THEMATIC DISCONTINUITY

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1992

Distributed by
Toronto Working Papers in Linguistics
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by

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A thesis submitted in conformity with the requirements
for the Degree of Doctor of Philosophy in the
University of Toronto

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Abstract

This thesis develops an analysis of thematic discontinuity. Thematic discontinuity occurs when the reference of a single thematic role is expressed by several syntactic constituents. Constraints are proposed to account for interpretive and syntactic asymmetries between the constituents of a thematic discontinuity. These constituents typically nest in a general/specific relationship. This is formalized in terms of the notion of the "granularity" of a role. I show that thematic discontinuity is both pervasive and systematic. Although thematic discontinuity is prototypically found with adjunct phrases, I demonstrate that this phenomenon also extends to arguments, accounting for asymmetries with topicalization and incorporation, among other phenomena. This leads directly to reformulating the Θ-Criterion as an interpretive constraint applying equally to arguments and adjuncts.

In addition, the approach to thematic discontinuity taken here suggests an explanation for asymmetries between agent and instrument phrases. Some of these asymmetries have been handled in the literature through a stipulative subject hierarchy.

I suggest that agent and instrument roles be analyzed as a thematic discontinuity, each expressing a "cause" role with a different granularity.

Topicalization is one productive construction that frequently involves thematic discontinuity. I provide a detailed account of topicalization in English, arguing that there are two types of topic constructions. Topics can involve adjunction to IP or they can be base-generated as specifiers of a functional projection, TopP. The consequences of these two structures are investigated, with particular attention to their interactions with the Subjacency Condition and the Empty Category Principle (ECP). Detailed consideration of sentences with TopP projections leads to a simplification of the ECP that applies uniformly to arguments and adjuncts at all levels of representation. Idiolectal variation found with the TopP construction provides insight into syntactic properties of functional heads and their projections.

Thematic discontinuity shows that a thematically relevant syntactic relationship can exist between constituents in a clause without being mediated by a predicate. The approach taken here casts doubt on the classic argument/adjunct distinction, and extends the empirical coverage of the theory of grammar while simplifying the theory.

Supervisor: Professor E. A. Cowper

Acknowledgements

There are many people that I would like to thank for their help and encouragement in this work. Elizabeth Cowper, my thesis supervisor, has been a patient friend and a constant source of good ideas and insightful criticism. She read every sentence of this thesis with careful attention to detail, and sometimes put more red ink on a page than I had black. Her demands for clarification, in both style and content, often made me realize just how much I was taking for granted. I consider myself fortunate to have had the opportunity to work under Liz's supervision.

I also wish to thank Diane Massam for numerous helpful discussions on these topics. She has given me many useful criticisms and suggestions, and has really helped me to clarify my assumptions and proposals.

I have particularly benefited from my involvement on the Social Sciences and Humanities Research Council of Canada Project ("Thematic Relations in the Lexicon and in Syntax"). In addition to financial support, this project has provided a valuable forum for discussing many of the ideas in this thesis.

There are many people who I wish to thank for their helpful comments on various topics in this thesis and well-timed words of encouragement, in particular: Susanne Carroll, Jack Chambers, Elan Dresher, Jila Ghomeshi, Geoff Huck, Barry

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Miller, Regine Moorcroft, Younghee Na, Keren Rice, Yves Roberge, Mike Rochemont, Ron Smyth, Cynthia Wannamaker, Ron Wardhaugh, and Hitay Yükseker. Of course, any errors and omissions are my own.

I am grateful, in particular, to John Colarusso, who is primarily responsible for fostering my early interests in linguistics.

There have been many others who have contributed to make my experiences as a graduate student both personally and intellectually rewarding. Although too many to enumerate here (and to attempt to do so would risk neglecting some), I wish to extend my appreciation to them all.

I wish to also thank the Social Sciences and Humanities Research Council of Canada for generously supporting me during my graduate studies through their doctoral fellowship programme.

On a more personal note, I wish to thank my family and close friends who have been there to see me through this. In particular, I wish to thank Karen, Bill and Rebecca for much needed distractions that helped me keep my sense of humour during the last few months. I also owe a great deal to my parents, whose unfailing love and encouragement have sustained me through all of this and all that led up to

it. Emily and I would particularly like to thank Grandpa and Grandma Brunson, Grandma Loker, and Uncle Ted for coming to our rescue.

Finally, I wish to thank Geoff Loker and Emily. Geoff has contributed so much to this thesis, and sacrificed so much for it, yet I have all too often been silent in my appreciation. His enthusiastic encouragement, careful proofreading, helpful advice, sense of humour (groan), and unending patience have helped me keep everything (almost) in perspective. Geoff kept the patterns of our life together going on around me while I devoted myself to finishing this project. I could not have finished without him. And Emily, somehow you make so many things a great deal more meaningful.

CHAPTER 1

Introduction

§1.1 Introduction

This thesis develops an approach to *thematic discontinuity*. A thematic discontinuity is a discontinuous construction in the syntax involving a single role distributed across two or more separate syntactic constituents. The data under investigation here are taken primarily from English, although I do provide descriptions of some constructions in other languages suggesting that the proposals made here might be typologically supported.

I will demonstrate that, in English, thematic discontinuity cross-cuts the traditional argument/adjunct distinction, and that extending syntactic theory to account adequately for thematic discontinuity leads directly to some important refinements to the theory. Thematic discontinuity provides crucial evidence for the correct formulation of certain key principles of grammar. We will see that an analysis of thematic discontinuity allows us to account for certain aspects of the behaviour of adjuncts, incorporation, and topicalization. The approach taken here readily extends

to explain subject hierarchy asymmetries without stipulating, for example, that agents are higher on the subject hierarchy than instruments.

Two principles of grammar will receive particular attention. These principles, although they are quite different, share the property of applying differentially to arguments and adjuncts. First of these is the Θ-Criterion, which applies to arguments but excludes adjuncts from its domain of application by stipulation. We shall see that the Θ-Criterion can be replaced by an interpretive constraint that applies equally to arguments and adjuncts. The interpretive version of the Θ-Criterion, together with principles of argument structure (of the sort proposed, for example, in Grimshaw 1990), the Projection Principle, and the constraints that will be proposed to restrict thematic discontinuity, covers a wide range of syntactic and interpretive limitations on arguments. As well, the interpretive version of the Θ-Criterion and the constraints on thematic discontinuity apply equally to adjuncts, accounting for limitations on the interpretation and syntactic distribution of adjuncts that would otherwise not be explained.

A second principle of grammar that differentiates between arguments and adjuncts is the Empty Category Principle (ECP). The ECP, according to Lasnik and Saito (1984, forthcoming) applies at s-structure and LF to traces in argument positions, but it only applies at LF to adjunct traces and other non-argument traces. This differential application is also stipulated, and does not follow from any intrinsic

properties of adjuncts. Again, I will demonstrate that this stipulation is not necessary. I will show that consideration of thematic discontinuity provides crucial evidence in favour of a revised formulation of the ECP that not only applies uniformly to arguments and adjuncts, but also has broader empirical coverage.

In the following section, I will present some of the theoretical assumptions that will be made throughout the thesis, and in §1.3, I will give a brief overview of the organization of this thesis.

§1.2 Theoretical Assumptions

The proposals made here will be cast within recent developments in the Government Binding approach to syntax. Most of the assumptions outlined here are fairly standard. Since most of the proposals that I will be making involve structural and thematic properties of constituents, I will outline my assumptions regarding these components of grammar. Other concepts and assumptions will be presented where they are relevant.

§1.2.1 The Principle of Full Interpretation

A fundamental principle of GB theory is Chomsky's (1986b) Principle of Full Interpretation, given in (1).

(1) Principle of Full Interpretation:

Every element of PF and LF must receive an appropriate interpretation.

(Chomsky 1986b, p. 98)

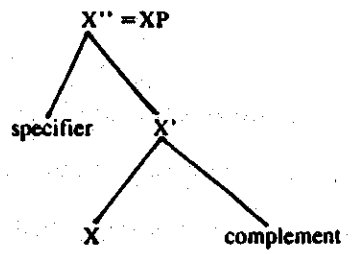
This principle prevents uninterpreted or vacuous elements from appearing at either level of representation.

§1.2.2 X-Bar Theory

X-bar theory is concerned with the internal structure of maximal projections. The basic tenet of X-bar theory is that phrasal categories are projections of lexical categories according to general principles that are category-neutral (Jackendoff 1977, Farmer 1980, Stowell 1981). I will assume that both lexical and functional categories project to two bar levels (see Chomsky 1986a, but compare Speas 1986, Fukui 1986). There is no recursion on intermediate projections, but adjunction is possible to both heads and maximal projections. Furthermore, I will assume that phrase structure trees are binary branching structures; this implies that the relation of sisterhood is

unique.[1,2] The sister of the head is referred to as the complement; the sister of the single-bar intermediate projection is referred to as the specifier. Schematically, a head X has the following projection (the order is irrelevant, but I have given the order that is typically found in English):

(2)

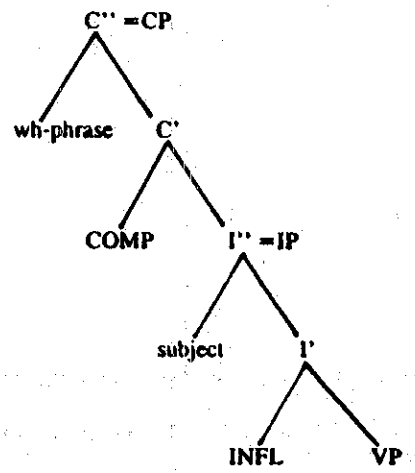


Functional heads also project in the same way. The structure of S fits the X-bar schema by being the projection of (at least) two functional heads, COMP and INFL, as follows (see Chomsky 1986a):

1. Dowty (1982) suggests that a binary branching syntax, a "one argument at a time" approach, gives a natural account of grammatical relations in the syntax. See also Kayne (1981), Jacobson (1987), Larson (1988a). Compare Chomsky (1986a, pp. 13-14) where an alternative definition of the sisterhood relation is proposed.

2. Although all of these assumptions can be found in the literature, I adopt these assumptions primarily to reduce the number of possible structures in which an adjunct might occur.

(3)



There have been a number of recent proposals that there are additional functional projections dominating VP. Although I will be alluding to these proposals where relevant, I will continue to assume that IP immediately dominates VP, although nothing in the thesis crucially hinges on this assumption.

Many current researchers assume that d-structure is a pure representation of subcategorized thematic relations. I will not be adopting this assumption. First of all, COMP and INFL do not have any obvious thematic properties, yet I will be assuming that CP and IP projections are present at d-structure. In addition, I will be assuming that adjuncts are present at d-structure. Of course arguments must be in argument positions at d-structure, and adjuncts are adjoined to maximal projections, but I will assume that all of these constituents are present at the level of d-structure.

§1.2.3 Theta Theory and Argument Structure

In this section I will present some of the assumptions that I will be adopting regarding the representation and assignment of Θ-roles, as well as outlining some current controversies about the status of Θ-roles. In GB theory, it has generally been agreed that the lexical entry of a verb contains a semantic-like information template that is referred to as a Θ-grid (see Stowell 1981). In early proposals the Θ-grid took the form of an unordered list of thematic roles that were assigned to the various arguments of the verb in a sentence. More recently such Θ-grids have been replaced by structured representations encoding some of the information that is relevant to the mapping between thematic relations and structural positions.

One type of information that has commonly been encoded into Θ-grids is an annotation of whether the role is assigned internal or external to the VP (see, for example, Williams 1980, 1981, Belletti and Rizzi 1988, Zubizarreta 1987, Di Sciullo and Williams 1987). Direct objects are assigned their Θ-role inside VP, directly by the verb. The direct object is the sister of the verb (i.e. the complement inside the VP) in a configuration of Θ-government.

The grammatical relation of subject has been analyzed in a number of ways -- there have been some proposals that the subject is base-generated as a specifier of VP that raises to the specifier of IP (Speas 1986, Fukui 1986), while other proposals

maintain that subjects can be base-generated as specifiers of IP. Following Williams (1981), a designated external role is passed up the VP projection and this role is assigned by predication to the subject position (see also Rothstein 1983). Marantz (1984) argues that the Θ-role of the subject is compositionally determined by the constituents in the VP. This suggests that the percolation of a Θ-role up to the maximal projection of VP does not consist simply of passing up an index from a Θ-grid, as Williams suggests.

§1.2.4 The Θ-Criterion and the Projection Principle

The basic principle of Theta Theory is the Θ-Criterion, stated in (4).

(4) The Θ-Criterion

Each argument bears one and only one Θ-role, and each Θ-role is assigned to one and only one argument.

(Chomsky 1981, p. 36)

It is assumed that the Θ-Criterion holds at LF; however, the Projection Principle, given in (5), extends it to s-structure and d-structure as well.

(5) The Projection Principle

Representations at each syntactic level (i.e., LF, and d- and s-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

(Chomsky 1981, p. 29)

§1.2.5 On the Status of Θ-Roles

In some recent work, it has been suggested that verbs appear in the lexicon with a Lexical Conceptual Structure (LCS) (see for example Hale and Keyser (1986, 1987), Rappaport, Laughren and Levin (1987), Rappaport and Levin (1986, 1988)). The LCS of a verb is a predicate decomposition that represents the concept of the verb, together with its participants. The participants are variables in the LCS, and these variables correspond to the Θ-roles of the verb. In addition to the LCS, the lexicon also gives the basic Predicate Argument Structure (PAS) of the verb. Linking rules associate variables in the LCS with positions in the PAS. Linking rules capture some of the pervasive generalizations that exist between syntactic positions and thematic relations (see also Fillmore 1968, Jackendoff 1983, Levin and Tenny 1988, Ostler 1980), but the PAS is totally devoid of any thematic content.

The PAS, together with the Projection Principle and X-bar Theory, defines d-structure grammatical relations. One premise of this approach is that Θ-role labels (e.g. "agent") are not available to the syntax. In this approach Θ-roles are claimed to be entirely derivative of LCS substructures that also define semantic classes of predicates. Linking rules take these thematically relevant substructures and convert them into overt relations that are expressed schematically in the PAS and projected into d-structure. In this way, the syntax has no direct access to the thematic type of its arguments -- the syntax can only distinguish the manner of Θ-role assignment. Θ-role labels are artifacts of LCS substructures and have no relevance in the syntax. This is essentially the approach of Rappaport and Levin (1988). See also Zubizarreta (1987) for an even stronger claim that Θ-roles have no status in the theory of syntax. We will see that evidence from thematic discontinuity suggests that the strong form of this hypothesis cannot be maintained -- the syntax does need to know when two constituents share a role in a thematic discontinuity.

Another approach to thematic relations is that taken in Jackendoff (1976, 1983, 1987). In this approach, detailed conceptual structures represent the decompositional analysis of the predicate, and thematic relations are positions defined in these representations. The motivation for the conceptual structures that Jackendoff proposes transcends issues of linguistics, and the structures are extended to other cognitive domains, including vision. I do not share this concern for a generalized theory of cognitive function (see also van Voorst 1988).

I agree with Rappaport and Levin (1988) and Jackendoff (1983) in assuming that Θ-roles are not syntactic primitives[3], but are derivative of conceptual representations. I do, however, continue to use Θ-role labels diacritically, not precluding further analysis, but merely glossing over that analysis. This point harks back to Jackendoff (1972) where, in the absence of a principled theory and representation of meaning, Jackendoff suggests "provisionally adopt[ing] an arbitrary feature, if we have clear intuitions about when this feature is present, and if it is fully understood that it has no life independent of the complete reading in which it is embedded."[4] (p. 24)

§1.2.6 Prepositional Phrases

Although a typical transitive verb is subcategorized for a single internal argument, some predicates are subcategorized for two internal positions. There are a number of predicates that obligatorily take a PP argument as well as an NP argument. Some of these enter into transitivity alternations (e.g. "give"), while others do not (e.g. "put").

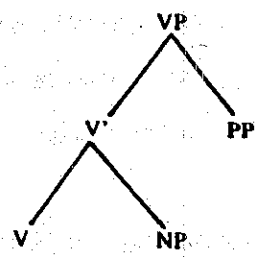
3. This approach contrasts sharply with claims made in Case Grammar. See Fillmore (1968), Anderson (1977).

4. Rappaport and Levin (1988) argue that in many cases we do not have clear intuitions about Θ-roles. I will set this problem aside.

I will assume that all obligatorily subcategorized arguments are assigned a role by the verb. In the case of bare NP direct objects, this role assignment is direct. In the case of obligatory PP arguments, the role is assigned indirectly. I assume that PP's have an inherent role that is compositionally determined by the nature of the preposition and the NP.[5] Following Higginbotham (1985), I assume that PP's have an open Θ-position that must link to something. In the case of obligatorily subcategorized PP's, this open position links with the subcategorized role in the triadic Θ-grid, and as a result this role is indirectly assigned.

There is considerable controversy about the structure of VP when the verb has two internal arguments.[6] Since I am assuming that syntactic structures are strictly binary, I will assume that obligatory PPs are generated inside the VP as sisters of V' (i.e. as specifiers of the VP) in the following configuration:

(6)



5. The role might also be partially determined by the context.

6. See Barss and Lasnik (1984), Larson (1987, 1988a, 1988b), Jacobson (1987), among others.

Some support for this structure comes from the fact that the direct object and the verb could be construed as compositionally determining the nature of an appropriate locative for "put". This is illustrated in the examples in (7).

(7) a) The contractor put the book on the table.

b) *The contractor put the book in Toronto.

c) The contractor put the subdivision in Toronto.

d) *The contractor put the subdivision on the table.

The unacceptability of (7)d) is certainly due to the impossibility of the situation being described. The situation described in (7)b) is plausible, but the location here is inappropriate for the particular choice of object. It is not clear, however, that the constituency must be as presented above. It might be the case that the object is inappropriate for the particular choice of location, suggesting a constituency where the verb and the PP form a constituent. Since my ultimate concern will be m-command relationships between arguments and adjuncts, the details of the internal structure of VP are largely irrelevant to the approach that I will be taking.

I will be making a rather strong claim that PP's which have been assumed to be optionally subcategorized due to their close connection to the semantics of the predicate (see Chomsky 1965) do not have their roles listed in the Θ-grid of the

predicate. So, for example, I will not be assuming that an optional instrument is part of the Θ-grid of virtually all agentive verbs. Unless the role is obligatory, I will assume that the PP is an adjunct. As Czaykowska-Higgins (1991) points out, specifying a verb for optional roles is essentially the same as proliferating homonyms in the lexicon, and it is not at all clear how one could reconcile optional roles with the Projection Principle of Chomsky (1981).

Like subcategorized PP's, adjunct PP's also tend to be thematically transparent -- they have an inherent role. These PP's also have an open Θ-position. Higginbotham (1983, 1985, 1987), following Davidson (1967) (in Davidson 1980), assumes that the Θ-grid of the verb has an event (E) position. The open position in the adjunct PP is discharged to the E position in the Θ-grid, under Θ-identification. In this way, an adjunct is interpreted as modifying the event, and is thematically licensed without specifically being listed in the Θ-grid of the verb. I will adopt these assumptions and furthermore assume that any number of adjuncts can be discharged to a single E position.

My assumptions are summarized in the following:

(8) a) The lexical entry of a verb contains a Θ-grid that has an event position and lists obligatory roles. PP's have an open Θ-position that must be linked.

b) Explicit Θ-roles from the Θ-grid are assigned by predication (subjects), directly (direct objects) or indirectly (linking an open position from a PP with a subcategorized role in the Θ-grid).

c) Adjunct PP's discharge their open position to the E position of the verb's Θ-grid.

§1.2.7 Adjuncts and Arguments

In this thesis, I am restricting my attention to what might be called thematic adjuncts, that is, adjuncts that bear a thematic relation to the event. There are a number of differences between arguments and adjuncts, some of which we might consider to be intrinsic differences. Adjuncts are always optional and are quite free in their distribution.[7] The role of the adjunct is transparent;[8] that is, the role that the adjunct bears with respect to the event is inherently part of the meaning of the adjunct phrase. I will not be assuming that the role is assigned by the preposition. The preposition "on", for example, can be used locatively or temporally. The inherent role of the adjunct is interpreted compositionally from the preposition and the NP.

7. Aspectual properties of the event impose limitations on which adjuncts are admissible. See Pustejovsky (1988), Tenny (1988, 1989), Grimshaw (1990).

8. See also Hale (1978), Nash (1980), Ostler (1980) for discussion of the contrast between grammatical cases and semantic cases.

Another intrinsic difference between an argument and an adjunct is due to their relationship to the predicate. Arguments are subcategorized, adjuncts are not, hence arguments are subject to the Projection Principle, while this principle is irrelevant for adjuncts.

§1.3 Overview of the Organization of the Thesis

This thesis is divided into two major components. Chapter 2 starts out as a pretheoretic, observational account of thematic discontinuity. Based on the evidence presented, two constraints are proposed that account for interpretive and syntactic restrictions on the distribution of thematic discontinuity. It is demonstrated that thematic discontinuity transcends the argument/adjunct distinction. The approach taken here leads directly to an interpretive version of one clause of the Θ-Criterion (see also Zubizarreta 1987, Grimshaw 1990). Chapter 2 closes with a sketch of how the approach to thematic discontinuity might be extended to account for distributional asymmetries found with agents and instruments.

