Coordinate Complexes, to be described in detail in Section 3.3.

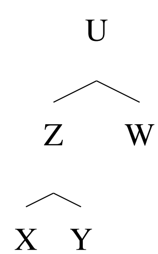
3.2.1 The Peak Novelty Condition and Penultimate Merge

As described in Safir (2010), adopting the Peak Novelty Condition allows Merge to apply to a node under a structure's undominated node, as long as the undominated node immediately dominates something it did not immediately dominate before. This instance of Merge "comes for free "in that it requires no modification to the definition of Merge. (72), (73), and (74) all satisfy the Peak Novelty Condition, stated in (71).

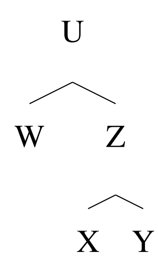
(72)



(73)

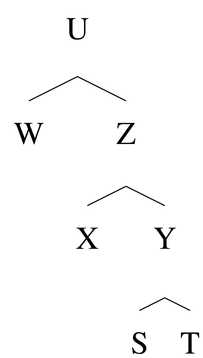


(74)



In (72), U, the undominated node, dominates nodes it did not previously dominate (Z and W). This is trivially true, as U did not exist before Merge; therefore, any nodes U dominates after Merge are nodes that U did not previously dominate. In examples (73) and (74), node Z is a node which the undominated node U did not previously dominate before Merge. Therefore, the PNC is satisfied. The PNC predicts that Merge may apply indefinitely if this condition on U dominating nodes after Merge that it did not dominate before Merge is satisfied. Per the Peak Novelty Condition, Merge to the Undominated Node and Merge resulting in the Undominated Node immediately dominating a node it did not previously dominate will result in a licit structure. A Merge operation that violates the Peak Novelty Condition, adding S in (75), is not a licit Merge operation.

(75)



As the Undominated node in (75) does not *immediately* dominate a node it didn't immediately dominate after Merge, the Peak Novelty Condition in (75) is not licit.

3.2.2 Penultimate Merge and Multiple Interrogatives

Once the Peak Novelty Condition is adopted, Penultimate Merge can account for tucking-in effects. Safir (2015) notes that,

(76) “PNC now permits head movement by adjunction to a higher head,

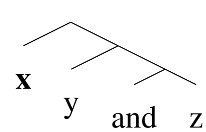
> as illustrated schematically in [[74]], *it permits tucking in, illustrated in [[74]], as proposed by Richards (1999) to account for superiority effects* (but see also Safir and Bassene (2015), forthcoming, who apply tucking in to clitic movement), and it permits late attachment, which is proposed to account for anti-reconstruction effects, as in [[74]]."

Items that are tucked in beneath the Undominated Node are those that exist in structure before Merge applies. As such, WH items in languages like Bulgarian can be said to undergo Internal Merge. Descriptively, Internal Merge of the highest in situ WH item results in a new undominated node. The Peak Novelty Condition is satisfied and, descriptively, Penultimate Merge has not applied. Internal Merge to a position that does not "add" to the top of syntactic structure but results in the Undominated Node immediately dominating something it did not before Internal can be described as Penultimate Merge.

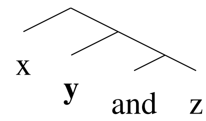
In addition to Internal Merge, External Merge to a position that does not change the Undominated Node is described in (76) as Late Attachment, a phenomenon assumed by Chomsky (1995), Lebeaux (1988), Fox and Nissenbaum (1999), among others. In Section 3.3, I will argue that External Merge to a position that does not change the Undominated Node, External Merge to a position underneath the highest conjunct in a coordinate structure, derives Multiple Coordinate Complexes. In Section 4, I propose that adopting the Peak Novelty Condition is compatible with an featural analysis by Zhang (2010).

The following structures are all licit output structures resulting from the application of Penultimate Merge. However, only one is a coordinate structure.

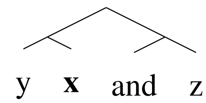
(77)



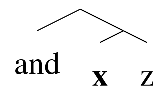
(78)



(79)

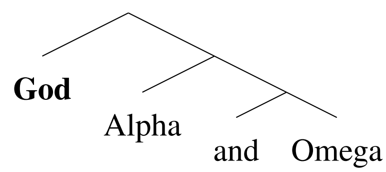


(80)

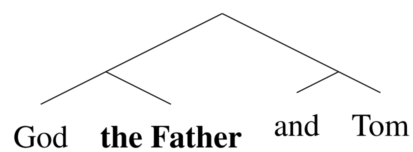


Merging x to the Undominated Node, illustrated in (77), results in a structure that is only superficially similar to that of a Multiple Coordinate Complex. (77) features a syntactic item, x, which takes a coordinate structure, [y [and z]] as its complement. Crucially, x is not a conjunct in the coordinate structure it takes as a complement. Similar to (79) and (80), (77) is an appositive construction. (77), (79), and (80) are illustrated by (81), (82), and (83) below.

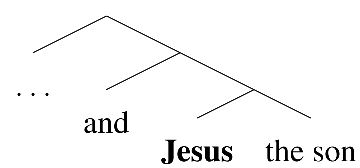
(81)



(82)



(83)



"God" takes the coordinate simplex, "Alpha and Omega", as an adjunct in the appositive construction "God, Alpha and Omega". "God" takes the DP "the Father" as an adjunct in the appositive construction "God, the Father". "the son" takes "Jesus" as an adjunct in the appositive construction "Jesus, the son". (78) is distinct from (77), (79), and (80) in that Penultimate Merge results in the insertion of a conjunct into a preexisting coordinate structure. (79) and (80) are also cases of Penultimate Merge, yet neither structurally serves as a conjunct as they are sisters to nominals.

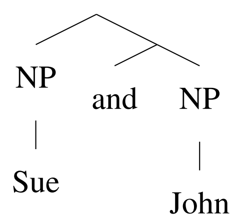
3.3 Deriving a Multiple Coordinate Complex

In this section, I propose that adopting the Peak Novelty Condition and the Penultimate Merge operation that follows, provides a principled way of deriving the structural difference between the two types of Coordinate Structure Complexes discussed throughout this paper, Repeated Coordinate Complexes and Multiple Coordinate Complexes.

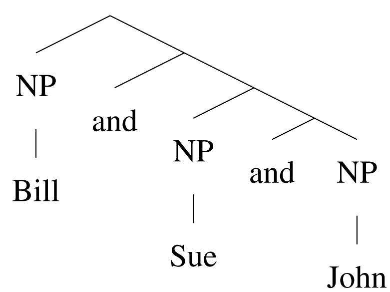
3.3.1 Coordinate Simplexes and Repeated Coordinate Complexes

As mentioned in Section 2.3, the interpretive parallel between a Coordinate Simplex and a Repeated Coordinate Complex likely has a syntactic parallel. This parallel is observed in (84) and (85), in which (85), the Repeated Coordinate Complex, takes a Coordinate Simplex as a conjunct.

(84)

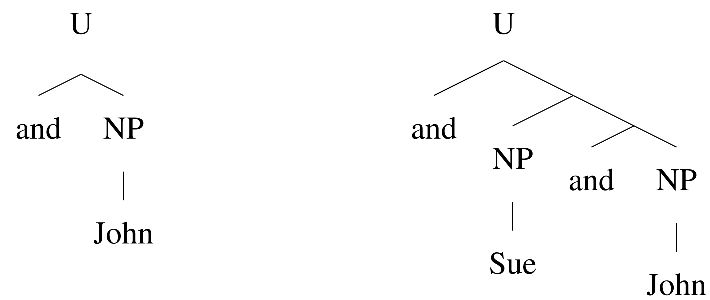


(85)



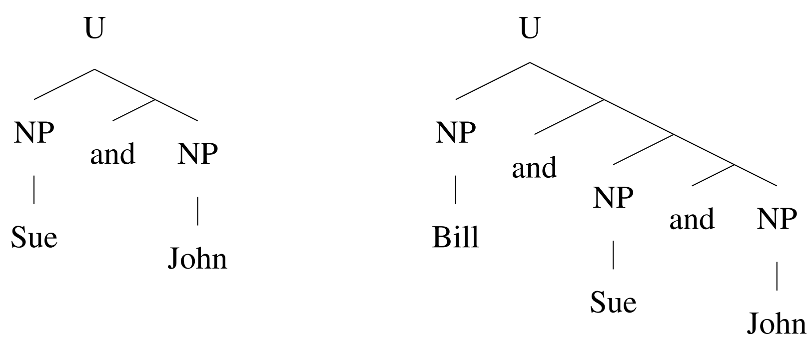
Both structures start by Externally Merging a conjunct with a coordinator. In (86), the coordinator “and” is Merged with a conjunct to form an Undominated Node that immediately dominates material it did not previously dominate. The structure on the left shows the first step towards the derivation of a Coordinate Simplex, while the rightmost structure, assuming a Coordinate Simplex as Internal Conjunct, represents the first step towards the derivation of a Repeated Coordinate Complex.