Most previous approaches to Θ-roles have focussed almost exclusively on the relationship between the predicate and its arguments (but see Levin 1979). The approach taken here differs from these in exploring relations between role-bearing constituents -- relations that are not mediated by a predicate. It is demonstrated that

asymmetries in the relation between constituents in a thematic discontinuity are pervasive and systematic.

Chapter 3 provides a detailed syntactic analysis of thematic discontinuity in English. Particular emphasis is placed on the implications of thematic discontinuity for principles of bounding and the ECP. One of the syntactic phenomena from chapter 2 that can introduce thematic discontinuity is the topic construction. The syntax of topic constructions is examined in detail in chapter 3, and it is demonstrated that these constructions provide crucial evidence as to the correct formulation of the ECP. The revised version of the ECP that is defended in chapter 3 applies equally to arguments and adjuncts, and provides an explanation of the apparent immunity of wh-adjunct traces to the ECP (Huang 1982). A surprising result of chapter 3 is that, by incorporating thematic discontinuity into the theory, we not only extend the empirical coverage of the theory, but at the same time we simplify the theory.

CHAPTER 2

Interpretive and Syntactic Constraints

On Thematic Discontinuity

§2.1 Introduction

Consider sentences such as those in (1).

(1) a) John waited for Mary on a/the bench under a/the tree.

b) John waited for Mary under a/the tree on a/the bench.

c) John arrived on Tuesday at noon.

d) John arrived at noon on Tuesday.

It has long been accepted that multiple instances of such adverbial roles as locatives and temporals are allowed in a single sentence (Nilsen 1973, Bresnan 1982, Grimshaw 1990). Within case grammar approaches, such examples appeared to violate the uniqueness condition on case (the "one-instance-per-clause principle" of Fillmore 1968)

-- "each case relationship occurs only once in a simple sentence" (Fillmore 1968, p21). The way around such apparent counter-examples as (1) involved either showing that the roles were actually distinct, or arguing that they occurred in different syntactic domains. The latter could take one of two forms:

1) An abstract predicate could create a separate (higher) clause giving as many clauses as necessary for uniqueness. This proposal is similar in spirit to analyses that distinguish "inner"/core roles from "outer"/peripheral roles, a distinction that is pervasive in the current literature (Chomsky 1965, Ostler 1980, Somers 1987), and which will be considered in more detail in §2.3.1.1.

2) All but one of the multiple instances of a role could be treated as modifiers of a single instance of that role (Fillmore 1971, Somers 1987, Zubizarreta 1987, but compare Nilsen 1973, Grimshaw 1990). This possibility will be discussed in §2.1.1.

Examples of multiple temporals and locatives have recently been used to highlight a contrast between adjuncts and the arguments of a predicate. It is generally concluded that temporals and locatives like those in (1) cannot be interpreted as grammatical arguments of the verb, since this would involve a violation of the biuniqueness condition on arguments (the Θ-Criterion). The Θ-Criterion applies only to arguments, and adjuncts are excluded from it by definition. The tendency has been

either to ignore adjuncts or to treat them as something totally different (operators in Bresnan 1982; constituents that augment the verb to give a derived, higher-order predicate, in McConnell-Ginet 1982; secondary predicates in Zubizarreta 1987.)

§2.1.1 Embedded Modification vs. Multiple Instances of a Role

We need to consider critically the possibility that multiple locatives and temporals like those in (1) might all involve embedded modification constructions. Certainly their freedom of order argues against such a treatment; however, the various orders could be transformationally derived.[1] Consider again the sentences in (1). The most reasonable embedded modification structure for (1)a) is (2), given the nature of benches and trees.

(2) John waited for Mary [on a/the bench [under a/the tree]].

1. Postal (1964), and McCawley (1982, 1987), among others, have proposed that transformations can introduce s-structure discontinuity. In contrast, Baltin (1987) suggests the following principle:

> Transformations never cause phrase markers to result in discontinuous constituency, though discontinuous base phrase markers are permitted. (p. 25)

See also Hale's (1983) account of Warlpiri syntax, where flat syntactic structures are subject to semantic interpretations that compose the meanings of discontinuous expressions.

With such a structure, the PP "under the tree" modifies the bench. Some authors (e.g. Somers 1987) claim that multiple locatives occurring post-verbally must be analyzed this way. Somers claims that this is demonstrated "by inserting the ellipsed relative pronouns"(p.147), giving the example in (3).

(3) I was sitting on a bench which was by a tree which was in a park which was in London. (Somers 1987, p. 148, ex. 12c).

What Somers and other proponents of such analyses miss is the possibility that these constructions are actually ambiguous, with an embedded modifier reading and one which involves multiple locatives modifying the event.

Consider sentences (1)a) and (1)b) in a context where there is a small tree and a relatively large bench. This bench could be said to be under the tree even if a substantial amount of the bench were, in fact, not under the tree. Now, if John were waiting for Mary on this bench, it is conceivable that he might not be actually under the tree. The sentence in (1)a) does have this as a possible interpretation -- an interpretation that corresponds to the embedded modifier analysis of "under the tree" in this context. It also has an interpretation, perhaps even the preferred interpretation, that John is actually waiting under the tree, regardless of the tree's coverage of the bench. In this interpretation, the phrase "under the tree" is locating the event and not

merely modifying the bench. In sentence (1)b), this is the only possible interpretation. The same point can be illustrated by the possibilities for denial, as shown in (4).

(4) a) John met Mary on the bench under the tree, but he didn't meet Mary under the tree.

b) *John met Mary under the tree on the bench, but he didn't meet Mary under the tree.

Sentence (4)a) eliminates the ambiguity and forces the embedded reading of the PP, invoking a context of the sort proposed above. It is impossible to deny that the event took place under the tree when the order of the locatives is the one that would be impossible in an embedded modification structure (i.e. (4)b)).

Another context that can distinguish the embedded modifier reading from the multiple locative reading arises if the bench has been moved. In the embedded modifier reading, it is possible that the bench currently (i.e. at the moment of speech) being identified as "under the tree", was not actually under the tree at the time of the event (it has been moved since the event occurred). In this context, the sentence in (1)a) makes no assertion that the event took place under the tree. Notice that sentence (1)b) precludes such a context, although it allows for the reading that the bench may have been moved and is not now (but crucially was at the time of waiting)

under the tree. That is, sentence (1)b) makes no assertion about the location of the bench at the moment of speech.

A further example of the contrast between embedded and non-embedded interpretations is found in the following example.

(5) a) The money was found near the mats on the beach.

b) The money was found on the beach near the mats.

Sentence (5)a) is ambiguous in a way that sentence (5)b) is not. (5)a) is compatible either with the reading that the money itself was found on the beach, or with the reading that the money was found near the mats, and hence near, but not necessarily on, the beach. That is, the PP "on the beach" locates the mats, but not the event of the money being found. This latter reading is the embedded PP modifier reading. Notice that this reading is possible only for (5)a) where the PPs are actually in the order that the embedded [mats [on the beach]] structure would predict to be basic. Note also that the embedded modification reading is actually quite difficult to get, and seems to require contextual priming. The normal inference for both sentences (5)a) and (5)b) is that the money was found on the beach. A parallel, although somewhat less plausible argument could be raised that the order in (5)b) corresponds to an embedded reading that the beach is being located as "near the mats" (i.e. which beach -- the one near the mats). In such a reading, it is possible that the money was

found on the beach, but not necessarily anywhere that would be considered near the mats. Again, the multiple locative reading here seems to be the most natural -- that the money was found both on the beach and at a location on the beach that is near the mats.

It is difficult to extend this sort of contrast to multiple temporal expressions. A possible example is found in (6).

(6) a) John arrived [around midnight]/[within half an hour of midnight] on Tuesday.

b) John arrived on Tuesday [around midnight]/[within half an hour of midnight].

If we accept that Tuesday stops at precisely midnight, and that 12:01 AM is actually Wednesday,[2] then (6)a) is compatible with a reading where John actually arrived on Wednesday. This reading is not possible for (6)b).

2. It really doesn't seem that we make such clear divisions as to when Tuesday ends and Wednesday begins -- this shows up in uses of the phrase "last night" to refer to a time that is, technically, "this morning" (e.g. Last night I got in at 3AM.) This certainly isn't a linguistic issue, but it does interfere with setting up contexts that provide a contrast between embedded and non-embedded readings of multiple temporals.

A further problem with the embedded modification analysis is that it still requires that special status be accorded to locative modifiers of locatives, and temporal modifiers of temporals, since embedded PP modifiers are not normally free to occur to the left of the PP that they modify.

(7) a) John waited for Mary [in the park [with the statue of the Queen]].

b) *John waited for Mary with the statue of the Queen in the park.

Sentence (7)b) is certainly not acceptable, as least if it is intended to convey the same meaning as (7)a).

It should be clear, then, that there is a contrast between embedded modifier PPs and multiple locatives and temporals. In a great many contexts the implications and inferences are identical, but it is possible to tease apart these two meanings in appropriately construed contexts. I will assume that PPs that are in an order that would permit a coherent embedding are structurally ambiguous. I will not be concerned with the embedded structure, but will instead focus my attention on the multiple locative/temporal adjuncts of the event. I will use the term *thematic discontinuity* to refer to a situation where more than one syntactic constituent serves to provide the understood (cumulative) reference of a single role.

(8) THEMATIC DISCONTINUITY: When syntactic constituents X1 ... Xn cumulatively identify the single role Θi, X1 ... Xn is said to be a thematic discontinuity or, equivalently, a Θi-discontinuity. Each Xi will be referred to as a (thematic) *disconstituent*.

Although the terms *thematic* and *role* are normally reserved for discussions of arguments, I will employ these terms now in anticipation of later results that show thematic discontinuity to be characteristic of both arguments and adjuncts. The clearest cases involve locative and temporal adjuncts, so this is where I will begin.

§2.2 Thematic Discontinuity: Adjuncts

With examples like (9), below, we understand the temporal role of the clause to be that time which is both "on Wednesday" and "at 3 o'clock".

(9) John met Mary on Wednesday at 3 o'clock.

The two temporal expressions in this sentence both provide temporal information about the event of "John meeting Mary" and they act as two separate syntactic constituents.

(10) John met Mary at 3 o'clock on Wednesday[3].

(11) John met Mary at 3 o'clock in the park on Wednesday.

(12) John met Mary on Wednesday in the park at 3 o'clock.

In (10) through (12) we see that the order of the two post-verbal temporals is irrelevant for interpretation, as is the intervention of a locative PP[4].

The two temporal expressions in (9); [on Wednesday] and [at 3 o'clock], taken together, are a thematic discontinuity identifying the temporal role (equivalently, a temporal discontinuity). Either temporal expression is a (temporal) disconstituent of this thematic discontinuity.

3. As mentioned in the previous section, I will not be concerned with the embedded PP modifier possibility for this order of contiguous PPs. It isn't clear to me that an embedded modification, in this example, could have a different interpretation than that associated with the thematic discontinuity.

4. Some orders of the post-verbal PPs are stylistically less felicitous. The normal order of PPs has location preceding time, accounting for the somewhat awkward nature of (11) and (12). The difference between (9) and (10) does not seem to be a matter of stylistic preference, but rather involves a difference in focus, with the final constituent bearing greater weight or focus.

§2.2.1 The Interpretation of Thematic Discontinuity

Although the two temporal PPs in (9) are disconstituents, they are not independent. We are not generally free to string together unrelated temporal expressions.

(13) a) *John met Mary on Wednesday on Thursday.

b) *John met Mary at 3 o'clock at 2 o'clock.

There are semantic restrictions on the nature of the disconstituents. Examples such as (13)a) and (13)b) clearly involve contradictory information and are ungrammatical or at least uninterpretable. Noteworthy here is the fact that we cannot understand (13)a) or (13)b) as involving any of the semantic links that would make them coherent, such as conjunction or disjunction. In order to express a conjoined or disjoined time, we must use an appropriate coordinate conjunction to give a single compounded constituent, as illustrated in (14).

(14) a) John met Mary (both/either) on Wednesday and/or (on) Thursday

b) John met Mary (both/either) at 3 o'clock and/or (at) 2 o'clock.

In addition, the meaning of the temporal discontinuity in (9) is not the same as the conjoined versions in (15).

(15) a) John met Mary (both) on Wednesday and (at) 3 o'clock.

b) John met Mary either on Wednesday or (at) 3 o'clock.

c) John met Mary not only on Wednesday but (also) at 3 o'clock.

These cases are mildly zeugmatic, perhaps due to the differing levels of specificity[5] of the two temporals. (15)a) and (15)c) are, perhaps, not incompatible with the interpretation of (9), but they strongly suggest an interpretation in which there are two meetings at two separate times.

What emerges are complementary interpretations of the conjoined expression and the thematic discontinuity. For the thematic discontinuity, an interpretive subsetting relationship must exist between the disconstituents. This results in the interpretive impression of zooming in on the time of the event -- setting a general temporal reference and further specifying this reference. The number of temporal adjuncts that are possible in a sentence is limited only by plausibility and upper bounds on lexicalized temporal expressions, which ultimately reflects limitations on our

5. The semantic restriction on appropriate conjuncts must be narrower and require a closer degree of sameness than is provided by thematic role information alone. As an approximation, the semantic requirement seems to involve not only similarity of role, but also equivalence of relative specificity:

i) I put a book on the shelf and on the table.
ii) I put a book on the shelf and under the table.
iii) I put a book on the shelf and in the filing cabinet
iv) ?I put a book on the shelf and next to the paperbacks.
v) ?I put the book on the shelf and in the library.

perception of time. Thus we find grammatical, though slightly odd, examples like the sentence in (16).

(16) John met Mary in 1969 during the summer in July on the day before his birthday in the afternoon at 3 o'clock.

The only condition on the existence of temporal disconstituents is that they be semantically restricted by subsetting in a way that provides a successively restricting interpretation for the single time of the event. In fact, this interpretation of successive restriction is largely responsible for the assumption in the literature that thematic disconstituents are really embedded modifiers.

This interpretive restriction on thematic discontinuity is, in many ways, similar to the effects of one of the clauses of the Θ-Criterion; namely, that each role be uniquely satisfied (although this is normally considered only to apply to subcategorized arguments). It is very much like having a single temporal slot available per clause, which can be filled by at most one reference. Grimshaw (1990) makes a similar observation. Also compare template analyses of adjuncts (Davidson 1967, McConnell-Ginet 1982). A temporal slot can be satisfied by a single (possibly conjoined) temporal adjunct. It can be satisfied by multiple temporal adjunct constituents provided that their meanings allow them to be interpreted as "zooming in" on a single temporal reference -- that is, provided that they be disconstituents of a temporal

discontinuity. This proposal does, however, involve a radical departure from the Θ-Criterion in its standard application with respect to arguments. The Θ-Criterion normally implies that each Θ-slot be syntactically unique. Here, at least in the case of adjuncts, the restriction seems to have to do with interpretation. Multiple syntactic constituents can satisfy the same role provided that these constituents satisfy semantic conditions guaranteeing a unique interpretation. In §2.5 I propose an interpretive version of the Θ-Criterion which holds for both arguments and adjuncts, and discuss its implications for arguments and theories of argument structure.

§2.2.2 Subsetting

As mentioned above, disconstituents of a thematic discontinuity are required to be in a "zooming-in" or subsetting relationship where a relatively more general expression is further specified and restricted. Such subsetting relations are asymmetric relations on sets.

I will use the notation in (17) to indicate the extension set of X, where X is one of the disconstituents bearing the Θ_i role. The extension set here includes the reference of the NP in the prepositional context[6].

6. I will have little to say about how, specifically, we interpret PPs such as "on Wednesday". The preposition "on", itself, is not sufficient to identify this PP as temporal -- the nature of the NP must also be taken into consideration.

(17). $\{X\}_{\theta_i}$

So, for example, in sentence (9), we have the following:

(18) $\{\text{on Wednesday}\}_{\text{temporal}}$ $\{\text{at 3 o'clock}\}_{\text{temporal}}$

Subsetting[7], as an interpretive restriction, must be satisfied for such thematically co-subscripted constituents to be interpreted as disconstituents. Hence, within the limitations imposed by plausibility, and upper bounds on lexicalized expressions that reflect our own perception of the role involved, we find that the relationship in (19) holds.

(19) INTERPRETIVE CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents of a thematic discontinuity expressing the role θ_i iff they cumulatively identify a single referent and $\{X1\}_{\theta_i} \supset \{X2\}_{\theta_i} \ldots \supset \{Xn\}_{\theta_i}$

What this says is that if X1, X2....Xn are disconstituents and cumulatively determine the referent of a particular role, then they must be interpreted as each providing

7. In §2.4 I will return to the issue of subsetting, showing that there is actually a better, more general way of looking at thematic discontinuity. For now, I will continue to use the notion of subsetting, but the reader should be advised that I will ultimately replace extensional subsetting with the notion of "granularity" that will be discussed in §2.4.

further restriction on the interpretation of the role. Note that this constraint is defined in terms of proper subsets -- that is, we do not consider a set to be a subset of itself with respect to this definition. Note also that for now we will assume that the order of X1 ...Xn in the sentence is irrelevant. Intuitively, we can view X1 as being the relatively most general expression, with Xi becoming increasingly specific as i increases.

The interpretation of two constituents as a thematic discontinuity is limited only by subsetting, and extends to other roles provided that they satisfy this interpretive restriction. The locative role readily allows discontinuity, as the examples in (20) show.

(20) a) Sue waited for Mary [in the park] [on the bench] [next to the water fountain].[8]

b) Sue waited for Mary [next to the water fountain] [on the bench] [in the park].

c) Sue waited for Mary [on the bench] [next to the water fountain] [in the park].

d) Sue waited for Mary [in the park] [next to the water fountain] [on the bench].

8. Here, and elsewhere unless otherwise indicated, I am excluding from consideration the NP attached reading of the PP.

e) Sue waited for Mary [next to the water fountain] [in the park] [on the bench].

f) Sue waited for Mary [on the bench] [in the park] [next to the water fountain].

Thematic discontinuity is also not restricted to PP adjuncts. Adverbs enter into the same interpretive restriction, as shown in (21).

(21) a) John checked his mail each day hourly.

b) John checked his mail hourly each day.

c) John checked his mail each hour daily.

d) John checked his mail daily each hour.[9]

e) John checked his mail daily every couple of hours.

f) John checked his mail every couple of hours daily.

Time and space are continuous by nature, yet they are perceived and realized lexically in a way that readily makes subsetting possible. In set theoretic terms, if we

9. In §2.4.2 I will discuss the ungrammaticality of i) - iv).

i) *John checked his mail hourly daily.
ii) *John checked his mail daily hourly.
iii) *John checked his mail each hour each day.
iv) *John checked his mail each day each hour.

take a continuous subset of a continuous set, the set cardinality, or size, of the superset and the subset are the same (both being infinite). This makes it problematic to interpret the subset as more restrictive. The fact that human perception, as reflected in lexical choices, imposes discreteness on the continuity of time and space allows us to avoid any problems with the subsetting relation on infinite sets. Given the relatively coarse-grained, non-continuous interpretation that we impose on any bounded partition of time or space, within given bounds, these sets are effectively countable sets. For example, the region of time expressed in the phrase [on Wednesday] is an infinitely continuous region due to the nature of time. However, we do not view this interval as infinite, but rather as made up of 24 hours, each consisting of 60 minutes ...down to an appropriate (but presumably finite) level of precison.

One further assumption that has been implicit throughout this discussion is that the thematic disconstituents jointly bear a role that is relevant to a single event/predicate. Examples like (22) through (24) do not exemplify thematic discontinuity since the multiple temporals or locatives are not relevant to the same predicate. These sentences are therefore not restricted by the subsetting relationship.

(22) a) On Tuesday Mary hoped [that Bill would arrive on Wednesday].

b) Mary hoped [that Bill would arrive on Wednesday] on Tuesday.

(23) In Toronto, Mary heard about [the storm in Boston].

(24) At noon, Mary made [a 2 o'clock appointment].

§2.2.3 Syntactic Restrictions on Thematic Discontinuity

§2.2.3.1 Asymmetries Involving Clause-Initial Disconstituents

The subsetting relationship that restricts the interpretation of thematic discontinuity is asymmetric, and this asymmetry carries over to the syntax, constraining the syntactic distribution of the disconstituents.

Consider the contrast in (25).

(25) a) On Tuesday, John met Mary at noon.

b) *At noon, John met Mary on Tuesday.

There is nothing inherently wrong with the expression [at noon] occupying clause-initial position, since it is free to occur initially when it is the only temporal adjunct.

(26) At noon, John met Mary in the park.

The problem with (25)b) is due to the fact that [at noon] is a disconstituent. However, [on Tuesday] in (25)a) is also a disconstituent. The asymmetry illustrated here coincides with the asymmetry of the extensional subsetting relation.