(86)



Both structures finish their respective derivation by Externally Merging an additional conjunct to the undominated node, forming a new Undominated Node that immediately dominates material it did not previously dominate.

(87)

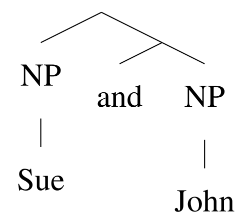


At no point in either of these derivations does Penultimate Merge apply, although the Peak Novelty Condition is necessarily satisfied in both examples. In both structures, the conjunct "and" licenses two conjuncts. In the Repeated Coordinate Complex, the lower coordinator licenses two conjuncts and forms a coordinate simplex. The higher coordinator also licenses two conjuncts, taking the Coordinate Simplex as one conjunct and a nominal as the other. Clearly, a Multiple Coordinate Complex, a coordinate structure containing one coordinator and more than two conjuncts, cannot be derived in the same fashion. I propose Penultimate Merge is crucial to the derivation of a Multiple Coordinate Complex, specifically to account for the presence of a third conjunct and absence of a second coordinator.

3.3.2 Multiple Coordinate Complexes

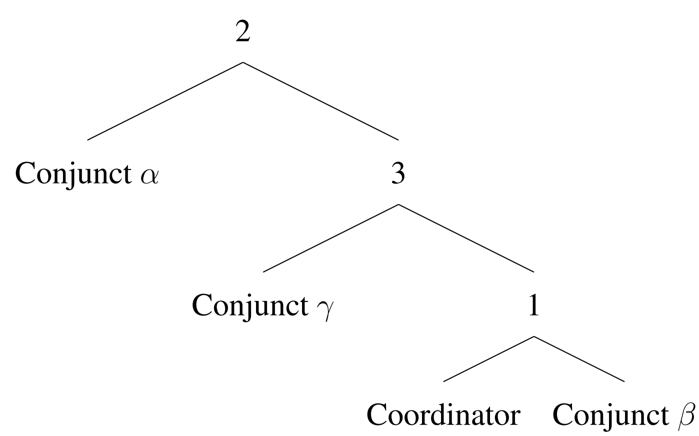
A Multiple Coordinate Complex begins its derivation like any other coordinate structure. A coordinator licenses two conjuncts, a complement and a specifier. After a coordinator and its complement are merged, the specifier conjunct is merged with the previously merged material (complement and specifier).

(88)



A Coordinate Simplex is derived. Another conjunct must be added to this Coordinate Simplex to derive a Multiple Coordinate Complex but no licensing coordinator exists. Instead of adjoining an additional conjunct to the Coordinate Simplex in (88), a proposal argued against in Section 1.3 and to be argued against further in Section 4, Penultimate Merge applies to a position that satisfied the Peak Novelty Condition. Descriptively, this position is the same position WH items are "tucked in" by Richards (1997).

(89)



In (89), two such positions exist. To preserve the relation between the External Conjunct, Conjunct α in (89) and its licensing coordinator, I propose that the second conjunct, Conjunct γ, undergoes Penultimate Merge to Node 1, forming Node 3. Node 3 is a node which the Undominated Node, Node 2, did not immediately dominate before Merge, and the Peak Novelty Condition is satisfied. An additional conjunct, δ may be merged only with Node 3, as being Merged with Node 1 would violate the Peak Novelty Condition.

Penultimate Merge gets the linear and structural effects of that conjunct that is Merged to a position below the highest conjunct, conjuncts I'll refer to throughout this paper as *Intermediate Conjuncts*. In the next section, I posit that deriving Multiple Coordinate Complexes via Penultimate Merge is additionally motivated by cross-linguistic observations concerning the relation between the highest structural conjunct in a Coordinate Simplex and the coordinator that licenses it. Crucially, the relation between the highest conjunct and its licensing coordinator is defined as a Criterial Relation. Reasons for applying Merge via Penultimate Merge instead of Merge to the Undominated Node, a Merge position preserved by the Peak Novelty Condition, are given in Section 4.

Chapter 4
Featural Specification

In this chapter, I draw on an analysis by Zhang (2010) which posits a unique relationship between a coordinator and a conjunct in that coordinator's specifier position. I explore the idea the relation Zhang describes is a relation between a Criterial Head and a Criterial Position, similar to the relation between an item specified for interrogative features and a interrogative operator described in Rizzi (1996). Although I don't fully adopt this proposal, I use elements of this idea to account for linear order effects among conjuncts and to further argue for Merge of an Intermediate Conjunct to a Penultimate position

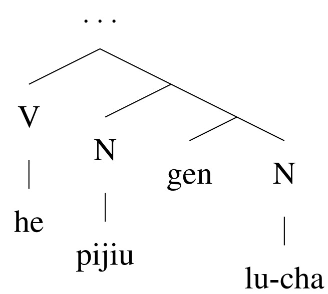
4.1 Matched and Mismatched Coordination

Zhang (2010) observes that coordinators, cross-linguistically, can be divided into two groups. The first group may only coordinate syntactic items that are of the same type. I refer to these coordinators as participating in *Matched Coordination*. Zhang describes "gen" and "you", both coordinators in Mandarin Chinese, as exclusively coordinating nominals and adjectives, respectively.

(90) Dai Jiaoshou xihuan he pijiu (gen/*you) lu-cha.
Dai Professor like drink beer and/and green-tea.
"Prof. Dai likes to drink beer and green -tea." NP coordination (Mandarin Chinese)

The verb "to drink", "he", selects a noun, "beer and green tea", under Zhang's analysis. Example (91) represents the coordinate structure in (90) and the verb that selects it.

(91)



In contrast, the coordinator "you" may only coordinate adjectives.

(92) Dai Jiaoshou shanliang (you/*gen) youmo.
Dai Professor kind and/and humorous
"Prof. Dai is kind and humorous."

Coordinators like "gen" and "you" are cross-linguistically common, and stand in contrast to coordinators like English "and" which may participate in Matched Coordination and *Mismatched Coordination*, coordination between two syntactic items that are not of the same syntactic category.

(93) You can depend on $[\text{John}]_{NP}$, $[\text{his assistant}]_{DP}$, and $[\text{that they will arrive on time}]_{CP}$.

(94) [$[\text{That our perspectives had changed over the years}]_{CP}$ and $[\text{the issue we had worked on as students}]_{DP}$] were the topics of discussion.

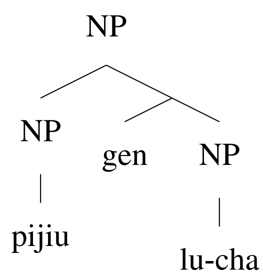
(95) We talked about [$[\text{Mr. Golson's many qualifications}]_{DP}$ and $[\text{that he had worked at the White House}]_{CP}$]. Zhang (2010):51

Note that, in the subject position, the order of conjuncts does not have an effect on the grammaticality of a sentence.

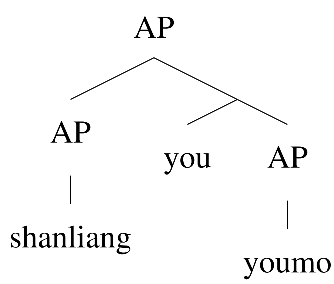
(96) [$[\text{The issue we had worked on as students }]_{DP}$] and $[\text{that our perspectives had changed over the years}]_{CP}$] were the topics of discussion.

These two groups of coordinators, to Zhang, are responsible for the label of a coordinate structure in different way. Coordinations like “gen” and “you”, Zhang argues, enter a syntactic derivation already specified for categorical features. These coordinators, intrinsically specified for categorical features, project their categorical features like any other head. Therefore, the label of the coordinate structure in (90) and (92) would be NP and AP, respectively.

(97)

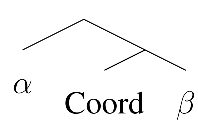


(98)



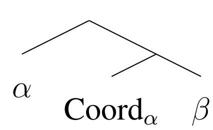
On the other hand, Zhang argues coordinators like English “and” enter a syntactic derivation unspecified for categorical features. These coordinators inherit their categorical feature from the conjunct that C-Commands the coordinator, a conjunct which Zhang calls the External Conjunct (α). The conjunct that is a complement of the coordinator, Zhang calls the Internal Conjunct (β).

(99)



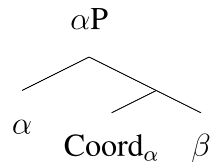
Coordinators like “and” receive their categorical features from α,

(100)



and project those features to derive a label for the coordinate structure.

(101)



Throughout the remainder of this paper, I'll refer to coordinators that Zhang describes as specified for categorical features, coordinators like "gen", *Intrinsic Coordinators*. Intrinsic Coordinators contrasted with *Inheriting Coordinators*, those coordinators like English "and" which get their categorical features from their External Conjunct.

In Zhang's proposal, the External Conjunct is responsible for determining the label of the coordinate structure, a property potentially important for selection and agreement. I propose that the relation between the External Conjunct and the coordinator can be described simply as a relation between a specifier (Zhang's External Conjunct) and a head (coordinator). In the next section, I propose principles that guide the derivation of Coordinate Simplexes, from which Coordinate Structure Complexes are built.

4.2 The CS Criteria

Rizzi (1991) uses the term "Criterial Position" and to refer to a position that is specified for certain features, the existence of which is licensed by the presence of a "Criterial Head".

(102) The WH Criterion:

a. A WH operator must be in a Spec-head configuration with X_{+WH}.

b. An X_{WH} must be in a Spec-head configuration with a WH operator.

The WH Criterion ensures that a WH item will move to a specifier position, descriptively a SpecCP position specified for WH features, and ensures the appropriate C-Command relation between operator and head is maintained. Drawing on the observations made by Zhang (2010), described in Section 4.1, I propose a similar family of principles exists for coordinate structures. The criteria that must be satisfied is described below and in the structure in (104).

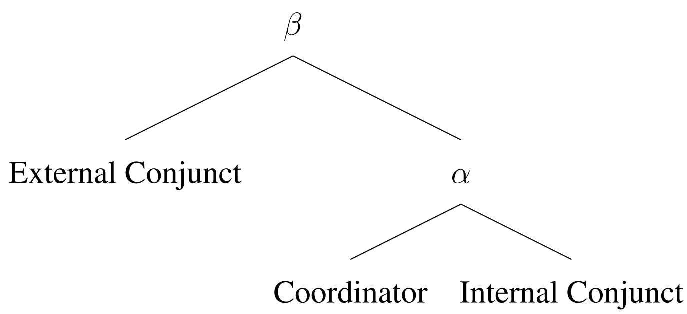
(103) The CS Criteria:

a. α is the product of a Merge operation between a coordinator and its complement, a coordinate structure's Internal Conjunct.

b. A Coordinate Simplex's External Conjunct is a conjunct that is merged with α to form a Coordinate Structure.

c. A Coordinate Simplex is the result of a Merge operation between α and a non-terminal consisting of a coordinator and its complement.

(104)



However, I believe that appealing to Criterial Positions in my analysis is unnecessary. While couching a Coordinate Simplex's External Conjunct in terms of a Criterial Position and a Coordinate Simplex's coordinator a Criterial Head gets the privileged relation described by Zhang (2010), describing this relation as one between a specifier and a head is conceptually simpler while preserving the feature checking analysis presented in Section 4.3.[1]

The approach towards coordinate structures outlined by the CS Criteria, effectively placing the burden of featural specification to a Coordinate Simplex is effectively described by the Spec-Head relation. Despite opportunity to be conceptually simpler, I will continue to refer to the conjunct in the specifier position of a Coordinate Simplex

[1]Zhang (2010) is skeptical regarding to what extent agreement interacts with coordinate structures. For this reason, a reader may not want assume Spec-Head Agreement is synonymous with Agreement.

as an “External Conjunct”, as the term remains useful for purposes of exposition when discussing Multiple Coordinate Complexes.

4.2.1 Semantic and Syntactic Symmetry (and Asymmetry)

A consequence of the CS Criteria is that the argument structure of a coordinator like “and” is a two-place, semantically symmetric relation. Below, syntactically symmetric properties of “and” are compared with the syntactically asymmetric properties of an item like “with” (examples from Lakoff (1986)

(105) He mixed a gallon of water with a quart of oil. (asymmetric)

(106) He mixed a gallon of water and a quart of oil. (symmetric)

Consider the examples below, described as semantically asymmetric by Lakoff (1986)

(107) What kind of herbs can you eat and not get cancer?

(108) What forms of cancer can you eat herbs and not get?

I will not consider examples (107) and (108) to be asymmetric in the relevant sense. I treat the implicatures present as pragmatic effects related to the linear order of the conjuncts. I return to the topic of symmetry as it relates to Multiple Coordinate Complexes in sections 4.4 and 4.6. Note that (108) violates the Coordinate Structure Constraint in that extraction from the second conjunct is allowed. Discussion of additional observed problems with the CSC as originally described is impossible within the confines of this paper.

4.3 Potential Revisions to Zhang (2010)

The featural specification analysis described in Zhang (2010) captures the relation between an External Conjunct and a coordinator for coordinators like “and”. However, it isn’t clear that the same kind of relation exists between Intrinsic Coordinators, like

Chinese “gen”, a nominal coordinator which Zhang describes as intrinsically specified for categorical features. If a coordinator like “gen” enters syntax already specified for categorical features, it isn’t clear why a relation between “gen” and its External Conjunct ought to exist. In this section, I will propose three revisions of the featural analysis found in Zhang (2010), analyses that motivate the relation between any type of coordinator, intrinsic or non-intrinsic coordinator, and that coordinator’s External Conjunct. The following analyses share two goals,

- Collapse the Intrinsic and Inheriting Coordinator distinction.
- Motivate a feature checking operation between a coordinator and that coordinator’s External Conjunct.

The second goal can be accomplished by stipulating that both Intrinsic and Inheriting Coordinators, in Zhang (2010), must check their categorical features with their External Conjunct. Trivially, this means that Intrinsic Coordinators will check their categorical features against their External Conjunct while Inheriting Coordinators will attempt to check their categorical features, will fail as they have no categorical features to check, and will inherit categorical features from that External Conjunct. Positing a feature matching relation between both kinds of coordinator and that coordinator’s External Conjunct is trivially done. However, in an effort to collapse what seems to be a poorly motivated distinction between coordinators, I describe three potential revisions to Zhang (2010).

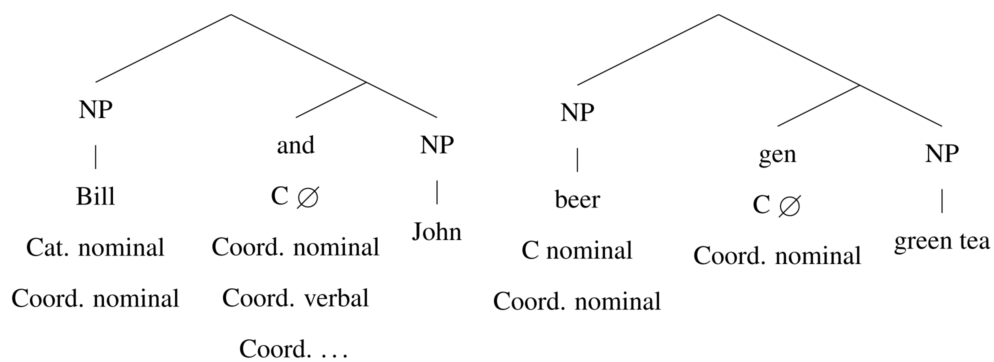
4.3.1 Coordinator Features vs. Categorical Features

In an effort to collapse the Intrinsic and Inheriting distinction proposed in Zhang (2010), I propose coordinators, whether they be Intrinsic Coordinators like Chinese “gen” or Inheriting Coordinators like English “and”, enter syntax *unspecified* for categorical features. Instead, I propose both coordinators enter syntax specified for non-categorical features. For the sake of exposition, I’ll refer to these non-categorical features as Coordinator features, although, crucially, these features are simply non-categorical features. Coordinators, before they enter the syntax, are described in the table below,

Coordinator	Categorical Features	Coordinator Features
and	none	+nominal, +adjectival, etc.
gen	none	+nominal

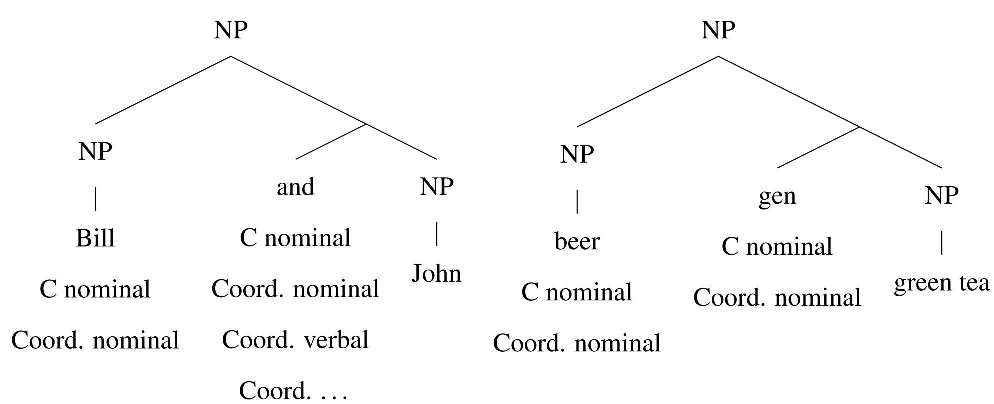
A conjunct, unspecified for categorical features but specified for coordinator features, checks its coordinator features with the categorical features of the item in its External Conjunct. If the features common to both the External Conjunct and coordinator match, the relation between the coordinator and the External Conjunct is licit. At this point, the coordinator is still unspecified for categorical features.