From the sentences in (27) and (28), it is clear that all of the disconstituents of a thematic discontinuity can occur together in initial position. There is complete freedom of order in clause initial position, just as there is for disconstituents in post-verbal positions.

(27) a) On Wednesday at noon John met Mary in the park.

b) At noon on Wednesday John met Mary in the park.

(28) a) In 1980 on the 24th of June at 3 o'clock John met Mary in the park.

b) In 1980 at 3 o'clock on the 24th of June John met Mary in the park.

c) On the 24th of June in 1980 at 3 o'clock John met Mary in the park.

d) On the 24th of June at 3 o'clock in 1980 John met Mary in the park.

e) At 3 o'clock on the 24th of June in 1980 John met Mary in the park.

f) At 3 o'clock in 1980 on the 24th of June John met Mary in the park.

In order to account for the asymmetries in (25) and (29) the grammar needs to make reference to the asymmetric subsetting relationship that constrains the disconstituents.

(29) a) In 1980 on the 24th of June John met Mary at 3 o'clock.

b) *In 1980 at 3 o'clock John met Mary on the 24th of June.

c) In 1980 John met Mary at 3 o'clock on the 24th of June.

d) In 1980 John met Mary on the 24th of June at 3 o'clock.

e) On the 24th of June in 1980 John met Mary at 3 o'clock.

f) *On the 24th of June at 3 o'clock John met Mary in 1980[10].

g) *On the 24th of June John met Mary at 3 o'clock in 1980.

h) *On the 24th of June John met Mary in 1980 at 3 o'clock.

i) *At 3 o'clock in 1980 John met Mary on the 24th of June.

10. Notice that this ungrammatical sentence is grammatical with the (somewhat implausible) reading: 'of all of John's 3 o'clock appointments on the 24 of June, the one where he talked to Mary was the one that occurred in 1980'. The point is that here we would actually be construing 'in 1980' to be the more restrictive, specific PP selecting from a set of meetings that satisfy the other PPs. This actually supports the proposed analysis of these sentences. A number of thematic discontinuities are ambiguous in just this way, allowing subsetting relationships either way, but, in the sentence with the preposed disconstituent, the ambiguity is resolved since the preposed prepositional phrase must be interpreted as the more general one.

This ambiguity proves particularly troublesome in the case of certain cyclic temporal terms (e.g. summer, Wednesday, 3 o'clock). These terms can be used in a definite way, expressing a single specific time, or they can be used generically, expressing a series of points in time. Notice that this ambiguity is not a factor for noncyclic temporals (e.g. 1989, the 20th century,..). This issue will be addressed in §2.4. In the examples that follow, I will be using the cyclic temporals definitely, unless otherwise indicated.

j) *At 3 o'clock on the 24th of June John met Mary in 1980.

k) *At 3 o'clock John met Mary in 1980 on the 24th of June.

l) *At 3 o'clock John met Mary on the 24th of June in 1980.[11]

Descriptively, what we see here is that no clause-initial disconstituent can be more specific (as defined by subsetting) than any of the disconstituents that occur post-verbally.

This phenomenon is not limited to temporal disconstituents. We find the same asymmetries in the following examples, which involve locative discontinuity.

(30) a) John met Mary in Toronto at the park.

b) In Toronto, John met Mary at the park.

c) *At the park, John met Mary in Toronto.

Also, this phenomenon is not limited to prepositional phrases -- disconstituent adverbs show exactly the same asymmetry.

11. Although we can get arbitrarily many locative or temporal disconstituents in a single clause, subject only to limits of plausibility, I will, from now on, restrict my attention to cases involving two disconstituents per role. This is sufficient to illustrate the asymmetry, and avoids the multiplicity of ordering and preposing possibilities that protract the examples and hasten the collapse of intuitions.

(31) a) John checked his mail each day hourly.

b) Each day John checked his mail hourly.

c) *Hourly John checked his mail each day.

d) John checked his mail daily each hour.

e) Daily John checked his mail each hour.

f) *Each hour John checked his mail daily.

As noted above, linear order alone does not really seem to be the determining factor here since disconstituents are in relatively free order when they all occur clause-initially or post-verbally. We might propose that freedom of disconstituent order is allowed only within a local domain. But then we would need to determine configurationally what the bounds of that domain are -- that is, we would need to determine the bounds within which free order is allowed, and across which this freedom is restricted. So this sort of approach reduces to a structural analysis.

Furthermore, there is some evidence for a structural difference between clause-initial and clause-final adjuncts. Assuming a configurational analysis of the scope of negation, the contrast in (32) shows that clause-initial adjuncts are not in the scope of the negative, while clause-final adjuncts are. This is illustrated by the distribution of negative polarity "any", as shown in the sentences in (32).

(32) a) The children didn't come to the park on any Saturday.

b) *On any Saturday, the children didn't come to the park.

From evidence such as this, it is clear that clause-initial adjuncts are structurally higher than those that occur after the verb. A more detailed analysis of these constructions, and other constructions involving thematic discontinuity will determine which of m-command, c-command or government is required to define the local domain in question here. For now, I will refer to whatever the appropriate relationship will be as X-command[12]. In chapter 3, I will argue that X-command should be m-command, with some provisos. The Interpretive Constraint on Thematic Discontinuity in (19), repeated below as (33), has the syntactic correlate in (34).

(33) INTERPRETIVE CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents of a thematic discontinuity expressing the role Θi iff they cumulatively identify a single referent and $\{X1\}_{\Theta i} \supset \{X2\}_{\Theta i} \ldots \supset \{Xn\}_{\Theta i}$

12. The X here is not a variable as it is in, for example, the approach to generalized binding taken in Aoun (1985), where X-binding has X ranging over A and A-bar. Here X is being used to defer specification of the particular type of command relationship. The structural relationship that is needed here does not conform in an obvious way to any of the command relationships in the current literature. In chapter 3 I will formalize precisely the relationship that is needed for this constraint. Since this chapter is intended to be a pretheoretic description of the phenomenon, I will not be explicitly formalizing the command relationship here and instead use X-command as a "deferral device".

(34) SYNTACTIC CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents expressing the role Θi, with

$\{X1\}_{\Theta i} \supset \{X2\}_{\Theta i} \ldots \supset \{Xn\}_{\Theta i}$ iff

Xj X-commands Xj+1 for $1 \leq j \leq n-1$

Where there is mutual X-command, disconstituents behave symmetrically and are thus in free order. Where there is asymmetric X-command, the relatively more general disconstituent must X-command all of the more specific disconstituents.

The Syntactic Constraint on Thematic Discontinuity is not limited to English. The following section shows that the situation in Turkish is entirely parallel to English.

§2.2.3.2 Turkish Disconstituents

The distribution of Turkish disconstituents is entirely analogous to the distribution of English thematic disconstituents discussed in the previous section.[13] In (35) we see the canonical order of the Turkish locative modifiers, but the order in (36) is also allowed, with the same meaning.

13. I wish to thank Hitay Yükseker for her help with the Turkish data.

(35) John Mary-le park-ta [aγaɟ-ɨn alt-ɨn-da] buluš-tu
John Mary-with park-loc tree-gen under-poss-loc meet-past
'John met Mary in the park under the tree.'

(36) John Mary-le [aγaɟ-ɨn alt-ɨn-da] park-ta buluš-tu
John Mary-with tree-gen under-poss-loc park-loc meet-past
'John met Mary under the tree in the park.'

Similarly, for temporal modifiers, both (37) and (38) are possible orders.

(37) John Mary-le [Salɨ gün-ü] [öγle vakt-i] buluš-tu
John Mary-with Tuesday day-poss noon time-poss meet-past
'John met Mary on Tuesday at noon.'

(38) John Mary-le [öγle vakt-i] [Salɨ gün-ü] buluš-tu
John Mary-with noon time-poss Tuesday day-poss meet-past
'John met Mary at noon on Tuesday.'

The same restriction on preposing found in English, applies to Turkish. In Turkish, the sentences in (39) with the semantically more general disconstituent in clause-initial position are grammatical, but those in (40), with the more specific disconstituent preposed, are unacceptable.

(39) a) park-ta John Mary-le [aγaɣ-ɨn alt-ɨn-da] buluš-tu
park-loc John Mary-with tree-gen under-poss-loc meet-past
'In the park, John met Mary under the tree.'

b) [Salɨ gün-ü] John Mary-le [öγle vakt-i] buluš-tu
Tuesday day-poss John Mary-with noon time-poss meet-past
'On Tuesday, John met Mary at noon.'

(40) a) *[aγaɣ-ɨn alt-ɨn-da] John Mary-le park-ta buluš-tu
tree-gen under-poss-loc John Mary-with park-loc meet-past
'Under the tree, John met Mary in the park.'

b) *[öγle vakt-i] John Mary-le [Salɨ gün-ü] buluš-tu
noon time-poss John Mary-with Tuesday day-poss meet-past
'At noon, John met Mary on Tuesday.'

Again, there is nothing inherent about these expressions that would preclude their appearance in clause-initial position, since they are free to occur clause-initially when they are the only constituent that expresses the relevant thematic role.

§2.3 Thematic Discontinuity: Arguments

In this section, I will show that the ability to participate in thematic discontinuity is not limited to adjuncts. Subcategorized arguments can also be disconstituents of a thematic discontinuity. First I will discuss why thematic discontinuity is more common with such typically adjunct roles as locatives and temporals. In §2.3.1, I will show that thematic discontinuity extends to subcategorized locatives and temporals. Finally, in §2.3.2, I will show that thematic discontinuity extends to other argument roles.

Temporal and locative adjuncts readily form thematic discontinuities since the very nature of time and space lends itself to the successive delimiting required by the Interpretive Constraint on Thematic Discontinuity. It is not so clear, however, how this would apply to the NPs denoting individuals and entities that typically satisfy argument roles. The nature of reference to individuals and entities seems to imply that these roles are already maximally specific and would not tolerate further subsetting. In fact, subsetting is a relation that is limited to sets and would seem to have no real application with respect to individuals. Even if individuals and entities are construed as sets containing a single member, they still do not have any proper subsets other than the empty set, which is semantically implausible as a role filler. The fact that thematic discontinuity is prototypically exemplified as a relationship involving adjunct phrases, and that it is rather difficult to construct cases of thematic discontinuity involving arguments, could simply be due to a limitation on the semantic type required for

subsetting. Note, however, that the foregoing assumes that the argument is to be further restricted by a disconstituent. There is no reason in principle why we could not have a disconstituent of an argument set a more general framework within which the reference of the argument is to be understood. If we find such examples cross-cutting the traditional adjunct/argument distinction, then there would be no need for a syntactic constraint to require that the subcategorized roles of a predicate be satisfied by a single syntactic constituent, and the clause of the Θ-Criterion that states this as a syntactic requirement would be called into question. This approach has the further implication that if a subcategorized argument is of a type that is appropriate for subsetting, then this argument should readily participate in thematic discontinuity with both more restrictive and more general disconstituents, and these should exhibit the same asymmetry that was found with adjunct disconstituents. If arguments can be construed as participating in thematic discontinuity, then the clause of the Θ-Criterion under discussion reduces to an interpretive constraint, and one of the classic syntactic distinctions between arguments and adjuncts is severely eroded.

§2.3.1 Locative and Temporal Arguments

When a locative or temporal is required by a verb, in many cases it shows up as a PP, rather than as a bare NP argument. First I will discuss subcategorized PP locatives and temporals, and then I will show that thematic discontinuity extends to bare NP arguments that are locative or temporal.

§2.3.1.1 Prepositional Phrases as Arguments

The theory of grammar has traditionally distinguished subcategorized PPs from adjunct PPs. The nature of this distinction has taken a variety of forms. The distinction between VP-internal and VP-external PP's is pervasive in the theory of grammar. A derivative distinction between "inner" and "outer" roles has also received common support. In the following sections, I will discuss both of these proposals, and will show that consideration of thematic discontinuity suggests that neither of these proposals is entirely correct.

§2.3.1.1.1 VP-internal and VP-external Prepositional Phrases

The distinction between VP-internal and VP-external PPs extends back to Chomsky (1965, p.101-106). Chomsky noted that certain types of prepositional phrases occur in "closer construction to Verbs" (p.101). These subcategorized PPs contrast with place and time adverbials that "modify the entire Verb Phrase or perhaps the entire sentence" (p.101). Using the sentence in (41)a) as an example, Chomsky pointed out that the first PP cannot prepose, as in (41)c), while the second PP "on the train" can optionally prepose to the beginning of the sentence, as in (41)b).

(41) a) He decided on the boat on the train.

b) On the train, he decided on the boat.

c) *On the boat, he decided on the train.

Notice, however, that in this example we do not have thematic discontinuity, since the first PP is not locative, although superficially it does contain a typically locative preposition. The role of "the boat" in this example is unambiguously theme. As Chomsky points out, when there is only one "on"-phrase, the sentence is ambiguous. The NP in the "on"-phrase in (42) could be either a theme or a location.

(42) John decided on the boat.

In a theory that permitted only one locative, this disambiguating function of the second locative could be explained. Although the approach being developed here allows for locative discontinuity, the disambiguating function of the second "on"-phrase can readily be accounted for by the interpretive restriction that such multiple locatives must be in a subsetting relation. "On the boat" and "on the train" do not satisfy the Interpretive Constraint on Thematic Discontinuity, and, hence, cannot both be interpreted as locative.

Chomsky's claim that preposability is a diagnostic of VP external PPs has largely gone unchallenged. Throughout the literature we find a distinction being made

between at least two types of prepositional phrase modifiers, depending on the relationship of the PP to the verb. There are prepositional phrases that occur within the VP constituent (internal PPs, complements, participants (Halliday 1970), PPs in construction with the verb (Gruber 1976)), and there are PPs that occur outside of the VP constituent (external PPs, adjuncts, circumstantials (Halliday 1970), sentential PPs (Reinhart 1981)).

Following Chomsky, PP-preposing is considered to be a diagnostic of the external status of a PP. We thus find contrasts such as (43).

(43) a) On Tuesday, John mailed the letter.

b) *To Mary, John mailed the letter.

In (43)a), the temporal phrase 'on Tuesday' is able to prepose because it is incidental to the meaning of the verb, and hence VP-external. In (43)b), the goal/recipient phrase "to Mary" is integral to the meaning of the verb, therefore VP-internal and unable to prepose.

Note however, that (43)b) is entirely grammatical as a topicalized construction, provided that "to Mary" not be separated from the rest of the sentence by a significant intonational break. "On Tuesday" can prepose regardless of intonation -- its function

at the beginning of the sentence is to set the general temporal framework within which the clause is to be interpreted.

Notice that (43)b) is improved if we replace the NP with a modified definite NP, as in (44).

(44) To the old woman, John mailed the letter.

Another way to facilitate the topicalization of a VP-internal PP is through modification in the VP. This is apparent in the following examples:

(45) a) *To Mary, John mailed it.

b) To Mary, John mailed a large red package that contained her birthday present.

c) To Mary, John mailed the present from Vancouver on Tuesday.

The preposability of VP-internal PPs is sensitive to the weight of the PP and the weight of the VP -- suggesting an interaction with the focus status of these constructions. For discussion of the interaction of modification and definiteness with focus constructions, see Rochemont (1978), Safir (1985) and Rochemont and Culicover (1990).

In chapter 3, I will examine this phenomenon in more detail. Note, however that it applies to both VP-internal PPs and VP-external PPs.

(46) a) On Tuesday, John arrived.

b) On Tuesday, John arrived at noon.

Although both of these sentences are fine, the clause-initial position for the PP in (46)b) is more appropriate than it is in (46)a).

Clearly, the distinction between VP-internal and VP-external status correlates with subcategorization. In (43) "on Tuesday" is not subcategorized by the verb, while "to Mary" is (optionally) subcategorized by the verb. Setting aside the obfuscating issue of optional subcategorization, there are a number of problematic examples. Consider the sentences in (47).

(47) a) On the table John put the book.

b) In the garage John keeps his car.

There is some controversy in the literature as to the grammaticality of such sentences. These sentences, even without extra modification on the preposed PP, are not as bad as they should be, particularly if there is no intonational break between the PP and the

rest of the sentence. Since a locative is clearly required by the verbs "put" and "keep", these PPs are VP-internal and should not be able to be preposed.

It seems, then, that although there is certainly some validity to the internal/external distinction in terms of subcategorization, it is not so clear that this distinction has any predictive power with respect to the preposability of any given PP. The internal/external distinction is typically defined by the nature of the relationship between a prepositional phrase and the verb. Although this may have a role to play in preposability, it is dangerous to use preposability as a diagnostic for the external versus internal status of a PP. We have seen that the preposability of a PP can be influenced by other considerations that have nothing to do with the relationship between the PP and the verb -- namely by the Syntactic Constraint on Thematic Discontinuity in (34).

An additional problem raised by the distinction between VP-internal and VP-external PPs concerns the derivation of sentences such as (48). The VP-internal/VP-external distinction predicts that the VP-internal PPs should be ordered before the VP-external PPs. We would need a transformation to reorder these PPs in sentences like (48).

(48) John mailed the letter on Tuesday to Mary.

Certainly "to Mary" in this sentence is being focused, but the end focus here does not invoke as strong a requirement for extra modification as does the preposed alternative.

A transformational account of sentences like (48) is not, of itself, a problem. What is problematic is the consequences that this derivation would have for the relevance of the internal/external distinction to preposing. There are two possible analyses of sentences like (48). The most plausible one involves moving "to Mary" to the right of the PP "on Tuesday" -- that is, to a VP-external position. But then we are left with the curious fact that, although we can derive an external position for "to Mary", this phrase can't continue to move to the clause-initial position. To get around this, we would need to resort to some sort of crossover constraint to account for the unacceptability of the preposed alternative. While this analysis is probably essentially correct and captures what is going on here, it casts doubt on the view that the preposability of a PP depends primarily on whether it is internal or external to the VP. In this example, we need to recast the restriction on preposability in terms of a crossover violation, rather than the PPs status as internal to VP, since VP-internal PPs can be made external clause-finally.

Another possible analysis of (48) would involve moving "on Tuesday" into the VP. Such an analysis has drastic consequences for the theory of movement and, hence, will not be given any real consideration.

§2.3.1.1.2 Inner and Outer Roles

The distinction between PPs that are internal to VP and those that are external has been extended to account for such contrasts as the following:

(49) a) Bertie washes his car in the garage.
(Ostler 1980, p. 48, ex. 1.50)

b) Bertie keeps his car in the garage.
(Ostler 1980, p. 48, ex. 1.52)

Ostler (following Starosta 1978) observes that outer locatives, as in sentence (49)a), locate the entire action, while inner locatives, as in sentence (49)b), specify the location of the theme alone. Following Chomsky's observation about preposability, we would expect the inner locative to resist preposing.

(50) a) In the garage, Bertie washes his car.

b) In the garage, Bertie keeps his car.

As discussed above, (50)b) is, perhaps, not as acceptable as (50)a), but it is still better than we would expect, particularly if we take the Focus Effect into account and modify the definite NP (e.g. in the underground garage...).

Note also that if we consider that locating only the theme and not the entire event is the criterion that defines an inner locative, then we can construct sentences with a discontinuous inner locative. These show the expected asymmetries. Note that we have already seen examples of outer locatives as disconstituents.

(51) a) John keeps his bike in the garage near the skis.

b) John keeps his bike near the skis in the garage.

c) In the garage, John keeps his bike near the skis.

d) *Near the skis, John keeps his bike in the garage.

(52) a) John put the books on the top shelf near the novels.

b) John put the books near the novels on the top shelf.

c) On the top shelf, John put the books near the novels.

d) *Near the novels, John put the books on the top shelf.

(53) a) John put the answer on the first page in the margin.

b) John put the answer in the margin on the first page.

c) On the first page, John put the answer in the margin.

d) *In the margin, John put the answer on the first page.

These sentences are, perhaps, ambiguous as to whether the more general locative takes an inner or an outer locative function. That is, they could be interpreted

as meaning that "while John was {general locative}, he...", although such a reading in (52) and (53) is rather far-fetched.

The syntactic constraint on thematic discontinuity seems to transcend the inner versus outer locative distinction. Consider the evidence in (54).

(54) a) John kept his bike in the garage near the skis (while) in Toronto.

b) (While) in Toronto, John kept his bike in the garage near the skis.

c) *In the garage, John kept his bike near the skis (while) in Toronto.

Let us interpret "in Toronto" in (54)a) as an outer locative; that is, we have roughly the meaning "while John was in Toronto, he kept his bike in the garage near the skis". We have seen that we can prepose a relatively more general inner locative when we have two inner locatives. Now we have the puzzling result that an outer locative in a post-VP position prevents the preposing of the most general inner locative. If, as has been suggested, inner and outer locative are distinct roles, then they should not behave syntactically as if they formed a single thematic discontinuity. If these are all simply locatives, then an outer locative is more general than even the most general of the inner locatives, and the contrast in (54) is exactly what we would expect. In the typical examples of the inner/outer distinction cited in the literature, there is one inner locative and one outer locative, and (again, following Chomsky 1965) the ability to prepose is considered a diagnostic of this distinction (see Ostler 1980, Somers 1987).