(109)



After the External Conjunct and coordinator check their features, I propose the External Conjunct transmits its categorical features to the coordinator. After categorical feature transmission, the coordinator projects its newly acquired categorical features to form its maximal projection.

(110)

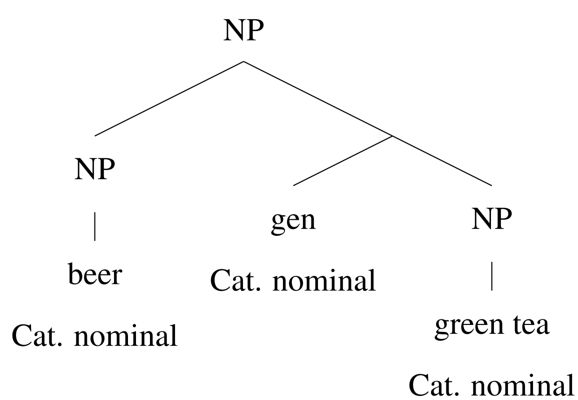


In this proposal, no coordinators are intrinsically specified for *Categorical Features*, but only the categorical features on the conjunct that match the categorical features on the External Conjunct can project.. Instead, every coordinator is intrinsically specified for *Coordinator Features* and the lexical category of the item in the External Conjunct must match those coordinator features of the coordinator. Therefore, a coordinator like “gen”, specified only for nouns, will only ever host nouns in the External Conjunct and therefore, a coordinate structure conjoined by “gen” will only ever be interpreted as a noun.

4.3.2 Intrinsic Overspecification

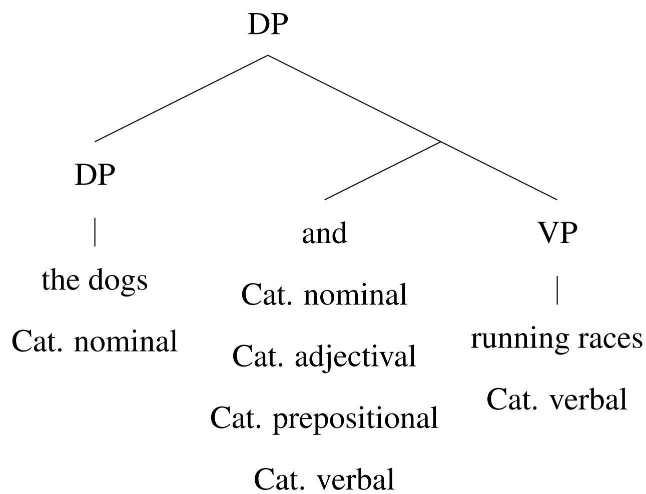
In a approach similar to that taken in Section 4.3.1, one could imagine both “gen” and “and” having intrinsic categorical features. “gen”, being specified for nominal categorical features, checks its featural specification against the item in its External Conjunct. If the two match, the coordinator projects its categorical features.

(111)



In (111), “gen”, specified for nominal categorical features (and implicitly not specified for other features), matches the categorical feature of its External Conjunct, “beer”. A coordinator like “and”, I propose, is *overspecified* for categorical features. “and”, specified for nominal, prepositional, adjectival, and verbal features, among others, is overspecified for categorical features. Like “gen”, “and” checks its featural specification against the featural specification of the item in its External Conjunct, and only those features that match are projected.

(112)



In (112), “and”, overspecified for categorical features, checks the External Conjunct. It matches the item in the External Conjunct position, “the dogs”, and the nominal categorical features are preserved while the non-nominal categorical features are discarded. As “and” is no longer overspecified, it projects its nominal features to the coordinate structure’s maximal projection. Unlike “gen”, “and” enters a syntactic derivation specified for only one categorical feature. [2]

The Overspecification proposal differs from that described by Zhang (2010) in that both groups of conjuncts are ascribed intrinsic categorical features and both groups must check the External Conjunct. “gen” must check the External Conjunct to make sure it is coordinating a nominal. “and” must check the External Conjunct in order to rid itself of extraneous categorical features.

4.3.3 Extreme Specification

Instead of distinguishing coordinators with intrinsic categorical features from those coordinators that inherit categorical features, one could posit that *all* coordinators have intrinsic categorical features. In addition, to explain the difference between Matched and Mismatched Coordination, one could posit that multiple coordinators, all phonetically

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[2]This approach predicts that Mandarin Chinese “gen” and “you” are two distinct morphological realizations of one coordinator, the realization being dependent on which feature is matched.

realized as “and”, exist and that these versions of “and” correspond to coordinators like “gen” and “you”, which participate in Matched Coordination but are phonetically distinct.

Items Coordinated	English/Chinese Coordinator
Nouns	and_1/gen
Adjectives	and_2/you
...	...
VPs	and_7/??

Adopting this analysis, every coordinator has intrinsic categorical features. In English, every coordinator is intrinsically specified for categorical features but are all realized, phonetically, as “and”. In Mandarin Chinese, coordinators are intrinsically specified for categorical features like English, but the difference between coordinators is phonetically realized.

Assuming the following inventory of categorical features (CP, TP, DP, NP, AP, PP, VP), adopting the Extreme Specification commits us to positing the existence of seven versions of “and”. For my purposes, an analysis like this might work as long as a coordinator matches its External Conjunct. For conceptual reasons, however, this approach does not seem well-motivated.

The common thread among these featural analyses is the relation between a coordinator and that coordinator’s External Conjunct. Eliminating the distinction between Intrinsic Coordinators and Inheriting Coordinators results in a conceptually cleaner analysis of coordinators. Building on a theory proposed by Zhang (2010), I’ve argued for a featural account of coordinate structures in which a coordinator, regardless of its featural specification, must interact with the External Conjunct in order for categorical features to be projected. Providing a uniform account of how coordinators and their categorical features, and how the featural specification of a coordinator interacts with its External Conjunct allows us to describe the relative unimportance of Intermediate

Conjuncts in Multiple Coordinate Complexes, an unimportance not expected if adjunction was responsible for the order of conjuncts in Multiple Coordinate Complexes.

4.4 Selection and Linear Order

As discussed in Section 4.1 and Section 4.3, the linear order of conjuncts potentially has an effect on a sentence's grammaticality under very specific circumstances.

(113) You can depend on . . .

a. John, his assistant, and that they will arrive on time.

b. John, that they will arrive on time, and his assistant.

c. his assistant, John, and that they will arrive time.

d. his assistant, that they will arrive on time, and John.

e. * that they will arrive on time, John, and his assistant.

f. * that they will arrive on time, his assistant, and John.

In this section I argue that the ungrammaticality of (113e) and (113f) is due to a selectional requirement imposed on the syntax, assuming selection is a semantic property. With this in mind, the proposal made by Zhang (2010) and the revisions outlined in Section 4.3 continue to motivate a Spec-Head relation between a coordinator and that coordinator's External Conjunct.

The linear order of conjuncts has no interpretive effect on a sentence featuring a Matched Coordinate Structure.

(114) Tom and Bill went to the store.

(115) Bill and Tom went to the store.

In addition, the linear order of conjuncts has no interpretive effect when Mismatched Coordinate Structures are in subject position, shown in (94) and (96) and repeated below,

(116) [That our perspectives had changed over the years]$_{CP}$ and [the issue we had worked on as students]$_{DP}$ were the topics of discussion.

(117) [The issue we had worked on as students]$_{DP}$ and [that our perspectives had changed over the years]$_{CP}$ were the topics of discussion.

The linear order of conjuncts only has the potential to affect a sentence's grammaticality when a Mismatched Coordinate Structure is in a non-subject position.

(118) We talked about the issue we had worked on as students and that our perspectives had changed over the years.

(119) * We talked about that our perspectives had changed over the years and the issue we had worked on as students.

In addition, subject-aux inversion shows that (120) is less acceptable than (121), an unexpected result if we expect clausal subject inversion to be worse than nominal subject inversion.

(120) # Were that our perspectives had changed over the years and the issue we had worked on as students the topics of discussion?

(121) Were the issue that we had worked on as students and that our perspectives had changed over the years the topics of discussion?

Based on the aforementioned observations, I propose that the ungrammaticality of (119) is due to an extra-syntactic restriction. Matched Coordination and Mismatched Coordination in subject position allow conjuncts to be freely ordered. This isn't surprising if coordination establishes a symmetric relation between those conjoined items. Adopting this view, the ungrammaticality of (119) is expected.

4.5 Penultimate Merge

The description of the Peak Novelty Condition and Penultimate Merge captures in a straightforward way the criterial nature of the relationship between an External Conjunct/Criterial Position and a coordinator/Criterial Head. In the sections previous to this, I've motivated the Criterial Relation between a conjunct in the Criterial Position and the coordinator whose features it must match. Penultimate Merge accounts for the linear order of conjuncts while preserving the intuition that, in a Multiple Coordinate Complex, it is the highest conjunct, not the conjunct in the lowest specifier position, that is responsible for assigning categorical features to the coordinator.

Penultimate Merge also captures the intuition that the relation between External Conjunct and coordinator, as described by the CS Criteria, is established when the two are merged. If a third conjunct in a Multiple Coordinate Complex is merged to the Undominated Node, a operation trivially licit operation, it becomes unclear how and when a coordinator receives its featural specification. Take, for example, (113b) and (113f), reproduced below, two coordinate structures containing the same conjuncts in a different linear order.

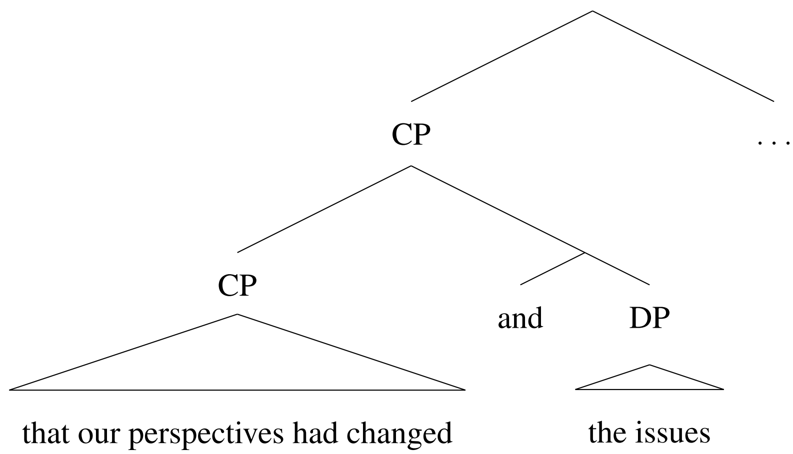
(122) You can depend on John, that they will arrive on time, and his assistant.

(123) * You can depend on that they will arrive on time, John, and his assistant.

If structural closeness determined what categorical features a coordinator would take, we would expect (122) to be bad, as the coordinator would take categorical features from the nearest specifier (a CP), project them, and encounter an error when "depend on" tries to select a CP. Again, we would expect (123) to be good, as the nearest conjunct, a nominal, would determine the coordinate structure's categorical feature and "depend on" would have no issue selecting a nominal complement. If, as I have proposed, Intermediate Conjuncts are merged after the criterial relation between External Conjunct and coordinator is established, Intermediate Conjuncts would contribute nothing to the categorization of a coordinate structure, an expected and observed result.

The possibility of adjunction to the outside of a coordinate structure can be further discounted by adopting Penultimate Merge. While adjoining to the top of a coordinate structure would get the correct linear order, interpretive problems would arise. In the structure below, adopting either Zhang's proposal or my revised version, is considered a CP.

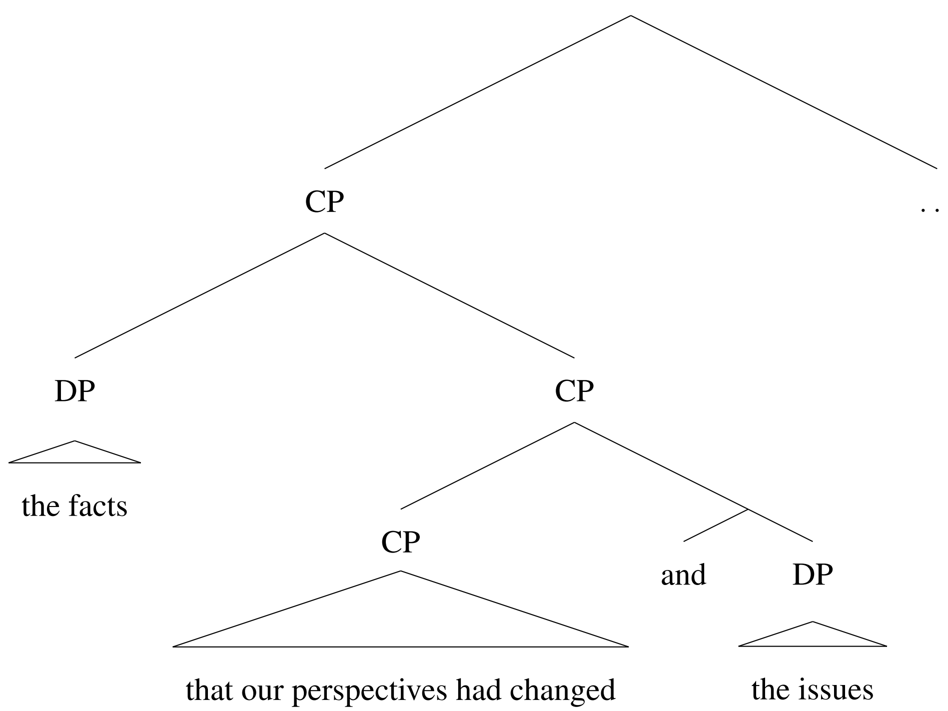
(124)



(125) That our perspectives had changed and the issues were the topics we discussed.

Adjoining an conjunct to the top wouldn't change the label of the maximal projection and an inconsistency regarding the highest conjunct and the label of the functional projection would be introduced.

(126)



(127) The facts, that our perspectives had changed, and the issues were the topics we discussed.

In summary, adjunction to the top of a Multiple Coordinate Complex cannot account for the interpretive and categorical observations made in this section. Instead, Penultimate Merge supports the claim made by Zhang (2010) regarding a connection between an External Conjunct. In this section, I proposed that this relation is between an Criterial Position and a Criterial Head, and have shown that Penultimate Merge ensures that Intermediate Conjuncts are interpreted as conjuncts without interfering with the relation between an External Conjunct and its head, a coordinator..

4.6 Multiple Coordinate Complex Symmetry

Throughout this paper, I've proposed that a symmetric relation exists between conjuncts in a Multiple Coordinate Complex, although the symmetric relation between conjuncts is crucially different than that symmetric relation between conjuncts in Repeated Coordinate Complexes and Coordinate Simplexes. As seen in Chapter 2 and observed by Borsley (2005), the second and third conjunct in a Multiple Coordinate Complex do not make up a Coordinate Simplex, in contrast to a Repeated Coordinate Complex. Therefore, conjuncts are symmetric Multiple Coordinate Complexes in that each conjunct has the same interpretive properties as the other conjuncts, but the group readings available to Repeated Coordinate Complexes are not available to Multiple Coordinate Complexes as the lexical item responsible for pair or subset formation, an additional coordinator, is absent.

In addition, conjuncts are symmetric in that each conjunct in a coordinate structure is equally as salient as the other. In (128), each person named is an equally salient hero. In terms of Theta Roles, John and Sue and Bill are equally salient Agents while Fluffy and Sparky are equally salient Patients (or Experiencers).

(128) John, Sue, and Bill saved Fluffy and Sparky.