In the rare examples where more than two locatives are considered, it has even been suggested that we need to distinguish outer locatives from "far-outer" locatives (Somers 1987, following a suggestion in Platt 1971). I won't attenuate the argument further, but note that these far-outer locatives are simply more general outer locatives.

So, then, what is the inner versus outer locative distinction? Certain verbs require a theme and location attributed to the theme; that is, they are subcategorized for a location. In fact, all verbs that are subcategorized for a locative (e.g. put, keep, stay...) are specifying the location of the theme. This assertion is tautologous given that the theme, for verbs of location, is defined as the entity whose location is being asserted. This subcategorized locative role can be expressed through a locative discontinuity, provided that, at some point in the discontinuity, the location be interpretable as a location for the theme (i.e. an inner locative). Certainly, what counts as a plausible location for the theme varies with the choice of the theme. Consider the sentences in (55).

(55) a) The developer put the subdivision in Toronto.

b) ?*John put his wallet in Toronto.

c) John put his wallet on the shelf.

The verb, together with the direct object (i.e. the theme that is being located) determine the appropriate relative specificity of the subcategorized location. Given

that inner locatives normally occur only with verbs that are subcategorized for locatives, then if there is only one locative, this will be interpreted as a locative for the theme (i.e. as an inner locative). If there is a locative discontinuity, it seems that some point in the scale from most general to most specific is selected as the dividing point between locations for the theme and locations for the event. How this point is selected is not immediately formalizable since it involves assessing plausibility in terms of real world knowledge, taking into account the nature of the theme and the relative specificity of the location. This is illustrated in (56). Xj is selected by the verb, together with the theme, in the manner discussed above.

(56) $\{X1\}_{\theta_i} \supset \{X2\}_{\theta_i} \supset \ldots \{Xj\}_{\theta_i} \ldots \supset \{Xn\}_{\theta_i}$

What we can infer, then, is that for all $i<j$, Xi is interpreted as an outer role, and for all $i \geq j$, Xi is interpreted an inner role. As for syntactic behaviour, the distributional asymmetries found with preposing follow straightforwardly from the constraint in (34). I will continue to refer to the inner versus outer interpretation of a PP with respect to the theme, while assuming that this distinction follows from selectional properties applying to the thematic discontinuity.

The discussion so far has focused on subcategorized locatives. Subcategorized temporals are really quite rare[14]. Punctual event verbs (e.g. happen, occur) are the best candidates for a subcategorized temporal. Consider the sentences in (57).

(57) a) The/An earthquake happened/occurred at 3 o'clock on Tuesday.

b) The/An earthquake happened/occurred on Tuesday at 3 o'clock.

c) On Tuesday, the/an earthquake happened/occurred at 3 o'clock.

d) *At 3 o'clock, the/an earthquake happened/occurred on Tuesday.

These sentences yield the same asymmetry that we would expect from temporal discontinuity.

It should be clear from the preceding discussion that thematic discontinuity transcends issues of subcategorization. What remains to be determined is whether thematic discontinuity extends to bare-NP arguments or if it is limited to PPs and adverbs, regardless of their status with respect to subcategorization. The subcategorized locative of "put" or "keep" does not typically enter into any non-lexical (Hale and Keyser 1988) transitivity alternation that gives bare-NP argument status to

14. Verbs such as "spend" and "wait" that are often claimed to be subcategorized for a temporal, are actually subcategorized for a durative role. See §2.3.2.3 for discussion.

the locative expression. In the following section, I will consider some predicates that are claimed to exhibit an alternation between a PP and bare NP locative.

§2.3.1.1.3 Transitivity Alternations with Locatives

Verbs like "spray" and "load" are claimed to enter into a transitivity alternation based on the near paraphrases found in (58) and (59).

(58) a) John sprayed the wall with paint.

b) John sprayed paint on the wall.

(59) a) John loaded the wagon with hay.

b) John loaded hay on the wagon.

Although this is commonly referred to as a locative alternation, the alternating role here seems to be more of a goal than a location. Setting this aside, however, it has been observed that for many speakers when the goal is the direct object of the verb, it is interpreted as being "wholly" affected. That is, in the above examples, the wall must be covered with paint, or the wagon laden with hay, in order to use the (a) sentences. When the goal is in the PP, it is also possible to interpret the goal as being only partially affected (see Rappaport, Laughren and Levin 1987, Rappaport and Levin 1988).

Now consider the following sentences:

(60) a) John sprayed paint on the wall along the baseboard.

b) On the wall, John sprayed paint along the baseboard.

c) *Along the baseboard, John sprayed paint on the wall.

(61) a) John loaded books in the car in the trunk.

b) In the car, John loaded books in the trunk.

c) *In the trunk, John loaded books in the car.

The (b) sentences above are possible with an inner reading of the preposed PP, while the (c) sentences are not possible with an inner reading. So, when these expressions are realized as PPs, they are consistent with the Syntactic Constraint on Thematic Discontinuity.

Now, note that if the bare-NP goal must be "wholly" affected, then we would expect that any further restriction on the bare-NP goal would not be felicitous.

(62) ?John sprayed the wall with paint along the baseboard.

(63) ?John loaded the car with books in the trunk.

There is some idiolectal variation here -- some speakers apparently do not have as strong a requirement that the wall and car be "wholly" affected. Note, however, that even for those speakers that find the examples in (62) and (63) acceptable, the preposed alternatives in (64) and (65) are not possible with the inner reading.

(64) *Along the baseboard, John sprayed the wall with paint.

(65) *In the trunk, John loaded the car with books.

Other alternations that involve what appear to be true locatives show the same asymmetries. Consider the following sentences.

(66) a) Bees are swarming in the rose garden in my backyard.

b) In my backyard, bees are swarming in the rose garden.

c) *In the rose garden, bees are swarming in my backyard.

d) The rose garden is swarming with bees.

e) My backyard is swarming with bees.

f) ??The rose garden is swarming with bees in my backyard.

g) My backyard is swarming with bees in the rose garden.

h) In my backyard, the rose garden is swarming with bees.

i) In the rose garden, my backyard is swarming with bees.

For such examples, we find the expected asymmetries when the locative is in a PP ((a) through (c)). When the locative is a subject, we find somewhat exceptional behaviour. We can, but do not have to, prepose the more specific disconstituent if the subject is a more general disconstituent (see sentences (g) and (i)). If the subject is the more specific disconstituent, we must prepose the more general disconstituent (contrast (f) and (h)). In §2.3.1.2 we will see that this behaviour extends generally to preposed PPs that are disconstituents with the subject NP.

Now consider the sentences in (67).

(67) a) John planted annuals in the flowerbed in my backyard.

b) In my backyard, John planted annuals in the flowerbed.

c) *In the flowerbed, John planted annuals in my backyard.

d) John planted the flowerbed with annuals in my backyard.

e) ??John planted my backyard with annuals in the flowerbed.

f) In my backyard, John planted the flowerbed with annuals.

g) *In the flowerbed, John planted my backyard with annuals.

Again, when the locative is a PP, we find exactly the behaviour that we would expect. These locatives again may be goals rather than pure locatives, and they also seem to involve an interpretation of being "wholly" affected when the location is the direct object. This accounts for the oddness of (e). But note that (g) is even less

acceptable that (e). If we allow a further restricting disconstituent on the object locative, it certainly cannot prepose.

In the following sections, I will further demonstrate that thematic discontinuity is not restricted to expressions of a particular form; that is, it is not limited to adjuncts and subcategorized elements that are of an "adverbial" form. It is also not limited to alternating PP/NP arguments. We will see in the following sections that thematic discontinuity applies equally to non-alternating locative and temporal subjects and objects.

§2.3.1.2 Subjects and Thematic Discontinuity

It is rather difficult to find examples of non-alternating bare-NP temporals and locatives. One fairly robust set of examples involves a temporal or locative as the subject of a predicate adjective construction, as illustrated in (68).

(68) a) Toronto is beautiful in Chinatown.

b) Chinatown is beautiful in Toronto.

c) Winter is dark in the early morning.

d) The early morning is dark in winter.

Note that here there is no apparent asymmetry: either disconstituent can appear as subject or as the PP. Even when we consider alternatives where the PP is in clause-initial position we do not get the asymmetry that we might expect from the Syntactic Constraint on Thematic Discontinuity. This is shown by the acceptability of all of the examples in (69).

(69) a) In Chinatown, Toronto is beautiful.

b) In Toronto, Chinatown is beautiful.

c) In the early morning, the winter is dark.

d) In winter, the early morning is dark.

The interpretation of (69)a) does not involve an assertion of the beauty of all of Toronto, but only asserts the beauty of Toronto at the particular location identified by "in Chinatown". The subject is being used synecdochically, a whole in place of a part. The more specific locative PP forces a narrower interpretation of the subject. Similar comments can be made about the interpretation of sentence (69)c). This is similar to what we saw with the subject locatives in the bare-NP alternate of the verb "swarm".

An asymmetry does, however, emerge when we embed these predicate adjective constructions within a "bridge" verb such as "think".

(70) a) I think [Toronto is beautiful in Chinatown].

b) I think [Chinatown is beautiful in Toronto].

c) I think [winter is dark in the early morning].

d) I think [the early morning is dark in winter].

All of the examples in (70) are ambiguous in that the temporal/locative PP could be interpreted as the time/place of "thinking". The relevant reading for this discussion is the discontinuous reading where the PP is interpreted together with the subject of the predicate adjective, as indicated by the brackets in the above examples.

Now, when we consider the alternative sentences with the PP in sentence-initial position, we find the expected asymmetry.

(71) a) *In Chinatown, I think Toronto is beautiful.[15]

b) In Toronto, I think Chinatown is beautiful.

c) *In the early morning, I think the winter is dark.

d) In winter, I think the early morning is dark.

15. Note that this sentence is grammatical, but it unambiguously means that the locative PP is providing the location of the "thinking". The * here implies that it is ungrammatical with the relevant reading that this PP is a disconstituent with the location "Toronto". The disambiguating function of the clause-initial position for the most specific PPs in these examples is a direct reflex of the Syntactic Constraint on Thematic Discontinuity. The same comments apply to the temporal PP in (71)c).

Only those examples that have the more general PP in a preposed position allow the reading of a locative discontinuity. Symmetric examples like (69), then, are not counterexamples to the constraint in (34), but actually provide crucial information about the nature of the X-command locality restriction, as we will see in chapter 3.

§2.3.1.3 Objects and Thematic Discontinuity

It is even more difficult to find examples of locatives and temporals occurring in direct object position and retaining their locative/temporal sense. Possible examples are shown in (72).

(72) a) I love Toronto.

b) I love Chinatown.

c) I love the summer.

d) I love the morning.

The sentences in (73) are ambiguous between a reading where the PP provides temporal/locative modification to the predicate "love" (an outer reading), and a reading where the PP is a disconstituent with the direct object (an inner reading). Recall again that we are abstracting away form embedded modifier readings, to the extent that they could even be distinct from the discontinuous reading in these examples.

(73) a) I love Toronto in Chinatown.

b) I love Chinatown in Toronto.

c) I love the summer in the morning

d) I love the morning in the summer.

So, for example, sentence (73)a) is ambiguous between the meaning "while I am in Chinatown (any Chinatown, including possibly Toronto's Chinatown), I love Toronto (all of Toronto)" and the meaning "I love that part of Toronto referred to as Chinatown". Again, we find that when the more specific PPs occur in clause-initial position, they are disambiguated and must be interpreted with the outer reading.

(74) a) *In Chinatown, I love Toronto.[16]

b) In Toronto, I love Chinatown.

c) *In the morning, I love the summer.

d) In the summer, I love the morning.

Thus, sentence (74)b), for example, remains ambiguous -- the PP can be interpreted as locating the event of my loving Chinatown, or it can be interpreted more narrowly as a further inner disconstituent with the locative object "Chinatown" (i.e. that particular Chinatown that is located in Toronto).

16. Again, this is ungrammatical with the reading that the clause-initial PP is a disconstituent with the object.

§2.3.2 Other Argument Roles

§2.3.2.1 Topicalization

§2.3.2.1.1 English "as-for" Topics[17]

There are at least 3 types[18] of "as-for" topics in English, illustrated by the following examples:

1) Discourse "as-for" e.g. As for the meeting, I'm exhausted.

2) Coreferential "as-for" e.g. As for John, I like him.

3) Generic "as-for" e.g. As for fruit, I like bananas.

17. I wish to thank Michael Rochemont for bringing "as-for" topics to my attention.

18. By "types" of topics, I do not mean that these topics are intrinsically marked with a feature that declares them to be either discourse, coreferential or generic. Instead I mean that the relationship between the topic and the licensor in the comment falls into one of three types, as discussed in the text. This issue seems to hark back to the issue of functional determination of empty categories (see Chomsky 1982, Bouchard 1984, Epstein 1984). The functional approach to empty categories contrasts with the view that empty categories have intrinsic features that determine how the binding principles apply to them (see Chomsky 1981). If topics are generated with intrinsic features, say for example [+ generic], then this feature would force them to be licensed in a particular way, and would rule out the non-generic use of this topic. The functional determination approach would essentially say that the type of topic that we have is determined by the particular context that it appears in. Alternatively, following Brody's (1984) approach to empty categories, we might freely assign a feature to a topic and allow licensing principles to rule out all but the acceptable value(s). The null hypothesis here is that "as-for" topics are all the same intrinsically, but that the three different ways that they are licensed in the comment distinguishes three different "types" of these topics.

Discourse "as-for" topics contain no obvious licensor within the sentence -- their appropriateness is determined entirely by the discourse context. Notice that the example sentence above can be interpreted quite differently in different contexts. Consider a context where people are discussing a forthcoming meeting -- this sentence could be used to imply that I will not be attending. In the context of the day after a rather lengthy meeting, this could be used to assert that I haven't recovered from that meeting yet. The point is that the "as-for" topic in such examples gets its relevance and interpretation from outside the clause to which it adjoins. Certainly the appropriate use of any "as-for" topic must take into consideration clause-external context, since these are a type of discourse connector. However, it is possible to distinguish discourse "as-for" topics from those whose relevance and interpretation with respect to the clause is entirely determined by clause-internal constituents.[19] I will be excluding discourse "as-for" constructions from consideration.

Coreferential "as-for" topics are licensed by a coreferential pronoun within the clause to which the topic is adjoined. These bear superficial resemblance to left-

19. It is possible to distinguish discourse topics from generic topics by noting the effects of stress and intonational contours. In sentences with generic topics, stress normally falls on the more specific disconstituent, as in (i). In sentences with discourse topics, we find the complementary situation, as in (ii).

(i) As for fruit, I like BANANAS. ("...,I LIKE bananas.)
(ii) As for bananas, (well) I LIKE fruit ...(so I ought to like bananas) "As for bananas, I like FRUIT.

I wish to thank Elan Dresher for pointing this out to me.

dislocations (e.g. John, I like him.) I will postpone discussion of coreferential "as-for" topics until chapter 3, where I will demonstrate that coreferential "as-for" topics pattern with left-dislocations, and exhibit quite different syntactic behaviour from generic "as-for" topics.

Of interest in this section is the generic "as-for" topic -- a construction that introduces a more general expression that is "doubled" by a more specific expression within the clause.[20] This type of "as-for" topic can be doubled by an NP bearing virtually any thematic role, cross-cutting the argument/adjunct distinction. In this construction, we again find an asymmetry between the more general and more specific expressions. Consider the sentences in (75).

20. Some examples seem at first glance to violate this restriction. Consider the sentence in (i).

i) As for bats, they are mammals.

Notice that in this sentence, although the "as-for" topic is more specific than the clause-internal "mammals", the condition is not violated. In this example the pronoun "they" is coreferential with "bats", and hence (i) is an example of a coreferential "as-for" topic. The more general NP "mammals" is merely asserting a more generic property of the pronoun that has its reference bound by the topic "bats", through the predicate nominative construction. "Mammals" is not licensing the topic here; "they" is.

(75) a) i) As for dogs, German Shepherds frighten me.

ii) *As for Dobermans, German Shepherds frighten me.

iii) *As for German Shepherds, dogs frighten me.[21]

b) i) As for the circus, I like the clowns.

ii) *As for the bears, I like the clowns.

iii) *As for the clowns, I like the circus.

c) i) As for fruit, I like bananas.

ii) As for bananas, I like red ones.

iii) *As for apples, I like bananas.

iv) *As for bananas, I like fruit.

The grammatical argument or adjunct that licenses the "as-for" topic must be more specific than the "as-for" topic. This is exactly what we would expect by the Syntactic Constraint on Thematic Discontinuity if these are cases of thematic discontinuity.

In order to be licensed, a generic "as-for" topic must occur in concert with a role-bearing NP (either an argument or an adjunct) in an appropriate semantic

21. This can, in an appropriate discourse, mean that all dogs frighten me, with "German Shepherds" being used for discourse coherence. It does, however, contrast with (i) by not being felicitous without being embedded in an appropriate priming discourse.

relationship that appears to be the same as the Interpretive Constraint on Thematic Discontinuity in (33). Consider the examples in (76) and (77).

(76) a) As for furniture, I like antique sofas/ this sofa.

b) *As for furniture, Mary likes John/ dobermans.[22]

(77) a) As for the park, John met Mary on the bench.

b) *As for the park, John met Mary.

Considering the examples in (76), it is clear that it is not sufficient to have a generic "as-for" topic. There also needs to be a semantically appropriate specific NP within the clause if the topic is to be licensed within the clause as a generic "as-for" topic. So, this type of "as-for" topic is not freely generated, but requires an appropriate argument (or adjunct) occurring within its domain. Note in particular that the sentence in (77)a) has the discontinuous reading where the meeting took place at the bench *in that park*. This suggests that generic "as-for" topics are in fact relatively general disconstituents in a thematic discontinuity with the more specific licensor.

I will assume that "as-for" topics are generated with a role variable -- they have neither a specific role assigned to them, nor do they have an inherent role, but they

22. This is ungrammatical as a generic "as-for" topic, although it might be possible to construe a contextual interpretation, giving this a discourse "as-for" reading.

need to be licensed by a role-bearing NP. In chapter 3, I will elaborate on this proposal, discussing what specifically assigns this role variable and in what configuration this assignment happens. The role variable must be bound by a role-bearing disconstituent in order for an "as-for" topic to be interpreted as generic. In this way, the "as-for" topic can be seen as sharing the role of the grammatical argument or adjunct that licenses it. This analysis would not be possible for subcategorized roles if we accept that the Θ-Criterion requires that each Θ-role be assigned to a unique syntactic constituent. It is, however, consistent with an interpretive version of the uniqueness requirement of the Θ-Criterion, which would apply equally to arguments and adjuncts.

The interpretation of "as-for" topics as general disconstituents related to arguments is not entirely straightforward. Selectional restrictions of the verb can be violated by the "as-for" topic, provided that they are satisfied by the more specific argument. Consider the sentence in (78).

(78) a) As for the refreshments, Mary will carve the meat.

b) *Mary will carve the refreshments.

This certainly seems to indicate that, in this example, the "as-for" topic is not the theme. It does, however, set the general bounds within which the theme is to be interpreted, in the same way that a general locative delimits the locational bounds

within which a specific locative is to be interpreted[23]. In this sense, then, it is valid to talk about the "as-for" topic as being a disconstituent with the role of the argument, even when it is expressing a level of generality that violates the specific selectional properties of the verb.

Note the similarity here to the inner vs. outer role distinction. There, the verb-object complex together selects a point, within the discontinuity, that counts as the subcategorized, or inner locative. For example, we saw that with the verb "put", we can find a more general locative disconstituent that would not be allowed by the selectional properties of the verb, in the context of its direct object. This more general locative is part of the locative discontinuity, together with the selected locative, even though, strictly speaking, it violates selectional properties. Somers (1987) assumes that the nature of the patient/theme role precludes any outer-patient possibility (p. 194-195). It seems that generic "as-for" topics are candidates for outer-theme status -- a status that, in the theory being developed here, is entirely derivative of the selectional properties of the verb (or verb-object complex).

Now consider the sentences in (79) and (80).

23. This proposal is in keeping with that put forward in Chafe (1976): "...the topic sets a spatial, temporal, or individual framework within which the main predication holds" (p. 50).

(79) a) As for Tuesday, John met Mary at 3 o'clock.

b) ?As for Tuesday, John met Mary.

The interpretation of (79)b) is not really like the discourse "as-for" topics for some speakers, since the relationship between the topic and the following sentence is clear in the absence of an embedding context -- the topic must be interpreted as the time of the clause. The acceptability of (79)b) for these speakers suggests that the tense of the clause is sufficient to license the inherently temporal "as-for" topic. Tense may well figure as a disconstituent in all cases of finite-clause temporal discontinuity, providing a natural locus for statements about co-occurrence restrictions on tense and temporal adjuncts. I will not pursue this matter here.

Now consider the following sentences.

(80) a) As for dogs, dobermans ate this food.

b) ?*As for dogs, this food was eaten by dobermans.

c) *As for dogs, this food was eaten.

If (80)c) is interpretable at all without a priming context, it must mean that the implicit agent of the passive is a disconstituent with "dogs", the generic topic. If, as Baker (1988a) claims, the implicit agent is the passive -en, a maximally general, incorporated argument, then the oddness of (80)c) is explained. Not only is the generic "as-for"

topic not licensed by a more specific disconstituent, the only potential disconstituent is even more general than the "as-for" topic. The comparative acceptability of (80)b) is due to the fact that the "as-for" is licensed by a more specific disconstituent, namely, "by dobermans". This sentence is unacceptable, however, because the "as-for" topic X-commands the maximally general passive -en argument, in violation of the Syntactic Constraint on Thematic Discontinuity.

If this is correct, then the passive -en, taken as a maximally general argument, will prevent any topicalization of the "by"-phrase in a passive construction. This is intuitively satisfying, given the pragmatics of the passive. The agentive passive construction is, itself, a topicalizing/focussing[24] construction and it would be unusual to topicalize a constituent with one construction while focussing it with another construction. This argument extends to account for the inappropriateness of a preposed passive "by"-phrase, as in (81).

(81) ?*By dobermans, this food was eaten.

24. See Siewierska (1984) for a proposal that the agentive passive topicalizes the theme while focussing the agent.

§2.3.2.1.2 Other English Topic Constructions

There are other left-dislocation constructions that, like "as-for" topics, seem to exhibit the general-specific asymmetry, suggesting that they too introduce a general disconstituent. The "with"-topic is quite productive and shows the same asymmetry that the generic "as-for" topic exhibits. Consider the following:

(82) a) It is interesting that, with the dogs, Emily liked the poodles best of all.

b) *It is interesting that, with the poodles, Emily liked the dogs best of all.

Sentence (82)b) cannot have the same reading as (82)a), again consistent with the constraints on thematic discontinuity.

A further, rather colloquial type of generic topic is found in the following sentences.

(83) a) Furniture-wise, I like arrowback chairs.

b) Chair-wise, I like arrowbacks.

c) *Chair-wise, I like furniture.

Again, these exhibit the expected asymmetry.

At this point, it is illustrative to consider some topicalization constructions that do not exhibit the expected asymmetry between the general and the specific. This is particularly important since these examples illustrate that it is possible to topicalize a more specific constituent, leaving a more general constituent in the non-topicalized position. Consider the following sentences.

(84) a) It was at 3 o'clock that John met Bill on Tuesday.

b) It was in Toronto that John met Bill in Ontario.

(85) a) Speaking of dobermans, I like dogs.

b) As far as dobermans are concerned, I like dogs.

It isn't just a general fact that we would never want to topicalize a more specific expression. Notice that in all of these constructions, there is a separate predicate for the topic (the predicate "be" in the cleft construction, "speaking" and "concerned" in the other topic constructions). My claim, then, is that these constructions do not involve a discontinuity, but instead assert a theme of the higher predicate, that is commented on by the lower clause. These topics, then, get their own role from the predicate in the topicalizing construction, and do not form a disconstituent with any constituent in the other clause, although that clause can set the topicalized expression in a wider or narrower context.

§2.3.2.1.3 Topicalization in Japanese

Japanese is a Topic Prominent language (Li and Thompson 1976). Certainly the Japanese wa topic has generated much discussion. In this section I will demonstrate that the three uses of the English "as-for" topic correlate quite directly with three uses of the Japanese wa topic. Generic wa topics, like generic "as-for" topics in English, show an asymmetry suggestive of the Syntactic Constraint on Thematic Discontinuity.

Gunji (1987) describes two types of topicalization in Japanese:

Type I Topicalization: Topicalization where the topic binds either a gap (as in example (86)) or the reflexive "zibun" (as in example (87)).

(86) Naomi-wa Ken-ga totemo aitagatteita
-topic -nom very wanted to see
"Naomi (topic), Ken wanted to see (her) very much."
(Gunji 1987, p.169 ex. 5.16a)

(87) Ken-wa zibun-no ie-ga Tokoyo-ni aru
-topic self-genitive home-nom -locative exist
"Ken (topic), his home is in Tokoyo."
(Gunji 1987, p167 ex. 5.12)

Type II Topicalization: Topicalization where there is no gap or reflexive; that is, where the sentence that follows the topic is a complete sentence.

Type II Topicalization seems to break down into two further subclasses, although Gunji does not explicitly make this distinction and analyzes these cases as identical. There are topics that are generic and are picked up within the clause by a more specific expression (for example, sentences (88) and (89)), and there are topics that bear no apparent connection to the clause that follows, except as established in a discourse context (for example, sentence (90)).

(88) sakana wa tai ga oisii
fish topic red snapper subj delicious
"Fish (topic), red snapper is delicious."
(Li and Thompson 1976, p.468 ex. 21)

(89) haru-wa akebono-ga yoi

spring-topic dawn-nom be good

"Spring (topic), the time of dawn is best"

(Gunji 1987, p173 ex. 5.22a)

(90) boku-wa hanbaagu-ga ii

I-topic hamburger-nom be good

(lit): "As for me, a hamburger is good."

(Gunji 1987 p.173 ex. 5.22b)

In discussing example (89), Gunji says "(this example) first presents the topic "spring" and talks about what time of day is best *in that season*" (Gunji 1987 p. 173, italics added). Clearly this generic topic is a being interpreted as a temporal disconstituent.

In the discussion of sentence (90), Gunji considers different contexts and how they can affect the interpretation of this sentence. For example, he considers the context of a fast-food restaurant, where sentence (90) might be contextually understood as expressing a wish to order a hamburger. In the context of a discussion about what people will bring to a pot-luck party, sentence (90) could be contextually understood as expressing a wish to bring hamburgers. It is clear that with such sentences it is the external context that determines the interpretation of the topic with respect to the

clause. This contrasts with examples like (89), where the intra-sentential disconstituent licenses the topic.

In fact, on the basis of this, it seems that Japanese wa topics exhibit the same subclasses as the English "as-for" topics. It is not surprising that "as for..." is widely used in the glosses of these Japanese sentences. Kuno (1973) asserts that wa topics "must be either generic or anaphoric" (p.44). Since non-anaphoric wa topics must be generic, it is apparent that these exhibit the same asymmetry as the disconstituent, generic "as-for" topics in English.

§2.3.2.1.4 Topicalization in Other Languages

Generic topicalization constructions are certainly not limited to English and Japanese, but are found in a variety of languages. The purpose here is not to catalogue such constructions, but to establish that there is some cross-linguistic motivation for treating certain topics as introducing a generic disconstituent. Some illustrative examples are found in (91) through (93).

(91) Korean:

Pihengki-nin	747-ka	khi-ta
airplane-topic	747-subject	big-stative

"Airplanes (topic), the 747 is big."

(Li and Thompson 1976, p.468, ex. 22)

(92) Korean:

a)

Namu-nin	chamnamu-ka	thinthinha-ta
trees-topic	oaks-nom	sturdy-dec

"As for trees, oaks are sturdy."

b)

*Chamnamu-nin	namu-ka	thinthinha-ta
oaks-topic	trees-nom	sturdy

"*As for oaks, trees are sturdy."

(Na 1986, p. 17, ex. 5c, and p. 92, ex. 126)

(93) Chinese:

shuiguo,	wo	zui	zihuan	xiangjino.
fruit	I	most	like	banana

"As for fruit, I like bananas most."

(Huang 1982, p.86 ex. 116)

§2.3.2.2 Sources and Goals

Gruber (1976) notes that "human" and "locality" sources and goals can be combined in a single sentence. Consider the following sentences.

(94) The message traveled from Bill to Alice.

(Gruber 1976, p. 78)

(95) The message traveled from New York to Philadelphia.

(Gruber 1976, p. 79)

(96) John sent the message to New York to Bill.[25]

(Gruber 1976, p. 80)

To these we might add the following.

(97) John received the message from New York from Bill.

The more general locality sources and goals can occur (perhaps marginally) in clause-initial position, while the more specific human sources and goals cannot occur clause-initially when they are disconstituents with a locality disconstituent. This is illustrated in the examples in (98) and (99).

25. Again, I am eliminating the NP-attached reading where "to New York" modifies "message" in an embedded structure: [the message [to New York]].

(98) a) (?)To New York, John sent the message to Bill.

b) *To Bill, John sent the message to New York.

(99) a) (?)From New York, John received the message from Bill.

b) *From Bill, John received [the message] [from New York].

A further example can be found in the following sentences.

(100) a) The bird flew into the brush to its nest.

(Gruber 1970, p.53 ex. 21)

b) (?)Into the brush, the bird flew to the nest.

c) *To the nest, the bird flew into the brush.

So, again, when we can construe multiple source and goal disconstituents, they also exhibit the asymmetry predicted by the Syntactic Constraint on Thematic Discontinuity.

§2.3.2.3 Duratives

It has commonly been claimed that verbs like "spend" and "wait" subcategorize for a temporal role (see for example, Somers 1987). If the Syntactic Constraint on

Thematic Discontinuity is correct, we have evidence to suggest that temporals and duratives are distinct roles. Consider for example the sentences in (101).

(101) a) I waited for three hours on Tuesday.

b) On Tuesday, I waited for three hours.

c) For three hours, I waited on Tuesday.

It is possible to prepose either the durative or the temporal, suggesting that these are not disconstituents.

Although duratives and temporals are not disconstituents, they are not entirely independent. We have seen in the above examples that it is possible to provide a more general temporal setting for the durative event. What we cannot do, however, is provide a temporal that is more specific than the durative.

(102) a) *I waited for 3 hours at noon.

b) *I waited for the summer in July.

(103) a) *I spent a year in Saskatoon last February.[26]

b) *I spent a week at the cottage on Tuesday.

26. The unacceptability of this sentence was used for effect in a comedy sketch (on the "Royal Canadian Air Farce", by "The Honorable David J. Broadfoot, Member of Parliament for Kicking Horse Pass").

This could be accounted for in a number of ways. One possibility is that duratives are wholly affected, in the same way that the bare-NP locatives with "spray"/"load" alternations are wholly affected -- precluding any further restriction (see §2.3.1.1.3). Another possibility is that the durative makes the entire event temporal, at a relative level of specificity determined by the nature of the durative. This would preclude any more specific temporal adjunct since, by the Syntactic Constraint on Thematic Discontinuity, such a temporal would need to be X-commanded by the entire clause and hence could not occur with the clause.

§2.3.2.4 Doubling and Noun Incorporation

Noun incorporation is a process (lexical or syntactic) in which the direct object of the verb occurs morphologically within the lexical verb. In languages that exhibit noun incorporation, we normally find alternation between sentences where the direct object surfaces within the verb, and those where the direct object surfaces as a syntactic direct object, separate from the verb. So, for example, in Onondaga, we find both sentences (104)a) and (104)b).

(104) Onondaga:

a) wa?-ha-hninu-? o-ye?kw-a?
tns-he/it-buy-asp it-tobacco-suf.
"He bought tobacco."

b) wa?-ha-ye?kw-ahni:nu-?
tns-he/it-tobacco-buy-asp
"He bought tobacco." (Woodbury 1975, p. 10)

In (104)a) we find "tobacco" occurring as a separate syntactic direct object of the verb "buy", and in (104)b) we find "tobacco" occurring inside the verb as an incorporated noun. Many languages exhibiting noun incorporation also exhibit what has been referred to as doubling of the incorporated noun by a full noun phrase -- that is, it is possible for both an incorporated noun and a full object to occur in the same clause.

There is a fairly uncontroversial semantic restriction on doubling that has been reported in the literature on noun incorporation (Baker 1988, Chafe 1970). Whenever there is a syntactic constituent that doubles the incorporated noun, the syntactic constituent must be more specific in reference than the incorporated noun. This can be accomplished by repeating the incorporated noun as the head noun of the doubled constituent and providing further modification. A typical example is shown in (105).

(105) Onondaga:

a) ?o-nohs-aka:yoh

pre-house-old

"The house is old."

b) ?o-nohs-akayo neke ka-nohs-a?

pre-house-old this pre-house-suf

"This house is old."

c) *?o-nohs-akayo ka-nohs-a?

pre-house-old pre-house-suf

"The house is old." (Chafe 1970, p.61)

(105)a) shows the regular incorporated object without doubling. (105)b) shows doubling of the incorporated object by a noun phrase that is further modified by a demonstrative. This sort of doubling is only possible if the doubled noun phrase provides additional specification over and above the incorporated noun, hence the ungrammaticality of (105)c).

Doubling can also often be accomplished with a noun phrase that has a different head noun than the incorporated noun, provided, again, that this noun phrase supplies further information about the incorporated object -- and, hence, is more

specific than the incorporated object. Thus, we have examples like (106) where the unincorporated noun phrase further specifies the theme established by the incorporated noun.

(106) a) Mohawk:

onu:ta? wa?-k-hnek-i:ra

milk past-I-liquid-consume

"I drank milk." (Mithun 1986, p.34)

"Milk", the doubled NP, is more specific in reference than "liquid", the incorporated noun.

b) Onondaga:

hati-hnek-aets o-e:ta:k-i?

they/it-liquid-gather pre-maple syrup-suf

"They gather maple syrup." (Woodbury 1975, p.11)

Again, "maple syrup", the doubled NP, is more specific in reference than "liquid", the incorporated noun.

c) Tuscarora:

wak-taskw-ayv? ta:ko:t

pre-domestic animal-exist for me cat

"I have a pet cat." (Williams 1976, p.36)

Once again, "cat", the doubled noun phrase, is more specific in reference than "domestic animal", the incorporated noun.

In general, with doubling and noun incorporation, the incorporated noun is more general in reference, while a more specific noun phrase can remain unincorporated and counts as the doubled phrase.

Contrasting (106)a) and (106)b), it is clear that it is the hierarchical configuration of the clauses that is relevant to the asymmetric distribution, and not the sequential order of the disconstituents. In Mohawk, the more specific noun phrase precedes the incorporated noun, and, in Onondaga, the more specific noun phrase follows the incorporated noun -- in each case consistent with the normal position of a direct object.

Baker (1988a) analyzes the doubled noun incorporation structures in the following way.[27] He assumes that the incorporated object receives its Θ-role as a direct object at d-structure from the verb. It is then incorporated into the verb by X° movement, and transmits its Θ-role to what he refers to as an 'adjunct NP'. The important point about this for the current discussion is that the two discontinuous elements -- the incorporated noun and the doubled phrase -- seems to count as a thematic discontinuity and that the disconstituents are asymmetric both semantically and syntactically, consistent with the Interpretive and Syntactic Constraints on Thematic Discontinuity.

Notice that I have not claimed that the cumulative reference of thematic disconstituents should be treated as coreference (contra Williams 1989). Williams adopts a revised version of the Novelty Condition of Wasow (1972), and extends this to account for doubling with noun incorporation.

27. There are a number of competing approaches in the literature on Noun Incorporation. Baker (1985, 1988) takes a syntactic approach. Other approaches have been more semantic or lexical in nature (see Chafe 1970, Williams 1976, Sadock 1980, Mithun 1984). The approach taken here to thematic discontinuity is compatible with either a syntactic or a lexical approach to Noun Incorporation, although I will be addressing some specific claims made by Baker in later sections of this chapter.

(107) The Novelty Condition

An anaphor may not introduce any presuppositions not associated with its antecedent.

(Wasow 1972, p. 178)

Williams generalizes this to a condition holding between any pair of coreferential NPs, claiming that an anaphorically dependent element cannot have more determinate reference than its antecedent. This proposal accounts for the contrast in the sentences in (108).

(108) a) A captain$_i$ walked into the room. The officer$_i$ at first said nothing.

b) *An officer$_i$ walked into the room. The captain$_i$ at first said nothing.

(Williams 1989, p. 434, ex. 25)

In these examples, the first NP (the antecedent) must be more specific in reference than the second NP (the anaphor). Note that the second NP in (a) is a pronominal epithet (see Lasnik 1976, Soames and Perlmutter 1979). If we accept Williams' analysis then there is a sort of subsetting relationship here, where the antecedent must be more specific in reference than the anaphor. The examples in (108), of course, do not involve thematic discontinuity at all -- each NP has its own independent Θ-role.

Williams extends this approach to cases of doubling and noun incorporation, claiming that the incorporated noun is bound by the doubled noun, and hence the doubled NP must be at least as specific as the incorporated noun.

Normally, if X binds the reference of Y, then X is structurally higher than Y. Also, it is unusual for binding to take place between a constituent within an X° and any other constituent, given the anaphoric islandhood of lexical items (see Postal 1969, Simpson 1983[28], Sproat 1985). If coreference between a syntactic constituent and a sublexical morpheme were possible, then the binding principles could be extended so as to be satisfied by the structural relationship between a doubled object and an incorporated noun. However, while Williams' proposal might account for doubling facts with noun incorporation, it cannot be extended to the other cases of discontinuity that we have discussed. According to Williams, binding involves a more specific, structurally higher NP binding a more general constituent (a pronoun or pronominal

28. Simpson (1983), working within the LFG framework, proposed the following condition:

Lexical Integrity Hypothesis

Constituent-structure processes (which include annotation of functional information, and indexing of anaphoric information) are blind to the internal structure of words. (p. 75)

Following Pesetsky (1979) and Mohanan (1982), Simpson proposes that Lexical Integrity follows from the Bracket Erasure Convention, a convention in the Lexical Phonology and Morphology Model that erased internal brackets at the end of every lexical stratum. If Bracket Erasure applied at the end of the last stratum, then the Lexical Integrity Hypothesis would follow from Bracket Erasure. See Sproat (1985) for arguments against this proposal.

epithet). With discontinuity, as we have shown, exactly the opposite situation obtains. The structurally higher disconstituent must be more general than any structurally lower disconstituents -- this is the insight behind the Syntactic Condition on Thematic Discontinuity.

Consider the sentences in (109) and (110).

(109) a) As for dogs$_i$, I like them$_i$.

b) *As for them$_i$, I like dogs$_i$.

(110) a) As for dogs, I like dobermans.

b) *As for dobermans, I like dogs.

If we were to adopt Williams' approach, the pronoun is more general than the NP "dogs" in (109), and hence the pronoun must be structurally lower than the more specific NP (the antecedent). Although this works for (109), it does not extend to (110) where the structurally lower NP must be the more specific disconstituent, not the more general one. Doubling with noun incorporation is a general/specific asymmetry that intuitively patterns with the asymmetries involving discontinuity rather than with binding. Contra Williams, we cannot bring discontinuity, which involves cumulative reference, together with binding, which involves coreference.

Intuitively, this contrast between binding and discontinuity makes sense. With referentially dependent constituents, the referent has already been established, and it is appropriate for further expressions referring to the same individual to be less specific. On the other hand, with thematic discontinuity, the referent has not been precisely established. The function of the construction is to provide further restriction and hence make the reference of the role more specific. That is, in cases of discontinuity, we supply more and more information, making the cumulative referent more restrictive. This means that in cases of discontinuity we do not have coreference at all, but rather a sort of cumulative reference. So, although the more general statement of Wasow's Novelty Condition presented in Williams (1989) will allow us to account for pronominal epithets that involve coreference, I disagree with his extension of this principle to account for asymmetries with doubling and noun incorporation. In such constructions we have cumulative reference, not coreference. The Novelty Condition does not constrain the cumulative reference of disconstituents; in fact, the Syntactic Constraint on Thematic Discontinuity could be seen as the opposite of the Novelty Condition. See also Brunson (1989) for discussion.

§2.3.2.5 Incorporation in English

In Keenan (1985), it is observed that English does allow incorporation of the passive agent into a limited range of verbs (expressing power and authority). Consider the examples in (111).

(111) a) This project is State-controlled/NSF-funded/government-regulated.

b) *This project is State-enjoyed/NSF-avoided/government-rejected.

(Keenan 1985, pg. 264, ex. 44)

In the acceptable examples above, it is (marginally) possible to provide an additional "by"-phrase, provided that it further restricts the incorporated agent. Consider the examples in (112)-(114).

(112) a) ?This policy is government-regulated by the Ministry (of Transportation).

b) ?This policy is Ministry-regulated.

c) *This policy is Ministry-regulated by the government.

(113) a) ?This policy was committee-approved by a quorum.

b) ?This policy was quorum-approved.

c) *This policy was quorum-approved by the committee.

(114) a) ?This research is government-funded by SSHRCC.

b) This research is SSHRCC-funded.

c) *This research is SSHRCC-funded by the government.

The acceptability of the (b) sentences is somewhat idiosyncratic -- what is relevant for this discussion is the contrast between the (a) and (c) sentences. Although none of the examples that double the incorporated agent in a "by"-phrase are totally acceptable, there is, nevertheless, a clear contrast between the (a) sentences and the (c) sentences in the above examples. This indicates that the sort of asymmetry found with standard cases of doubling and noun incorporation also applies in English.

Further examples of marginal noun incorporation occur with adjectival passives. We find grammatical examples such as (115).

(115) The leaves were (very) bug-eaten.

When we have a by-phrase with these passives they are marginally grammatical, and are possibly no longer adjectival, but again, there does seem to be a contrast of the expected sort.