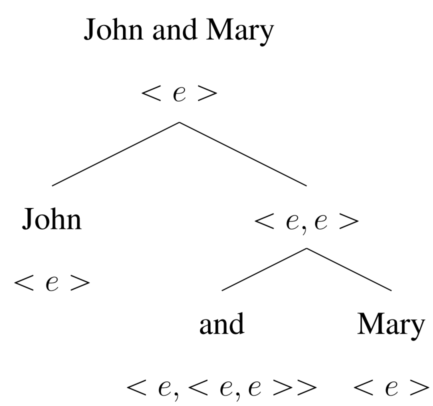
In general, coordinate structures establish a symmetric relation between their conjuncts. This generalization continues to apply to Multiple Coordinate Complexes despite the fact the second and third conjuncts do not form a coordinate simplex. Instead, the only complete coordinate structure, the entire coordinate complex complex, is the only structure available for interpretation.

Chapter 5

Semantic Concerns

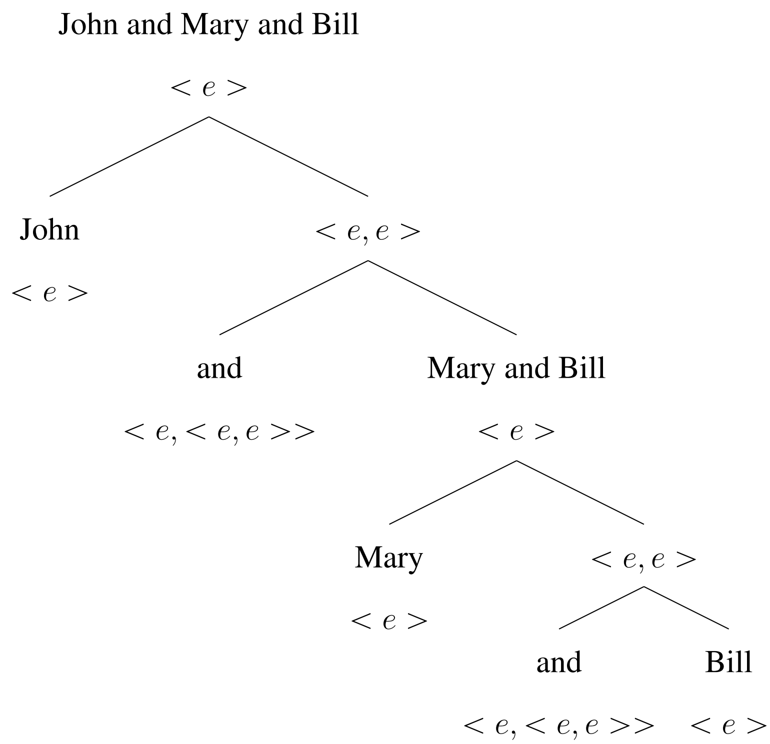
It remains to be seen how a Multiple Coordinate Complex is semantically interpreted according to the proposal I've outlined here. Traditional semantic analyses of coordinate structures describe coordinators as functions from a type to functions from a type to a type. Assuming proper names are of type $< e >$, the tree below gives a sense of how Coordinate Simplexes have been treated.

(129)



Repeated Coordinate Complexes, being composed of Coordinate Simplexes, are composed much the same way as Coordinate Simplexes, reinforcing the similarity between the two.

(130)



Previous analyses of Multiple Coordinate Complexes have posited a covert coordinator that composes the first and second coordinator. In this proposal, I've explicitly claimed that covert coordinator does not exist. A motivated solution to explain the semantic composition of a Multiple Coordinate Complex like,

(131) John, Mary, and Bill (went to the bank).

is needed [1]

The thrust of the proposal described in this paper has been syntactic. Crucially, a semantic solution must account for the interpretive differences described in Section 2 without positing an unpronounced coordinator. In Section 5.1, I introduce and quickly dismiss one solution. In Section 5.2, I elaborate on the semantic distinction that leads the the interpretive differences described earlier. In Section 5.3, I introduce an analysis which posits the existence of an infinite number of coordinators, a proposal which enables traditional semantic composition at a high conceptual price. In Section 5.4, I

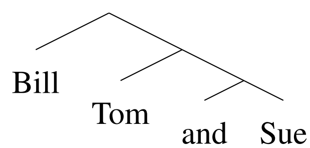
[1] I'd like to thank Nick Danis and Simon Charlow for bringing some of these concerns to my attention during RULing XI.

introduce an analysis which relies on a reimagination of "and" to posit the existence of one "and" which coordinates both Matched and Mismatched coordinate structures, including Multiple Coordinate Complexes. I claim this analysis both captures cross-linguistic generalizations about "and" and allows the semantic composition of Multiple Coordinate Complexes to proceed without positing covert material.

5.1 An Untenable Analysis

In an effort to force a MCC to compose, one claim might be made of the structure, specifically the conjunct that has undergone Penultimate Merge, below.

(132)



One might argue that if Intermediate Conjuncts like "Tom" were functions from entities to entities, of type $< e, e >$, the structure would compose. One might be able to imagine postulating some type of type shifting operation to derive such a type but it isn't clear what such a type would denote. The only analogue which comes to mind is that given to negation, which is usually treated as a function from truth values to truth values ($< t, t >$).

The solution briefly described in this section os ad hoc and should not entertained seriously. Solutions worth serious consideration rely on the observation made in the next section regarding the difference between treating coordination as a union operator or a set formation operator. Two tenable analyses follow this next section.

5.2 Union vs. Set Formation

As described in Winter (2001):39, treating "and" as a union operator leads to a different interpretation than treating "and" as a set forming entity. The difference is not seen in the first two examples below, but is seen in the second pair.

(133) a. ⟦Mary and John⟧ = $\{m'\} \cup \{j'\} = \{m', j'\}$ Union

b. ⟦Mary and John⟧ = $\{m'\}sf.\{j'\} = \{m', j'\}$ Set Formation

(134) Dylan and Simon and Garfunkel wrote hits in the sixties.

a. (Dylan and Simon and Garfunkel) wrote hits in the sixties. Union

i. $(\{d'\} \cup \{s'\}) \cup \{g'\} = \{d', s'\} \cup \{g'\} = \{d', s', g'\}$

ii. $\{d'\} \cup (\{s'\} \cup \{g'\}) = \{d'\} \cup \{s', g'\} = \{d', s', g'\}$

b. Dylan and (Simon and Garfunkel) wrote hits in the sixties. Set Formation

i. $d'sf(s'sfg') = d'sf\{s', g'\} = \{d', \{s', g'\}\}$

c. (Dylan and Simon) and Garfunkel wrote hits in the sixties. Set Formation

i. $(d'sfs')sfg' = \{d'sfs'\}, g' = \{\{d', s'\}, g'\}$

The parallel between "and" as a Union operation or a Set Formation operation and the derivation of a Coordinate Simplex/Repeated Coordinate Complex or that of a Multiple Coordinate Complex is clear. As a Union operation involving three conjuncts, "and" has either a reading in which three individuals wrote hits independently of each other or a reading in which all three collaborated on hits collectively. As a Set Formation operation "and" has two possible readings, both involving proper subsets.

This analysis, described in Winter (2001) as having origins in Hoeksema (1983), is altered from an account in which two "and" coordinators exist to one in which one "and" coordinator undergoes "type lifting" operations to account for readings. On Winter (2001)'s account, the one "and" can handle both collective and distributive readings and no distinction between Boolean "and" and non-Boolean "and" is required.

5.3 Multiple Coordinators

The first tenable account postulates the existence of two versions of any given coordinator: a version that conjoins two conjuncts, used in the construction of Coordinate Simplexes and Repeated Coordinate Complexes, and a version that conjoins $n > 2$

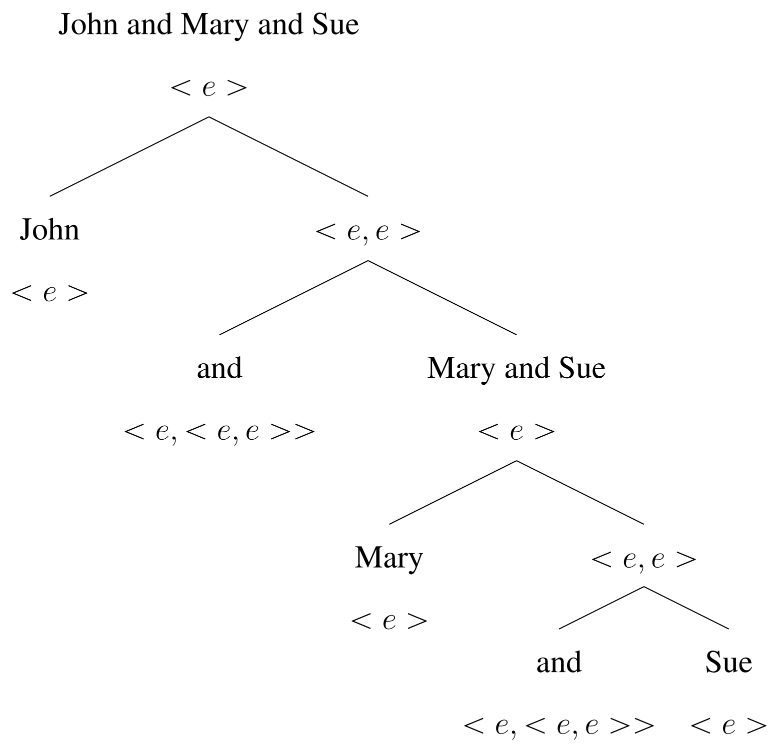
conjuncts, used in the construction of Multiple Coordinate Complexes. This semantic proposal relies on the intuition that there is something uncomfortable with changing the semantic type of an Intermediate Conjunct, while preserving the intuition that there ought to exist a structural difference to reflect the interpretive difference between readings.