(116) a) ??The leaves were bug-eaten by aphids.

b) *The leaves were aphid-eaten by bugs.

§2.3.2.5.1 Conflation

Another candidate for an incorporation-like phenomenon in English is suggested by the analysis of lexical conflation in Hale and Keyser (1988). According to Hale and Keyser, conflation relates the sentences in (117). In (117)b), the nominal "shelf" first incorporates into the locative preposition and then into the abstract verb of motion.

(117) a) John put his books on the shelf.

b) John shelved his books.

With conflation of a locative, we can have additional locative disconstituents, of both the inner and outer variety.

(118) a) John shelved the books in the library.

b) John shelved the books on the top shelf.

c) John shelved the books on the top shelf in the library.

d) John shelved the books in the library on the top shelf.

(119) a) John boxed the candy in the living room.

b) John boxed the candy in a shoe box.

c) John boxed the candy in a shoe box in the living room.

d) John boxed the candy in the living room in a shoe box.

In (118)a) and (119)a) the locative PP provides a relatively more general location for the event. The examples in (118)b) and (119)b) show that the incorporated location can also be further restricted by an additional locative PP. We do, however, find an asymmetry emerging when we consider the sentences with the prepositional phrases in clause-initial position.

(120) a) In the library, John shelved the books.

b) ?On the top shelf, John shelved the books.[29]

(121) a) In the living room, John boxed the candy.

b) ?In a shoe box, John boxed the candy.

It seems that if we incorporate a locative Xj, then Xi is an outer locative for $i<j$, and an inner locative for $i>j$. So the incorporated location is, specifically, that point in the thematic discontinuity where we switch from an inner to an outer

29. This clause-initial PP seems to strongly suggest an outer locative reading (an elf on the top shelf), although the inner locative is not impossible.

interpretation. Notice that the conflated verb is not subcategorized for a locative, so any approach that correlates inner locatives with subcategorized locatives would miss the distinction to be found with this type of incorporated verb.

Also, note that the conflated locative itself does not count as a disconstituent. This can be seen by the following sentences, which readily allow the inner reading of the preposed PP when there is a more specific disconstituent.

(122) a) On the top shelf, John shelved his book next to the dictionary.

b) In the crate, John boxed the dishes next to the cutlery.

A further restrictive disconstituent facilitates the inner reading of the preposed PP. This suggests that the conflated locative has a selectional function, but that it is not itself a disconstituent. That is, it specifies the point in the gradation of a locative discontinuity at which the distinction in interpretation between the inner reading and the outer reading occurs.

The obvious question now is whether we can construe an outer role with the noun-incorporation sentences. That is, is there an example with a meaning such as, for example, "as for living things, I [domestic animal-have] a cat". The prediction here is that this should be possible, although the plausibility of such examples might be suspect. If generic topicalization is possible with incorporated constructions, then an

even more interesting question can be raised. If there are acceptable examples such as, "as for cats, I [domestic animal-have] a Burmese", then this would suggest that, like English conflation, the incorporated generic sets a selectional bound on the inner reading of the theme, rather than being a disconstituent of the theme.

Let us briefly speculate on the implications, if this approach is correct, of extending this analysis further. We might consider the verb's selectional properties as setting a (generic) upper bound on the roles it selects. This bound is, of course, packaged into the lexical item in a less obvious way than the conflated locative. Now, the requirement of Θ-government between a verb and its selected inner arguments could be viewed as a special case of the Syntactic Constraint on Thematic Discontinuity in (34). This is an intriguing possibility, however it opens up rather more issues and consequences than can adequately be contained here.

§2.4 Granularity

Although the notion of extensional subsetting intuitively captures the asymmetry of thematic disconstituents, it really doesn't hold up to more rigorous semantic consideration.

It is well-known that the meaning of a word cannot be equated with its referents. This has led to the distinction between the extension of a word (the set of

entities that this word picks out in the real world) and the intension of a word (its inherent sense). An extension can be seen as an instantiation of the intension of a word (formalized through lambda-extraction, in Montague Semantics). In many instances we find an ambiguity between what has been referred to as the *de re* reading and the *de dicto* reading. The *de re* reading implies that we have a particular extension in mind, while the *de dicto* reading is intensional. Consider, for example, sentence (123), which is ambiguous between an extensional *de re* reading, and an intensional *de dicto* reading.

(123) The Prime Minister is unpopular.

If this sentence is asserting a fact about a particular Prime Minister, then it has an extensional (de re) reading, but if it is asserting a fact to be true for whoever happens to be the Prime Minister, then it has an intensional (de dicto) reading.

We run into particular difficulty for the notion of extension when we consider terms for entities that do not exist, at least in this world. Such terms have no extension. But, such terms clearly can enter into thematic discontinuity.

(124) As for unicorns, I like spotted ones.

In fact all of the generic "as-for" topics take on an intensional, rather than extensional sense, consistent with the generic use of the NP.

"Belief" contexts provide another area where the distinction between intension and extension figures crucially. In the sentence in (125) we are not necessarily asserting the existence of the location identified by the disconstituents in the subordinate clause, however again thematic discontinuity is involved.

(125) Mary believes that, in Atlantis, John swam at the new aquatic facilities.

Thus, although extensional subsetting seems like the appropriate restriction, it does not give us the results that we need. The semantic constraint on discontinuity must be stated in terms of intensions.

In the discussion of extensional subsetting in §2.2.2, we contrasted relatively more general expressions (e.g. winter) with relatively more specific expressions (e.g. February), and subsetting seemed to capture this distinction. However, we can capture the same distinction in terms of what I will refer to as the granularity of the role. Considering the temporal role as an example, we can construe time as being partitioned into years, a relatively coarse-grained partition, or into days, a relatively finer-grained partition. In this way, we can view the granularity of a role as ranging from coarse to fine grain. So, rather than describing the Interpretive Constraint on

Thematic Discontinuity in terms of subsetting, we can simply require that each disconstituent express the reference of the role from a different perspective in terms of the fineness of the grain of the disconstituent. That is, disconstituents must describe the same referent with different relative granularity. This notion of granularity is actually more robust than extensional subsetting, particularly in that it is not limited to extensions, but can apply to intensions as well.

The claim then is that we can construe partitions of time and space as being ranked along a scale from coarse to fine grain, as illustrated in (126).

(126)

COARSE-GRAIN FINE-GRAIN

<< ——————————————————————— >>

time:

(sample instantiation)

...years . months . weeks . days . hour . minutes . seconds ...

location:

(sample instantiation)

...countries . cities . neighbourhoods . streets . houses . rooms ...

A crucial difference between this proposal and the subsetting proposal is that now what counts as a coarser or finer grained instance of a discontinuity is relativized to the role itself. Notice that what counts as a finer grained location is defined in the context of location -- it has to be construed as a sub-region. I will employ the notation in (127) to mean that X1 is coarser-grained with respect to location than its disconstituent X2, or, more generally, the notation in (128).

(127) $X1_{loc} \supset_{loc} X2_{loc}$

(128) $X1_{\alpha_i} \supset_{\alpha_i} X2_{\alpha_i}$

Now, compare the examples in (129) .

(129) a) John met Bill on the boat in the harbour.

b) In the harbour, John met Bill on the boat.

c) On the boat, John met Bill in the harbour.

Under normal assumptions about the comparative sizes of boats and harbours, the sentence in (129)c) is not acceptable. It is, however, acceptable in the interpretation that there is a relatively large boat, and comparatively small harbour, where the boat is partially outside of the harbour. This order forces "harbour" to be interpreted as a sub-region of "boat", contradicting our normal expectations. So,

sentence (129)c) is only acceptable in a world or context where there is a region, x, such that x is "on the boat", but not "in the harbour".

Similar results obtain for the sentence in (130).

(130) a) John met Bill under the tree on the bench.

b) Under the tree, John met Bill on the bench.

c) On the bench, John met Bill under the tree.

Sentence (130)c) is only acceptable with the interpretation that there is some region, x, such that x is "on the bench" but not "under the tree"; that is, if "under the tree" is a subregion of "on the bench", contra normal assumptions.

This implies that the clearest examples of ungrammaticality with preposed disconstituents should occur when there is no ambiguity possible about the nesting of the subregions. This prediction does seem to be valid.

(131) a) In France, I met John in Paris.

b) *In Paris, I met John in France.

Temporals create another sort of complication for the issue of granularity. Many temporal expressions are cyclic in nature. "At 3 o'clock" is true every 12 hours,

"on Wednesday" is satisfied every week, "in the summer" is satisfied once a year, and so on. With cyclic temporal terms there is an ambiguity between a *de re* reading (a specific Tuesday), and a *de dicto* reading (the concept of 'Tuesday', its cyclic definition). This ambiguity extends to all the cyclic temporal expressions (months, days, hours). In the *de dicto* reading, these temporals are not situated where we would expect in the scale of granularity, but rather seem to be located as coarse-grained temporals, more general than the *de re* temporals. In the *de re* reading, temporals are well-behaved in terms of relative granularity, but the possibility of the *de dicto* reading with cyclic temporals creates a compounding ambiguity with rather fluid interpretations.

(132) COARSE-GRAINED TEMPORAL FINE-GRAINED TEMPORAL

<< ———————————————————— >>

..de dicto hour/day/month..de re year.de re month.de re week.de re day....

Consider the following:

(133) In 1989, John met Mary in July.

(134) In July, John met Mary in 1989.

Sentence (133) forces the *de re*, specific July reading, since there is only one July bounded by the non-cyclic expression "in 1989". Sentence (134) is unusual in that

it forces a somewhat unnatural *de dicto* reading of the PP "in July"; that is, of all of John's activities in any time that counts as July, John's meeting Mary was one of the 1989 July activities.

Now consider the sentences in (135) and (136).

(135) In 1989, John met Mary on Tuesday.

(136) Last week, John met Mary on Tuesday.

Assuming that the reference of the deictic "last week" is clearly understood, sentence (136) has a *de re* reading for "on Tuesday". Sentence (135) is again ambiguous between a *de re* and *de dicto* reading for "on Tuesday", but the *de dicto* reading is bounded by the unambiguously *de re* "in 1989". So, not only do the *de dicto* senses of the cyclic temporals slip in at the coarse-grained end of the scale of granularity, we find such bounded *de dicto* readings interspersed among the *de re* readings.

Again, the prediction is that non-cyclic temporals should yield clearer grammaticality judgements due to the non-interference of the *de dicto* reading. This prediction is correct.

(137) a) In the latter half of the 20th century, I met John in 1989.

b) *In 1989, I met John in the latter half of the 20th century.

(138) a) In 1982, I went to Toronto on the day I graduated from High School.

b) *On the day I graduated from High School, I went to Toronto in 1982.

To conclude, the Interpretive Constraint on Thematic Discontinuity should now be stated as in (139).

(139) INTERPRETIVE CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents of a thematic discontinuity expressing the role Θi iff they cumulatively identify a single referent and

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

where $X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i}$ is true iff X1 is coarser-grained with respect to the role Θi than X2.

§2.4.1 Granularity and Preposition Choice

The issue of granularity also influences preposition choice. There is extensive literature on what counts as an appropriate choice for locative or temporal prepositions (see, for example, Lindkvist 1976, Herskovits 1986) This literature explores the many regularities and idiosyncracies of preposition choice in terms of the geometric

properties of the NPs, extending this metaphorically to temporal domains. The point of this section is not to review or replicate the results of this literature, but to point out that granularity also seems to play a role in preposition choice. This is brought out by considering the way that other thematic disconstituents affect the choice of a preposition for a particular locative or temporal disconstituent.

To illustrate this point, I will consider what Herskovits (1986) calls the three basic topological prepositions: "in", "on" and "at". She correlates the choice of preposition with geometric properties of the referent of the NP -- a "geometric ideal" (p. 155). I will argue that there is more involved.

First note that there does seem to be a correlation in terms of relative granularity between the use of prepositions such as "in", "on" and "at" temporally and locatively.

(140) John met Mary [in July] [on Wednesday] [at 3 o'clock].

(141) John met Mary [in Toronto] [on Bemerton Court] [at the red brick house next to the park].

In each of examples (140) and (141) the temporal and locative disconstituents occur in an order from relatively coarser to finer grain. Generalizing across locatives and temporals, "in" is being used in the coarsest disconstituent, "on" is being used in the

intermediate disconstituent, and "at" is being used in the finest disconstituent. This follows from the typical use of "in" as locating in a 3-dimensional space, "on" as locating on a 2-dimensional space, and "at" locating at a point, since these nest (in terms of sub-regions) in the expected way.

Some terms (particularly temporals) seem to be associated (lexically) with particular prepositions, allowing little variation (see (142)).

(142) a) John met Mary in/*on/*at July.

b) John met Mary *in/on/*at Wednesday.

c) John met Mary *in/*on/at noon.

The interesting cases involve discontinuity, and how other disconstituents can affect preposition choice. Consider the following sentences.

(143) John met Mary [in Toronto] [on Bemerton Court] [at/in the red brick house].

(144) John met Mary [in/*at the red brick house] [on the second floor] [at the doorway to the study].

(145) John met Mary [on/*at the corner] [at the streetlight].

(146) John met Mary on/at the corner.

Notice that although the prepositions "in", "on" and "at" seem to reflect the granularity of location, we can zoom in on a point and treat it as a 3-dimensional region, using the preposition "in", rather than "at", as in example (143). This is in keeping with a proposal by Jackendoff (1987), following Talmy (1978). Jackendoff proposes the following rule for the temporal tier.

(147) P --> P R P

This rule takes a point in time, P, and zooms in on it to reveal a bounded inner region, R (an interval bounded by points). Jackendoff uses this rule to account for instances where punctual events take place over an interval of time, as in the following examples.

(148) a) It took Bill three hours to die.

b) The light flashed on for 10 milliseconds.

(examples from Jackendoff 1987, p. 399)

Jackendoff also proposed the rule in (149).

(149) R --> R P R

This rule takes a "snapshot" of a designated point of time in an interval. This rule does not seem to extend to preposition choice with disconstituents as readily as the rule in

(147). We can't seem to treat a region as a point with respect to preposition choice, and at the same time as a region (taking sub-regions) with respect to granularity. This accounts for the oddness of "at" in sentences (144) and (145), although "at" is perfectly acceptable when there are no finer-grained disconstituents, as in (146).

§2.4.2 Granularity and Adverb Form

A somewhat different situation presents itself with the choice of the form of an adverb, but again this seems to have something to do with granularity.

Consider the following examples:

(150) a) John checked his mail each day hourly.

b) John checked his mail hourly each day.

c) John checked his mail each hour daily.

d) John checked his mail daily each hour.

e) *John checked his mail hourly daily.

f) *John checked his mail daily hourly.

g) *John checked his mail each hour each day.

h) *John checked his mail each day each hour.

We can have multiple -ly adverbs in a clause (e.g. John deftly rearranged the figurines on the shelf daily.), provided that they not be contiguous, and we can generally have multiple "each NP" expressions (e.g. John checked each message each day). In the case of disconstituents, however, we need to have a different form for each disconstituent, regardless of contiguity (see (151)).

(151) a) *Daily, John checked his mail hourly.

b) *Each day, John checked his mail each hour.

The disconstituents in (151) do not violate the Syntactic Constraint on Thematic Discontinuity, and the adverbs with the identical form are not contiguous in the surface sentence. Why are these unacceptable? A possible explanation might be that the form of the adverb, like the form of the preposition, is involved in identifying the granularity appropriate for the adverb. Here the form of the adverb is not tied specifically to any particular degree of granularity, but merely serves to identify a difference in granularity -- that is, different forms of the adverb are required if the adverbs are disconstituents and, as required, exhibit a difference in granularity. Since disconstituents require a difference in granularity, this approach would predict that adverbial disconstituents must take different forms.

§2.4.3 Granularity and Topic Form

A parallel situation is found with respect to the form of the disconstituent topics. Sentences such as (152) where there are multiple disconstituent "as-for" topics are not permitted.

(152) a) *As for fruit, as for bananas, I like the red ones.

b) *With fruit, with bananas, I like the red ones.

c) **Furniture-wise, chair-wise, I like arrowbacks.

We can (perhaps somewhat implausibly), combine topic disconstituents if they involve a different form. Consider the examples in (153).

(153) a) As for fruit, with bananas, I like the red ones.

b) With fruit, as for bananas, I like the red ones.

c) ?With fruit, banana-wise, I like red ones.

d) ?Fruit-wise, with bananas, I like red ones.

e) ?Fruit-wise, as for bananas, I like red ones.

f) ?As for fruit, banana-wise, I like red ones.

So again, if we can construe multiple disconstituent topics, they must be identified with a different form to reflect the difference in granularity.

§2.5 On the Status of the Θ-Criterion

The Θ-Criterion, stated in (154), is a fundamental principle of the Government and Binding theory of syntax. It is normally assumed to require a biuniqueness between argument positions and the Θ-roles that are assigned by a predicate.

(154) The Θ-Criterion

i) Each argument bears one and only one Θ-role.

ii) Each Θ-role is assigned to one and only one argument.

(Chomsky 1981, p. 36)

A principal function of the Θ-Criterion has been to enforce the valency of a predicate -- that is, the Θ-Criterion ensures that predicates are associated with the correct number of arguments (according to their lexical properties) in the syntax. It is also commonly assumed that any constituent that potentially bears a role, but neither needs a role nor receives a role from a lexical head in the sense of the Θ-Criterion, is an adjunct. Thus adjuncts are excluded, by definition, from the Θ-Criterion.

Clause (ii) of the Θ-Criterion breaks down into two requirements. First it requires that all of the Θ-roles of a predicate be assigned to some argument. In addition, it requires that a Θ-role be assigned to only one argument.

Now the question arises: Does clause (ii) of the Θ-Criterion mean that an argument of the verb cannot be a disconstituent? If it does, then it is too restrictive, since as we have seen, arguments do occur as disconstituents. Certainly, under one interpretation, the Θ-Criterion is incompatible with an argument being part of a thematic discontinuity. Strictly speaking, the Θ-role assigned to this argument would not be associated with "exactly one argument" since the role would be associated with an argument and an additional disconstituent. However, it could be argued that the additional disconstituent is not itself an argument, and hence the Θ-Criterion does not apply to it. The Θ-Criterion is satisfied since there is only one argument bearing the role. Any additional disconstituents are adjuncts and are excluded from the Θ-Criterion by definition.[30] If we interpret the Θ-Criterion this way, many facts about discontinuity are left unexplained. What is being missed by this approach is that there are two types of uniqueness. There is a uniqueness requirement on the interpretation of each Θ-role, broadly construed to include adjunct roles as well as argument roles. In addition, there is a uniqueness requirement on structural argument positions. If we restrict the empirical domain of clause (ii) of the Θ-Criterion so as to apply only to argument positions, then there is no reason even to refer to Θ-roles in this clause. It might as well simply require that argument positions be unique. But now it is not a

30. This is the approach taken in, for example, Baker (1988a). With noun incorporation, Baker assumes that the incorporated object is the argument, and that the doubled object, when there is one, is an adjunct that receives a role transmitted from the incorporated argument.

part of theta theory, but a part of the theory of argument structure, and we still need a constraint to ensure a unique interpretation for each role.

In earlier sections I suggested that the Interpretive Constraint on Thematic Discontinuity, together with an interpretive version of clause (ii) of the Θ-Criterion, could account for restrictions on adjuncts, while allowing for disconstituent arguments. I will now pursue this idea.

The Interpretive Constraint on Thematic Discontinuity forces the disconstituents of a thematic discontinuity to cumulatively express the referent of a single role (each with a different granularity), effectively zooming in on the intended referent of the role. If we assume that all roles, both adjunct and argument, must be uniquely interpreted, then this assumption (stated in (155)), together with the Interpretive Constraint on Thematic Discontinuity, accounts for the unacceptability of the sentences in (156), while allowing the sentences in (157).

(155) All roles (argument or adjunct) of a single event/predicate must be uniquely interpreted.

(156) a) *I met John on Tuesday on Thursday.

b) *I met John in Toronto in Montreal.

(157) a) I met John on Tuesday at noon.

b) I met John in Toronto at the Sky Dome.

Grimshaw (1990) claims that examples such as (156) show that arguments and adjuncts are more similar in their licensing requirements than is usually assumed (see Grimshaw 1990, pp.147-149, also Zubizarreta 1987, p. 36, footnote 7). In addition, Jackendoff (1987) argues against the biuniqueness requirement of the Θ-Criterion, developing a theory of conceptual structure with limited visibility to the syntax. The proposals here are more in the spirit of Grimshaw (1990) than Jackendoff (1987).

It should be clear that the assumption in (155) extends to account for the following unacceptable sentence.

(158) *I like dogs cats.

If both NPs are to be interpreted as a single theme of "like", they must be disconstituents, but these NPs do not satisfy the Interpretive Constraint on Thematic Discontinuity -- these NPs are not cumulatively identifying a single referent.

Similarly, we can account for the unacceptability of the sentence in (159).

(159) *The book was read by Mary by John.