Coordinator	Number of Conjuncts Conjoined	Example
and_2	two	Tom and Sue
and_2	two	(Tom and Sue) and Bill
and_2	two	Tom and (Sue and Bill)
and_3	three	Tom, Sue, and Bill
and_4	four	Tom, Sue, John, and Bill

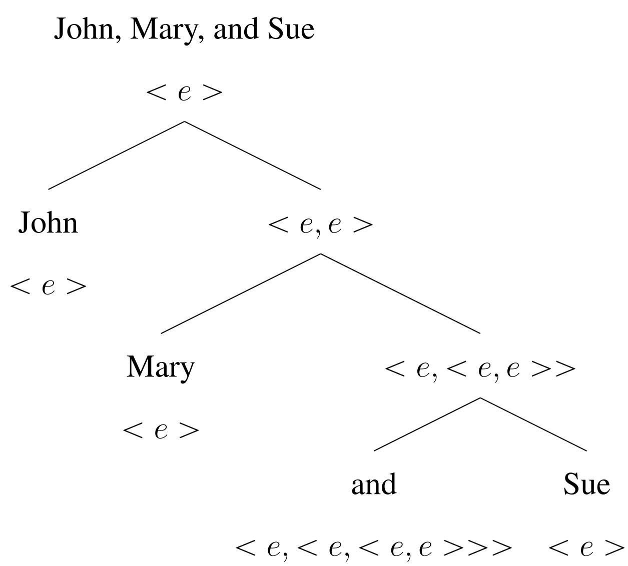
'and_2' is clearly the coordinator used in Coordinate Simplexes and RCCs. It remains unclear whether 'and_3' and 'and_4' ought to exist as distinct coordinators, or whether they should be subsumed as '$\text{and}_{n\,>\,2}$'. The difference between these two approaches isn't immediately relevant. For simplicity's sake, I'll distinguish the Simplex/RCC 'and', 'and_2', from the MCC 'and', '$\text{and}_{n\,>\,2}$'.

and_2	$\text{and}_{n\,>\,2}$
{j, k}	{j, k, m}
{{j, k}, m}	
{j, {k, m}}	

(135)



(136)



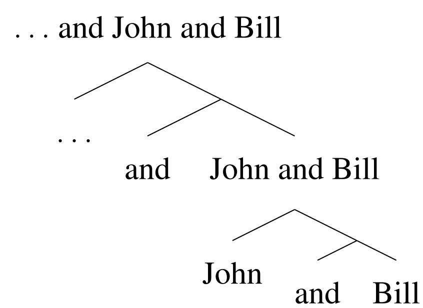
and$_2$ only takes two arguments, getting the readings accessible to and$_{n\,>\,2}$ by taking sets of two as arguments. On the other hand, and$_{n\,>\,2}$ takes n arguments where $n > 2$, as is therefore only capable of group or individual readings, not the subgroup readings available to and$_2$. This approach makes more sense than shifting the semantic type of an Intermediate Conjunct and using the same “and”, presumably and$_2$ (which takes two arguments), for semantic composition.

At first glance, an interesting and unexpected consequence of this proposal is the existence of a coordinator that takes, at minimum, more than two arguments. Cross-linguistically, a coordinator that takes three arguments at minimum, not two, is not attested. At first glance, and$_{n\,>\,2}$ seems to fit this definition. However, the existence of and$_{n\,>\,2}$ is predicated on the existence of and$_2$, and the two are, for all intents and purposes, identical when removed from the coordinate structure in which they appear. Consequently, “gen”, the Mandarin Chinese coordinator which may only coordinate nominals, is expected to have two instantiations: gen$_2$ and gen$_{n\,>\,2}$. What is actually unattested is a coordinator x, where x$_{n\,>\,2}$ exists but x$_2$ does not.

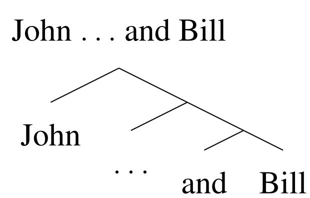
5.4 “and” as a Flexible Lambda Abstractor

A conceptual disadvantage to the account outlined above is the forced postulation of an infinite number of coordinators. Coordination is a potentially recursive operation, whether it be coordination of Coordinate Simplexes or coordination of Intermediate Conjuncts.

(137)



(138)



What’s more, a different set of coordinators is required to account for Mismatched Coordination, requiring coordinators that not only exist to coordinate coordinate structures containing n conjuncts, but coordinators that require n conjuncts where conjuncts differ in syntactic category. Constraining ourselves to Simplex coordination and six syntactic categories, we must posit the existence of thirty six coordinators. This number becomes exponentially larger as we admit Repeated Coordinate Complexes and Multiple Coordinate Complexes.

Current analyses of functional projections like “vP” and “VoiceP” (the two being distinct in this description) rely on a distinction between arguments in complement and arguments in specifier position. Adapting terminology from Kratzer (1996), I refer to the former as a *Internal Semantic Argument* and the latter as a *External Semantic Argument*.

Based on a observation in Marantz (1984) (presented in Kratzer (1996) a relation between a functional head and its internal semantic argument is different than that between a head and its external semantic argument. Kratzer (1996) adopts the view that “external arguments are not true arguments of their (heads)”, one coordinator can be used to account for Simplexes, RCCs, and MCCs. Building on these and subsequent accounts of the “vP” and “VoiceP” maximal projections, I propose that a coordinator like “and” may be able to take an infinite amount of External Semantic Arguments, and that one coordinator, “and”, may be able to accommodate and abstract over those External Semantic Arguments.

Cross-linguistically, coordinators take one conjunct, an “Internal Semantic Argument”, as their internal argument. We can begin to semantically define “and” with this observation. A coordinator, like a Voice, v, or V head, has this one true argument. This coordinator is unconcerned with the nature of its External Semantic Argument(s). These arguments may be as complex as an infinite number of arguments (a MCC) or as simple as one argument (either one conjunct or a coordinate structure itself).

Regardless of the semantic type of the conjuncts participating in the construction of the coordinate structure, “and” can be viewed as a functional head that takes one internal argument and n external arguments, where $n \geq 2$ conjuncts results in a MCC and $n = 1$ results in a Simplex/RCC. Below, one “and” gets the Simplex reading in