If the two "by"-phrases are to be understood as cumulatively identifying a single "agent" role, then they must be disconstituents, but these cannot be interpreted as disconstituents expressing the same role.

There are some examples that the assumption in (155), together with the Interpretive Constraint on Thematic Discontinuity, does not readily account for. Consider the following sentence.

(160) *I like dogs dobermans.

Here the two NPs could logically be a discontinuity since they satisfy the Interpretive Constraint on Thematic Discontinuity. So, this constraint will not account for the unacceptability of sentence (160). Notice, however, that a topicalized construction is possible here, as in sentence (161).

(161) As for dogs, I like dobermans.

In this sentence, "dogs" sets the framework of reference within which the theme is understood, and is itself a coarser-grained disconstituent theme according to my assumptions. If this approach is correct, then the unacceptability of (160) is not due to the theme Θ-role being distributed over two NPs. It must be due to a uniqueness requirement on the subcategorized direct object position. So, the explanation for the

unacceptability of (160) is not due to a violation of the Θ-Criterion, but is instead due to a violation of principles of argument structure that define unique structural positions in the syntactic configuration.

Subcategorized roles are associated with obligatory positions in an argument structure. By the Projection Principle, these positions must be present in the syntax, and they are projected into the d-structure syntax as *unique* structural positions, consistent with the X-bar base component. In this way, argument structure and the lexical properties of a predicate define a core syntactic tree, and any additional disconstituents for subcategorized arguments would need to be adjoined to this core syntactic tree in such a way as to ultimately satisfy the Syntactic Constraint on Thematic Discontinuity.

Since adjunction is possible only to maximal projections that are not arguments (Chomsky 1986a), disconstituents must be adjoined outside VP. The Syntactic Constraint on Thematic Discontinuity would then force the subcategorized VP-internal argument positions to be filled by the maximally specific disconstituent. A VP-internal argument could not X-command a VP-external adjunct, while a VP-external adjunct could X-command a VP-internal argument. Hence, the constraints on thematic discontinuity allow us to derive the fact that the argument position is the maximally specific disconstituent of a thematic discontinuity (see also §3.2). Of course, this also

allows more general disconstituents to occur outside of VP as adjuncts or as generic "as-for" topics, as required.

Now, let us consider subject arguments, which may be base-generated outside VP as specifiers of IP.[31] At issue here are sentences like (162).

(162) a) *Dogs dobermans ate the food.

b) *Dogs ate the food by dobermans.

Again, the unacceptability of (162)a) is due to a uniqueness requirement on the subject position rather than the Θ-Criterion. In (162)b) there is a general subject that presumably could X-command the further restrictive "by"-phrase. Since "by"-phrases can introduce the role typically borne by the subject in a passive sentence, we need to explain why a "by"-phrase cannot double the subject's role in the active sentence (again, provided that the X-command restriction is satisfied). To resolve this problem, following Grimshaw (1990), I will assume that such "by"-phrases are "a-adjuncts" (argument-adjuncts) that are licensed by a suppressed external argument. That is, "by"-phrases are licensed by a particular type of argument structure, and

31. There is some current debate as to whether subjects are actually base-generated in the specifier of VP. If they are, then the account of VP-internal arguments extends straightforwardly to subjects.

hence are not as freely generated as most adjuncts are.[32] Sentence (162) is not acceptable because the argument structure of the active sentence does not have a suppressed external argument, and hence the "by"-phrase is not licensed. Once again, this sentence is not ruled out by the Θ-Criterion. It is ruled out by a principle of the theory of argument structure.

A further problem of a similar sort is illustrated in (163).

(163) *This food was eaten by dogs by dobermans.

Again, following Grimshaw, both of these "by"-phrases would be a-adjuncts, licensed by a suppressed external argument position. Here we need to assume that since external argument positions are unique, when suppressed they must license a unique a-adjunct. The uniqueness of the "by"-phrase thus follows from the uniqueness of the suppressed external argument that licenses it. So, again, we can derive the uniqueness requirement here from principles of argument structure without appeal to the Θ-Criterion.

Since the Θ-Criterion only applies to the core argument roles (by definition), and we have seen that uniqueness requirements on core argument positions can be

32. Recall from chapter 1 that I am following Higginbotham (1985) in assuming that adjuncts are normally licensed by linking their open Θ-position to the E position in the Θ-grid of the verb.

imposed independently by principles of argument structure (applying to structural positions) then the uniqueness requirement in clause (ii) of the Θ-Criterion is not needed if we have the interpretive condition in (155). The other aspect of clause (ii) of the Θ-Criterion forces all subcategorized roles to be assigned. This clause follows from the Projection Principle, which independently requires that lexical properties of the predicate be present at all levels of representation. This could readily be enforced through obligatory positions in an argument structure for obligatorily subcategorized roles.

The two clauses of the Θ-Criterion are independently open to empirical investigation. Rejection of one of these clauses does not necessarily require rejection of the other clause. The objections raised here do not extend to clause (i) of the Θ-Criterion; however, this clause has also had its critics. Jackendoff (1972, 1987) argues that it is possible for an NP to bear more than one role (for example, the subject of transaction verbs like "buy", "sell" etc. involve two roles; a factor that distinguishes "buy" from "obtain"). Zubizarreta (1987) argues that certain adverbs (e.g. "intentionally") actually assign an external role to an argument that may be an argument of the main predicate. In this way, an argument can receive more than one role. Again, these objections are to the "only one Θ-role" aspect of clause (i); the weaker requirement that all NPs bear a Θ-role could reasonably be extended to all NPs (argument or adjunct), and could be make to follow from the Principle of Full Interpretation (Chomsky 1986b). If we accept Jackendoff and Zubizarreta's arguments,

it seems that we can reduce clause (i) of the Θ-Criterion to the independently motivated Principle of Full Interpretation. Since my main concern here is with clause (ii) of the Θ-Criterion, I will leave these comments about clause (i) as speculative, and restrict my attention to clause (ii).

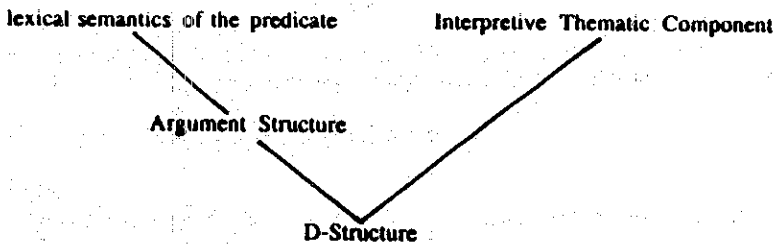
Clause (ii) of the Θ-Criterion, as a syntactic constraint, has nothing to offer that would not be independently dealt with by any adequate theory of argument structure, together with the Projection Principle, the assumption in (155), and the constraints on thematic discontinuity that have been proposed here. Thus, I will propose that clause (ii) of the Θ-Criterion be replaced by the assumption in (155) -- but note that it is no longer a constraint on syntactic representations, but rather a constraint on interpretation, and it applies equally to arguments and adjuncts.

(164) INTERPRETIVE VERSION OF CLAUSE (II) OF THE Θ-CRITERION

All the roles (argument or adjunct) of a single event/predicate must be uniquely interpreted.

The model of grammar that I am developing here can be schematically represented as in the following:

(165)



The Interpretive Thematic Component is a level of representation at which all of the participants of the event are represented, including adjuncts, arguments and all of their disconstituents. I will have nothing to say about the specific nature of this representation, although an enriched representation of conceptual structure along the line of Jackendoff (1987) is one possibility. This level of representation is interpreted off of d-structure (or possibly s-structure). The lexical semantic representation of the predicate is subject to argument structure principles that define a core syntactic tree of unique argument positions, consistent with the lexical properties of the predicate. Any participants not accommodated by the argument structure (i.e. disconstituents of arguments, and adjuncts) are adjoined to this core tree (see chapter 3 for structural details), giving the d-structure representation (consistent with principles of X-bar syntax).

§2.6 The Granularity of Cause

In this section, I will show that thematic discontinuity extends beyond the sort of phenomena that have been under discussion, and that it provides a solution to some puzzling asymmetries that at first do not seem to involve discontinuity at all.

It has long been observed that there is a dependency between the agent role and the instrument role. Gruber (1970) points out that "the instrumental phrase cannot ordinarily be used without the subject being an Agent" (Gruber 1965, p. 139). See also Fillmore (1968, 1971), Nilsen (1973) and Somers (1987) for similar observations.

Another fact that has long been observed is that instruments can occur as subjects (Baker 1988a, 1988b, Fillmore 1967, 1968, Marantz 1984, Nilsen 1973, Sanders 1975, Levin 1979, 1989, Somers 1987). We find paradigms such as the following:

(166) a) John broke the vase with a hammer.(agentive subject; causative)

b) The hammer broke the vase. (instrumental subject; causative)

c) The vase broke. (theme subject; inchoative)

The following sentences are not possible:

(167) a) *The hammer broke the vase by John.

b) *The vase broke by John.

c) *The vase broke with a hammer.[33]

Typically, these facts have been accounted for by appealing to a hierarchy of roles as candidates for subjecthood -- a subject hierarchy. The subject hierarchy stipulates that *agent* is higher than *instrument*, which in turn is higher than *theme*. If agent, instrument and theme are all expressed, the agent must be the subject. If there is no agent, then the next higher role in the hierarchy will be selected as the subject; the instrument if there is one, otherwise the theme. The sentences in (167) are violations of the subject hierarchy, accounting for the ill-formedness of these constructions. It should be emphasized that the subject hierarchy is stipulative -- it offers no real explanation, but merely characterizes the behaviour of these roles.

To these facts, let us add the following:

(168) a) John broke the vase with a hammer.

b) With a hammer John broke the vase.

33. Middle constructions form a systematic class of exceptions that differ from these examples.

(i) This vase will break easily with a hammer.

See Hale and Keyser (1987) and Massam (1989). Although the approach taken here will have implications for the analysis of middles, I will not pursue this issue.

(169) a) The vase was broken by John with a hammer.

b) *With a hammer the vase was broken (by John).

In the active sentences, it is possible to prepose the instrumental PP, as in (168)b). This contrasts with (169)b) which shows that we cannot prepose an instrumental PP in the passive. Note that there is no general prohibition against preposing PP's in passive constructions:

(170) On Tuesday, the vase was broken by John.

This restriction on preposing in passive sentences seems to apply specifically to the instrumental PP (and also to the passive "by"-phrase, as established in §2.3.2.1.1).

All of these facts can readily be accommodated if we assume that agents and instruments are disconstituents of a single *cause* role, with the agent being the coarser-grained disconstituent. This proposal would not work if we were expressing constraints on discontinuity in terms of extensional subsetting, since in no way can "with a hammer" be taken as a referential subset of "John" in (166) - (169). It is, however, consistent with the revised notion of granularity that replaced the notion of subsetting (see §2.4). Since granularity is relativized to the role, it is conceivable that an agent might be a coarser-grained disconstituent sharing the cause role with a finer-grained instrumental disconstituent.

This proposal has a direct antecedent in the work of Nilsen (1973), Sanders (1975), and Levin (1979). Consider the following quotation from Sanders (1975):

> The most obvious facts about Agents and Instrumental are facts about their meanings and the relations that hold between their meanings. Thus both AGENT and INSTRUMENT are semantically complex, and, as suggested ...by references to Agents as Animate Instruments and to Instruments as Inanimate Agents, they can reasonably be assumed to share at least one generic property in common. The characteristic obscurity of the boundaries between so-called case properties and other generic properties is especially evident here too, however, and the distinction between Agents and Instruments can perhaps be assumed to consist solely of their distinction with respect to the property of Animateness.
> (Sanders 1975, p. 141)

Nilsen (1973) attempts to characterize the difference between agents and instruments in terms of the semantic features *Controller* and *Controlled*. The agent role bears the feature values [+ controller; - controlled], while the instrumental role bears the feature value [+ controlled] and is unspecified for the feature controller. In this way, Nilsen captures the similarities between these two roles as well as the differences. Levin (1979) proposes a similar notion of "control", but Levin's proposal differs from Nilsen's in being a relationship between the agent and instrument rather than features on these roles. Levin explains this relation as follows:

> The control relation differs from a predicate-argument relation in that it is a direct relation between two noun phrases, unlike a predicate-argument relation which is a relation of a noun phrase to a verb.
> (Levin 1979, p. 79)

The relationship between disconstituents is likewise a relation between NPs (or PPs) that is not mediated by a verb.

If we are correct in treating agents and instruments as disconstituents of a single role, then the subject hierarchy follows immediately from the structural prominence of the subject position, together with the Syntactic Constraint on Thematic Discontinuity. Similarly, the fact that an instrumental PP cannot prepose in the passive can be accounted for in the same way as the fact that passive "by"-phrases cannot prepose. In both cases, the passive suffix -en is a more general disconstituent which is required, but fails, to X-command the preposed PP. The well-formed (168)b) is entirely analogous to sentences like the following (repeated from §2.3.1.1.2 and §2.3.1.2):

(171) a) In Chinatown, Toronto is beautiful.

b) In the flowerbed, my backyard is crawling with ants.

In these cases, there is mutual X-command between the subject and the preposed PP, satisfying the Syntactic Constraint on Thematic Discontinuity.

There have been a number of attempts to characterize the relationship between agents and instruments with respect to causation. Nilsen (1973) discusses the "chain

of causation" where chronological precedence directly correlates with subjecthood. He gives the following example:

(172) John caused his finger to cause the trigger to cause the gun to cause the bullet to cause the man to be dead.
(Nilsen 1973, p. 136)

In such a chain of causation, Nilsen points out that the agent "John" is "both chronologically prior to all other nouns, and is also first choice in the subject-marking hierarchy." (Nilsen 1973, p. 136) Following Levin, it is perhaps preferable to consider this as a chain of control rather than one of chronological precedence.

In the approach taken here, such chains of causation reflect the granularity of the cause role. Each link in the chain of causation provides a finer-grained disconstituent of the cause role. All of these disconstituents together give a highly restrictive expression of the cause of the event. We have seen that in general disconstituents are limited by plausibility and considerations of human perception, making examples like (172) rather far-fetched.[34] In the same way that locative and temporal disconstituents express the location and time of an event with different

34. In fact, given that there is a separate predicate for each expression of the cause in (172), this example probably does not involve discontinuity at all. There are considerably more limitations on disconstituents of a single cause role than is apparent in examples like this where there are separate predicates.

relative granularity, effectively zooming in on a more precise location or time, the agent and instrument taken together provide a more precise cause for the event. In this way, the chain of causation can be seen as zooming in on the cause of the event with progressively finer granularity.

An argument that might be raised against this approach is that instruments are appropriate answers to "how" questions (that is, they provide a "manner" modification of the event), and hence are semantically different from agents. Notice, however that an agent is a felicitous answer to a "how" question when this question does not already express an agent:

(173) a) How was the vase broken?
How did the vase get broken?
b) John did it.

Although more naturally one would use a subject "who" question to request information about the identity of an agent, examples like (173) show that is possible to assert and identify an agent in a felicitous answer to a "how" question.

The approach that I am taking here does not imply that there is no semantic difference between agents and instruments. Certainly there is a semantic difference between agents and instruments, reflected in the difference that they express in terms

of the granularity of cause. As Nilsen (1973) points out, "It is the fact that agents and instruments are very similar, yet somewhat different, which makes the following sentence interesting":

(174) Matches don't start forest fires: people do!

(Nilsen 1973, p. 65)

Following Levin (1979), we may want to explain differences in the granularity of cause in terms of control -- coarser-grained cause disconstituents exert control over finer-grained cause disconstituents in a chain of causation. Even if this is the correct conceptual characterization, as far as the syntax is concerned it is sufficient that these be treated as disconstituents that are asymmetrically related.

§2.6.1 On the Instrument Role: Argument or Adjunct?

First of all, I would like to point out that the instrumental is not an a-adjunct in the sense of Grimshaw (1990). Instruments are not licensed by a suppressed argument, like the passive "by"-phrase. They can occur with either the passive or the active, and subject only to limitations on plausibility, they can occur with virtually any predicate that assigns a cause role.

Instruments are normally optional,[35] suggesting that they are adjuncts. Also, they pattern with adjuncts in VP pro-form constructions:

(175) a) *What John did on the shelf was put the book.

b) What John did on Tuesday was meet Mary.

c) What John did with the knife was cut the bread.

However, it has also been pointed out that instruments seem to obey the Θ-Criterion (or the "one case per simple predicate" test of case grammar) and are therefore better treated as arguments. Consider, for example, the sentence in (176).

(176) *Mary cut the meat with a knife with a saw.

This example can readily be ruled out by the interpretive version of clause (ii) of the Θ-Criterion. Examples like those in (177) are more problematic.

35. The direct object instrument with the verb "use" is a candidate for an obligatory instrument. It is not clear to me whether this object should be treated as an instrument or a theme, with the instrumental sense encapsulated into the verb. If we treat this direct object as an instrument, then this affords some insight into the following sentence:

(i) John used a hammer to break the vase.

In this sentence, the infinitival clause is controlled by the entire cause role of the matrix verb; that is, it is controlled not only by the agent but also the instrument.

(177) a) *Mary cut the meat with a tool with a saw.

b) ??As for tools, Mary cut the meat with a saw.[36]

In order to account for these, we need to consider seriously what will count as sufficiently distinct levels of granularity of cause for the disconstituents to satisfy the Interpretive Constraint on Thematic Discontinuity. As suggested earlier, the granularity of cause may correlate with a control relation (following Levin 1979). If this is the correct way to formulate the grain of causation, then we could require that different grains of causation must be independently controllable. This readily extends to other examples, such as those in (178), which might be thought to satisfy the Interpretive Constraint on Thematic Discontinuity.

36. Although the "as-for" topic is licensed by a finer-grained disconstituent, there is also a coarser-grained disconstituent (the agent "Mary") in the comment clause, accounting for the oddness of this sentence. This is similar to the following sentences:

i) *As for Tuesday, John met Mary last week at 3 o'clock.
ii) *As for the park, John met Mary on the bench in Toronto.

Sentence (i) is unacceptable with the definite non-cyclic reading of "Tuesday". That these examples seem worse than sentence (177)b) can possibly be accounted for by appeal to the fact that the disconstituents of cause are more distinct referentially than temporal and locative disconstituents. I will not explore this possibility further.

(178) a) *John cut the meat with a knife with the sharp end.

(Zubizarreta 1987, p. 37, ex. in footnote 7)

b) *John painted the wall with a paintbrush with the ends of the bristles.

c) ?*John killed Bill with a gun with a bullet.

This distinction correctly characterizes the acceptable sentences in (179).

(179) a) Mary wrote the essay with her right hand with a pencil.[37]

b) John stirred the soup with his right hand with a spoon.

In these examples, the agent controls the hand which controls the instrument, while the examples in (178) do not allow for such a chain of control -- the two NPs in the "with"-phrases are not independently controllable.

This approach to the instrument creates an interesting situation. The instrument is not itself subcategorized by the verb, but is a disconstituent of a subcategorized role. Being a finer-grained disconstituent than the agent forces the instrument to be structurally no higher than the agent by the Syntactic Constraint on Thematic Discontinuity. When an instrument co-occurs with an agent, it acts like an adjunct in not being subject to argument structure requirements, but it acts like an

37. I wish to thank Judith Cowper Szamosi for this example.

argument in being a disconstituent of a subcategorized role. When there is no agent, the instrument acts like an argument in all respects.

There have been a number of proposals that have attempted to characterize this seemingly contradictory behaviour of instruments. Marantz (1984) proposed that the VP assigned the instrument role to a VP-adjoined PP. Baker (1988b) proposes that instruments are optional arguments of the verb -- they receive their role from the verb and their case from the preposition. This proposal requires that instruments be internal to the VP, as a sister of V.

Both of these approaches capture some of the properties of instruments. Marantz's approach can account for the behaviour of instruments as VP-external in VP pro-form constructions, while Baker's account fails to capture this adjunct-like behaviour. Baker's approach captures the argument-like properties of instruments. Neither approach characterizes the fact that instruments are not freely subcategorized by any verb. If instruments are optionally subcategorized arguments, why are they limited to verbs that have an (overt or implicit) agent role? We could propose some sort of lexical redundancy rule to account for this, but in the approach presented here this restriction follows automatically. In fact, the current approach allows us to capture the intermediate status of instruments -- instruments are subcategorized through the cause role, but they are optional when there is an agent that satisfies this role. The agent in subject position is structurally prominent and a coarser-grained disconstituent

of cause, which forces the finer-grained instrument to be adjoined to the VP in a structurally subordinate position. It is not a VP-internal argument, it is an adjunct that is a disconstituent of a subcategorized role.

§2.6.2 Intermediary Instruments vs. Enabling/Facilitating Instruments

There are two types of instruments that have been distinguished in the literature: intermediary instruments and enabling or facilitating instruments. While intermediary instruments can occur as subjects, enabling/facilitating instruments cannot occur as subjects (see Marantz 1984, Levin 1989).