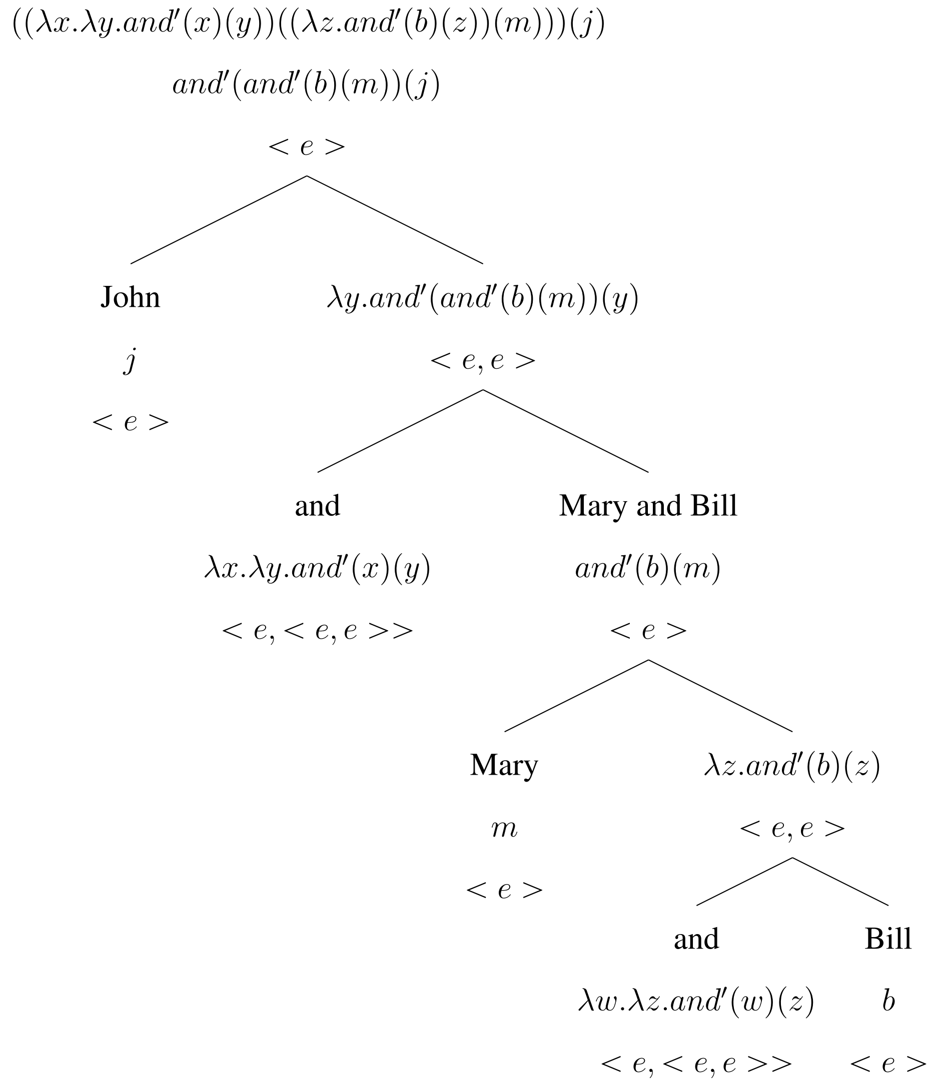
(139), the RCC reading in (140), and the MCC reading in (141),

(139) John and Mary

$(\lambda x.and'(m)(x))(j))$

- and; $and'(m)(j)$; $< e >$
  - John; j; $< e >$
  - $\lambda y.and'(m)(y)$; $< e, e >$
    - and; $\lambda x.\lambda y.and'(x)(y)$; $< e, < e, e >>$
    - Mary; m; $< e >$

(140) John and Mary and Bill



(141) John, Mary, and Bill

$$and'(b)(m)(j)$$
$$< e >$$

John $\quad j \quad < e >$

$$\lambda y.and'(b)(m)(y)$$
$$< e, e >$$

Mary $\quad m \quad < e >$

$$\lambda y.\lambda z.and'(b)(y)(z)$$
$$< e, < e, e >>$$

and $\quad \lambda x.\lambda y.\lambda z.and'(x)(y)(z) \quad < e, < e, < e, e >>>$

Bill $\quad b \quad < e >$

The coordinator in (141), of type $< e, < e, < e, e >>>$ differs in type from that in (139) and (140) but is still the same coordinator as "and" simply has another coordinator to abstract over in (141). This analysis is similar to the multiple coordinates analysis presented in Section 5.3 in that types of coordinates remain the same, but leverages the cross-linguistic fact that the left periphery is infinitely recursive in a coordinate structure to present a conceptually simpler analysis without any of the ad hoc stipulations presented in Section 5.1.

5.5 Conclusion

This section has outlined some avenues through which a semantic analysis of the syntactic proposal described throughout this paper may be pursued. These analyses do not rely on a covert item to ensure interpretation. Instead, these analyses rely on what appears to be a cross-linguistic property of coordination, especially on nominal conjunction, to motivate an analysis in which one coordinator is responsible for the three types of coordination discussed.

Chapter 6

Conclusion

In this paper, I have proposed that using Penultimate Merge to derive Multiple Coordinate Complexes results in a syntactic structure that captures the interpretive difference a Multiple Coordinate Complex and a Repeated Coordinate Complex. In addition, adopting the Peak Novelty Condition, a empirically necessary revision of the Extension Condition, motivates a syntactic derivation of a Multiple Coordinate Complex that does not rely on non-standard syntactic structures, like a ternary structure for coordinate structures, or non-standard syntactic processes like Pair Merge. Finally, utilizing Penultimate Merge captures linear order effects with respect to selection of Multiple Coordinate Complexes in non-subject position. In addition, using Penultimate Merge provides additional evidence in favor of categorizing conjuncts as complements and specifiers to an coordinator instead of considering coordinators adjuncts. Finally, the adoption of the Peak Novelty Condition motivates a derivation of Multiple Coordinate Complexes which supports an analysis by Zhang (2010), an analysis that provides a principled account of a coordinate structure's selectional requirements and a principled account of a coordinate structure's syntactic label without resorting to structure-specific stipulations.

Bibliography

al Khalaf, E. (2015). *Coordination and Linear Order*. Ph. D. thesis, University of Delaware.

Borsley, R. D. (2005). Against conjp. *Lingua 115*(4), 461–482.

Chomsky, N. (1995). *The Minimalist Program*. The MIT Press.

Fox, D. and J. Nissenbaum (1999). Extraposition and scope: a case for overt qr. In C. J. D. H. S. Bird, A and P. Norquest (Eds.), *Proceedings of the 18th West Coast Conference on Formal Linguistics*. Cascadilla Press.

Gazdar, G. e. a. (1985). *Generalized Phrase Structure Grammar*. Basil Blackwell.

Hoeksema, J. (1983). Plurality and conjunction. In A. G. B. ter Meulen (Ed.), *Studies in Modeltheoretic Semantics*, pp. 1–63. Foris Publications.

Kratzer, A. (1996). *Severing the External Argument from its Verb*, pp. 109–137. Dordrecht: Springer Netherlands.

Lakoff, G. (1986). Frame semantic control of the csc. In A. M. F. et al. (Ed.), *CLS 22 part 2. Papers from the Parasession on Pragmatics and Grammatical Relations*, Volume 22, Chicago, Ill. University of Chicago.

Lakoff, G. and S. Peters (1969). Phrasal conjunction and symmetric predicates. In D. Reibel and S. Schane (Eds.), *Modern Studies in English: Readings in Transformational Grammar*. Englewood Cliffs, New Jersey: Prentice-Hall.

Lebeaux, D. (1988). *Language Acquisition and the Form of Grammar*. Ph. D. thesis, University of Massachusetts.

Linares, C. (2012). *The Dependency Axiom and the Relation between Agreement and Movement*. Ph. D. thesis, Rutgers University.

Marantz, A. (1984). *On the Nature of Grammatical Relations*. MIT Press.

Moltmann, F. (1992). *Coordination and comparatives*. Ph. D. thesis, MIT.

Payne, J. (1985). Complex phrases and complex sentences. In T. Shopen (Ed.), *Language Typology and Syntactic Description*, pp. 3–41. Cambridge University Press.

Richards, N. Lowering and cyclicity: Attraction by x from spec xp.

Richards, N. (1997). *What Moves Where When in Which Language?* Ph. D. thesis, Massachusetts Institute of Technology.

Rizzi, L. (1996). Residual verb second and the wh-criterion. In A. Belletti and L. Rizzi (Eds.), *Parameters and functional heads*, Volume 2, pp. 63–90. New York: Oxford University Press.

Ross, J. R. (1967). *Constraints on Variables in Syntax*. Ph. D. thesis, Massachusetts Institute of Technology.

Safir, K. (2010). Viable syntax: Rethinking minimalist architecture. *Biolinguistics 4*(1).

Safir, K. (2015, December). The a/a'-distinction as an epiphenomenon. Handout.

Safir, K. and M. Bassene (2015). The morphosyntax of verb stems in jóola eegimaa: Stem-internal movement and compositional interpretation. ms.

Sag, I. A., G. Gazdar, T. Wasow, and S. Weisler (1985). Coordination and how to distinguish categories. *Natural Language and Linguistic Theory 3*, 117–171.

Winter, Y. (2001). *Flexibility Principles in Boolean Semantics: coordination, plurality and scope in natural language*. Cambridge, Massachusetts: MIT Press.

Winter, Y. (2006). Multiple coordination: Meaning composition vs. the syntax-semantics interface. Unpublished manuscript.

Zhang, N. N. (2010). *Coordination in Syntax*. Cambridge University Press.