(180) a) David broke the window with a hammer.

b) The hammer broke the window. (intermediary instrument)

(181) a) Doug ate the ice cream with a spoon.

b) *The spoon ate the ice cream. (enabling/facilitating instrument)

(Levin 1989, p. 25, exx. 177 - 178)

Consider the contrast between sentence (180)b) and (181)b). If instruments are next in line to be subjects in the absence of the agent, then sentence (181)b) should be acceptable. That this sentence is not acceptable might suggest that these are different types of instruments. I would like to suggest instead that this difference is

attributable directly to the verb. Certain verbs are not only subcategorized for a cause role, but also require a sentient, higher animate cause. In fact, we might want to consider this a separate role, say a *plan* role, that requires sentience. Following Jackendoff (1972, 1987), if a single NP can simultaneously bear more than one role, we might treat "Doug" in sentence (181)a) as simultaneously bearing a cause role and a plan role. In sentence (180)a) we can infer a plan when the subject is sentient, but the verb is not subcategorized for a plan role. This approach is supported by contrasts such as the following:

(182) a) Mary wrote the essay with a pen.

b) *A pen wrote the essay.

(183) a) Mary transcribed the essay with a pen.

b) A pen transcribed the essay.

In these examples, the instrument is appropriate as the subject only if the verb does not entail a sentient, planning agent. In this approach, the contrast between an enabling/facilitating instrument and an intermediary instrument is not made in terms of the instrument, but rather reflects a difference in the agent as determined by verbal subcategorization. If the verb is subcategorized for a cause role, then an instrument can be the subject. If the verb subcategorizes for a cause role and also a plan role,

then a sentient agent can simultaneously satisfy these two roles, but a nonsentient instrument cannot satisfy the plan role.

Now consider the following sentences:

(184) a) The crane loaded the truck. (intermediary instrument)

b) *The pitchfork loaded the truck. (facilitating instrument)

(Levin 1989, p. 25, ex. 179)

The contrast here is problematic, but this is actually a more general problem for the appropriate characterization of vehicular means. In general, when a sentient agent is controlling a vehicle, this sentience is metaphorically extended to the vehicle. Consider the following sentences:

(185) a) The car was driving recklessly.

b) The car deliberately/intentionally ran over the pedestrians.

In these examples it is not the car itself that is reckless or malicious, rather the individual controlling the car. For some reason, English allows us to use the vehicle term as a metaphoric extension of the controlling individual. The contrast in (184) is readily accounted for by treating the vehicle, "the crane", as a metaphoric extension of the individual controlling the crane. This proposal that vehicles have metaphoric

sentience does not extend to all instruments, accounting for the unacceptability of (184)b).

§2.6.3 Causatives

In English, causative constructions are syntactic and involve a separate causative predicate (e.g. cause, make, force, coerce, etc.). Unless the causative predicate were analyzed as a modal of some sort, this suggests that the external cause is not a disconstituent with the agent (or instrument) of the subordinate clause.

In many languages there is a morphological process of causativization that increases the valency of a predicate through the addition of an external cause. Across languages, the derived construction has the external cause as the structurally prominent subject (see Comrie 1976, 1981, 1985, Baker 1988a, Marantz 1984). This fact is explained in the proposal here. If an external agent or force causes an agent to do something, then this (controlling) external cause is a coarser-grained disconstituent of the cause role, and as a result must have structural prominence over the "internal" agent.

§2.7 Implications and Conclusions

The main point of this chapter has been to demonstrate that thematic discontinuity can apply to all roles, cross-cutting the traditional argument/adjunct distinction. If the approach to thematic discontinuity taken here is correct, then we have seen that it is both possible and necessary to recast clause (ii) of the Θ-Criterion as an interpretive constraint, rather than a uniqueness requirement on syntactic positions.

Furthermore, the structural relevance of the Interpretive Constraint on Thematic Discontinuity (i.e. the Syntactic Constraint on Thematic Discontinuity) suggests that there are structural relationships in the syntax that are thematic in nature, but that occur between role-bearing constituents without the mediation of a predicate. This has far-reaching implications for theories of argument structure and Θ-Government that have dealt exclusively with relations between predicates and their subcategorized arguments. The analysis of thematic discontinuity proposed here falsifies the strong claim that syntactic representation is completely devoid of thematic content (see, for example, Rappaport, Laughren and Levin 1987). The syntax crucially must know when two constituents are disconstituents of a single thematic discontinuity. However, we have seen no evidence that the syntax needs to know specifically what role these disconstituents bear, but it does need to know when two constituents share a role in a thematic discontinuity. Although this proposal does not seriously

undermine the approach to predicate-argument structure taken by Rappaport, Laughren and Levin, it does suggest a weakening of the claim that the syntax has no access whatsoever to Θ-role labels.

CHAPTER 3

Thematic Discontinuity and Topicalization:

Syntactic Implications

§3.1 Introduction

In this chapter, I provide a structural account of thematic discontinuity, exploring how it interacts with other core areas of grammar such as the theories of government and bounding and the consequences it has for the theory as a whole.

In chapter 2, two constraints were proposed to account for the interpretive and syntactic asymmetries found with thematic discontinuities. These constraints are repeated below in (1) and (2).

(1) INTERPRETIVE CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents of a thematic discontinuity expressing the role Θi iff they cumulatively identify a single referent and

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

where $X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i}$ is true iff X1 is coarser-grained with respect to the role Θi than X2.

(2) SYNTACTIC CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents expressing the role Θi, with

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

iff Xj X-commands Xj+1, for $1 \leq j \leq n-1$

Note that these constraints are in keeping with the strong claim made in Montague grammar, and categorial grammar in general, that syntactic and semantic categories are isomorphic.

This chapter is organized as follows: §3.2 considers some evidence that bears on the post-verbal constituency of adjunct and disconstituent PP's. In §3.3 I turn to preposed PP's and "as-for" topics. An adequate account of these constructions requires an analysis of English topic constructions in general. I propose such an analysis, and compare it with proposals in the current literature. It will be shown that a consideration of disconstituent topics provides crucial evidence for a revision of some

current assumptions, and leads directly to a more explanatory theory of topic constructions in English. In particular, I will contrast my results with approaches taken in Rochemont (1989), Rochemont and Culicover (1990), and Lasnik and Saito (forthcoming).

§3.2 The Syntax of Post-Verbal PP's

Analyses that propose an attenuated IP structure (Pollock 1989, Chomsky 1989) provide many possibilities for the position of post-verbal PP adjuncts. Assuming, following Chomsky (1986a), that adjunction is possible only to maximal projections that are not arguments, we have at least the following projections that would permit adjunction: AGRsP (the projection of Subject Agreement), TP (the projection of tense), NegP (the projection of Neg), AGRoP (the projection of Object Agreement), and VP. Evidence to distinguish among these attachment possibilities is not readily found; in fact it is not at all clear what might count as evidence for one position over another. Furthermore, it is not clear what status these functional projections have with respect to the theory of barriers. They would need to be defective categories of some sort (possibly due to the non-lexical nature of their heads), but they would need to be even more strongly defective than Chomsky (1986a) assumed that IP was, since we presumably would not want this stack of projections to enter into inherited barrierhood. Chomsky assumes that IP has a special status, in that it can be a barrier only by inheritance from a blocking category that it dominates. All other projections

may be intrinsic barriers if they are blocking categories (see Chomsky 1986a, p. 15 for discussion of the special status of IP). Attenuated IP structures do have an important function to play in terms of head movement, but the implications of these maximal projections for theories of XP movement and adjunction have not really been addressed. In fact, most current work on non-head movement distinguishes only CP (S'), IP (S), and VP. I will adopt this simplifying assumption as well, but it should be noted that when I refer to VP adjunction, I mean adjunction to a maximal projection dominated by IP, ultimately allowing for an attenuated IP structure.

The arguments for making a structural distinction between subcategorized PP's and adjunct PP's are well-known. I will once again restrict my attention to temporal and locative adjuncts.

First of all, unless there is an end-focus interpretation, subcategorized PP's precede adjunct PP's post-verbally.

(3) a) Mary put the book on the table at noon.

b) *Mary put the book at noon on the table.

Also, emphatics tend not to intervene between the object and a non-focussed subcategorized PP, while they can intervene between the object and an adjunct PP (Culicover and Wilkins, 1984).

(4) a) John wrote the letter himself at noon.

b) *John put the letter himself on the table.

Other arguments refer to VP ellipsis, gapping and VP anaphora (see Jackendoff 1977, Culicover and Wexler 1977, Wexler and Culicover 1980, Culicover and Wilkins 1984, Rochemont and Culicover 1990).

Culicover and Wilkins (1984) argue that gapping is only possible when the result has a single constituent in the lowest VP. This accounts for the contrasts in sentences such as those in (5) if subcategorized PP's are inside the lowest VP while adjunct PP's are outside of the lowest VP.

(5) a) John sells trucks on Thursdays, and Mary, cars on Fridays.

b) *John put Fido in the doghouse, and Sam, Spot in the yard.

Jackendoff (1977) argues that "do so" is a pro-form that has the category VP. If subcategorized PP's are attached inside the lowest VP, we would expect that subcategorized PP's cannot occur with the "do so" pro-form. If adjunct PP's are attached outside the lowest VP, then we would expect that adjuncts can occur with the "do so" proform. The contrast between (6)a) and (6)b) supports these proposals regarding the attachment of PP's.

(6) a) *John put the book on the table and Mary did so on the shelf.

b) John sells trucks on Thursdays and Mary does so on Fridays.

Similarly, the focussed constituent in the pseudo-cleft construction must be a complete VP and cannot exclude a subcategorized PP. Consider, for example, the sentences in (7).

(7) a) *What John did on the shelf was put the book.

b) What John did was put the book on the shelf.

Assuming that all of these constructions are diagnostics of a VP constituent, clearly the subcategorized PP patterns as if it were part of the lowest VP. Any construction that refers to the VP constituent cannot exclude subcategorized PP's.

With PP adjuncts, however, we find that they are free to pattern either with the VP, as in (8), or separately from the VP, as in (9).

(8) a) John met Mary in the park, and Bill did too.

b) John met Mary on Tuesday, and Bill did too.

c) I said that John would meet Mary in the park and meet Mary in the park he did.

d) I said that John would meet Mary on Tuesday and meet Mary on Tuesday he did.

e) What John did was meet Mary in the park.

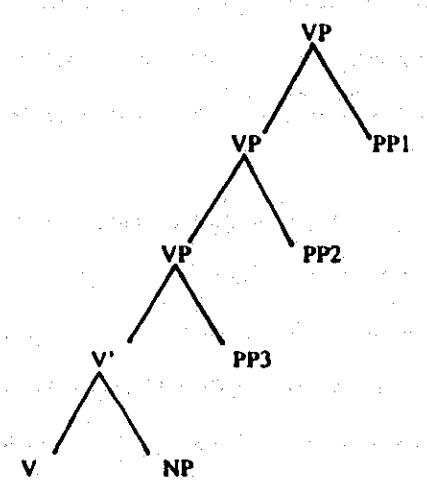
f) What John did was meet Mary on Tuesday.

(9) a) What John did on Tuesday was meet Mary.

b) What John did in the park was meet Mary.

Clearly, the adjunct PP's are attached outside the VP proper, but nevertheless, do occur within a VP. This suggests, as is commonly assumed, that PP adjuncts are adjoined to VP, in a configuration like (10) (see also Rochemont and Culicover 1990).

(10)



PP1 and PP2 in (10) are adjunct PP's, while PP3 is a subcategorized PP. I am assuming that PP3 is a specifier of VP due to the fact that selectional restrictions on this PP are determined by the verb and the object collectively (see chapter 2, §2.3.1.1.2, examples in (55)). This is similar to a proposal in Marantz (1984) that subjects are outside of the verb-object constituent. Note that the same structural relationship could be obtained by allowing recursion on V'. This is an option that I will not be pursuing but which may be necessary if subjects are to be base-generated as specifiers of VP (see Speas 1986, Fukui 1986).

The pseudo-cleft construction with a focussed VP provides a test for the constituency of the VP, abstracting away from end-focus. Consider the following sentences:

(11) a) John put his books on only the top shelf at noon.

b) John put his books at noon on only the top shelf.

In (11) we see that it is is possible for a subcategorized PP to occur to the right of an adjunct if it is to receive an end-focus interpretation. Now consider the sentences in (12).

(12) a) What John did was put his books on only the top shelf at noon.

b) What John did was put his books at noon on only the top shelf.

c) What John did at noon was put his books on only the top shelf.

d) *What John did on only the top shelf was put his books at noon.

The pseudo-cleft construction focuses the post-copular constituent. In the examples under consideration, this constituent is a VP. An end-focus constituent cannot be excluded from the post-copular VP in the pseudo-cleft construction. This accounts for the unacceptability of (12)d) when compared to (12)c), where a non-focussed adjunct PP has been excluded from the post-copular VP.

There is some evidence that temporals are attached higher than locatives, perhaps to TP in an attenuated structure. Recall from chapter 2 (footnote 4) that the locative PP's normally precede temporals when they occur post-verbally. This preference could be accommodated by having temporals attached higher than locatives at d-structure, and invoking move-α to account for sentences in which the temporal precedes the locative. This movement could be the trigger for the end-focus interpretation that is present in sentences with the order exemplified in (13)b).

(13) a) John met Mary in the park on Tuesday.

b) John met Mary on Tuesday in the park.

Clearer evidence for the structural prominence of temporals is found in the contrast between the sentences in (14).

(14) a) What John did on Tuesday was [meet Mary in the park].

b) ??What John did in the park was [meet Mary on Tuesday].

While it is entirely natural to have a temporal PP modifying the VP pro-form when the antecedent of the pro-form contains a locative, it is odd to have a locative PP modifying the VP pro-form when the antecedent VP contains a temporal.

These differences could be accommodated quite naturally by having temporals adjoined to TP (the projection of tense) at d-structure. This is intuitively satisfying, given the clear interdependence between tense and temporal adjuncts. Since I am using a simple IP structure, I will accommodate this distinction by assuming that temporal adjuncts are base-generated as VP adjuncts higher than the base-generated position of locative adjuncts.

This assumption implies that the order in (13)b) is derived by movement of the locative PP, giving the end-focus nature of this construction. Such movement is not entirely straightforward since adjuncts, not being subject to argument structure requirements, are rather free in their distribution. If the PP moves, it is not altogether clear that it would need to leave a trace. The d-structure position of an adjunct is not specified by the verb, and hence no principle of grammar would be violated if no trace were left. If movement left no trace, the derivation would be equivalent to an analysis which generated the PP in the higher position at d-structure and accounted for the

end-focus interpretation with an interpretive rule. This question will arise in later discussion, but for now I will assume that in the absence of a focussed interpretation, temporals attach higher than locative adjuncts.

There is also evidence that when there is a locative or temporal discontinuity, the coarsest-grained disconstituent PP is higher than the finer-grained disconstituent, again in the absence of a focussed interpretation. Consider the sentences in (15) and (16).

(15) a) What John [did] on Tuesday was [meet Mary at 3 o'clock].

b) What John [did] in the park was [meet Mary on the bench].

(16) a) *What John did at 3 o'clock was meet Mary on Tuesday

b) *What John did on the bench was meet Mary in the park.

Since I am assuming that the pseudo-cleft construction is base-generated, then the two PP's in the above examples are not, strictly speaking, disconstituents. There are two predicates here, "did" and "meet". "Did" is a pro-form that contains a disconstituent PP within its reference. With pseudo-cleft constructions like these, it is possible to adjoin a coarser-grained disconstituent to the VP pro-form when the antecedent VP contains a finer-grained disconstituent. This is illustrated by the acceptable sentences in (15). It is, however, impossible to adjoin a finer-grained disconstituent to the VP

pro-form when the antecedent VP contains a coarser-grained disconstituent. This is shown by the unacceptable sentences in (16).

The contrast is explained if the disconstituents are adjoined to the VP so that the finer-grained disconstituent is closer to the verb than all coarser-grained disconstituents of the same role. This may reflect the d-structure configuration, or it may be due to properties of the pseudo-cleft construction (in terms of focus). If the end-focus position is a derived position, then it seems that the Syntactic Constraint on Thematic Discontinuity applies to d-structure with a stricter version of X-command than at s-structure (perhaps c-command at d-structure). The d-structure version of the constraint would need to be relaxed at s-structure to permit focussed disconstituents. Alternatively, if end-focussed constituents are base-generated in situ, then the asymmetries with the pseudo-cleft construction would need to be explained in terms of the focussing properties of this construction.

According to the proposal made above, in the absence of an end-focus interpretation, temporal and locative disconstituents would be ordered, left to right, from finest-grained to coarsest-grained. This would help to explain the pervasiveness of the notion that post-verbal disconstituents are embedded modifiers. Assuming this, the order in (17)b) below would be less natural than the order in (17)a). Note that the order in (17)a) is what would be required for an embedded modification structure.

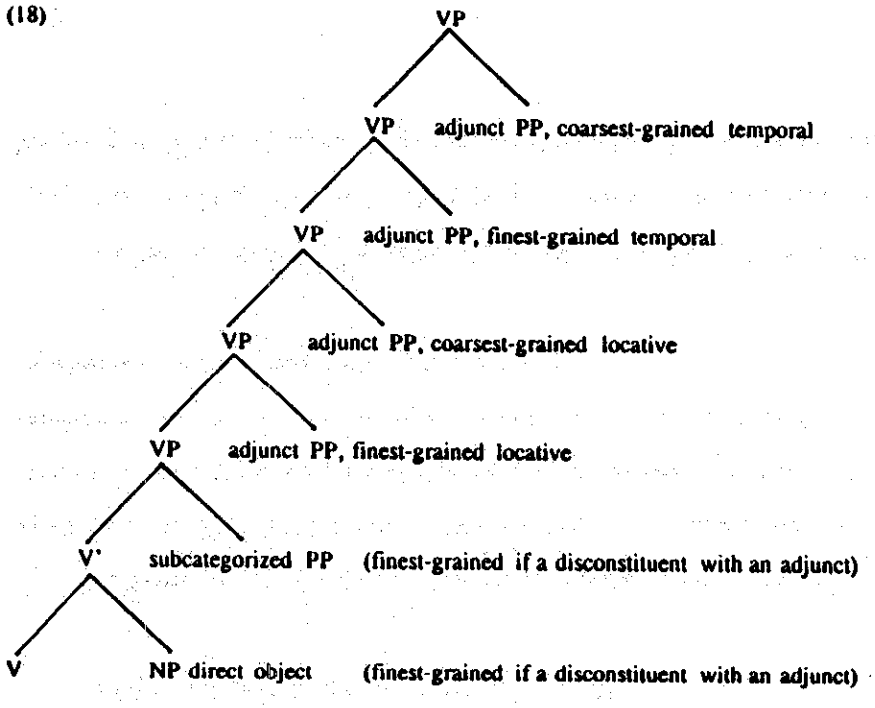
(17) a) I met Mary at the red-brick house on Bemerton Court in Toronto.

b) I met Mary in Toronto on Bemerton Court at the red-brick house.

Sentence (17)b) is certainly grammatical. It could readily be derived from a d-structure with the order in (17)a) by two applications of a local transformation adjoining the finer-grained disconstituent PP's to the right edge of the VP, or by base-generation of two end-focus constituents. Either approach will work provided that we can state the Syntactic Constraint on Thematic Discontinuity so as to allow mutual X-command in such a configuration. Note that these proposals are in keeping with the natural interpretation of (17)b); namely, that it involves two progressively forceful end-focus constituents.

On the basis of these considerations, I will assume a d-structure as in (18) for a VP containing locative and temporal disconstituents when there is no end-focus interpretation.

(18)



Once again, this structure does strongly suggest that an attenuated IP might provide a more explanatory treatment. However, I will continue to adopt the simplifying assumption that these are all merely VP adjuncts. It is entirely possible that the barriers problem for XP movement that would be introduced by additional functional projections might not be that serious. For example, head movement might void the barrierhood of the various maximal projections (Lema and Rivero 1990, Lema 1991). Again, this question is beyond the scope of this thesis, and I will therefore continue to assume that the projections introduced by adjunction are segments of the VP.

§3.3 Topicalization

Following Chafe (1976), Jacobs (1986), and Rochemont and Culicover (1990), I will assume that the topic/comment distinction and the focus/background distinction are not the same.

According to Chafe, "the topic sets the .. framework within which the main predication holds" (p. 50). The comment, then, is the rest of the sentence, which is interpreted within the frame of the topic. I will assume that the notion of topic (at least in English) is structurally defined (see §3.3.4).

The focus/background distinction, on the other hand, is associated with the new/given distinction. In Rochemont and Culicover (1990), the notion of "c(ontext)-construable" (that is, under discussion) is used to characterize *given*. They propose the principles in (19) and (20).

(19) If α is not c-construable (= under discussion) then α is a focus.
(Rochemont and Culicover 1990, p.20)

(20) In a well-formed wh question/answer sequence, all and only the information requested is focussed in the response.
(Rochemont and Culicover 1990, p. 18)

Following Rochemont and Culicover (1990) and Horne (1987), I will assume that focus is a discourse phenomenon and cannot adequately be accounted for by consideration of sentences in isolation.

Topic has often been erroneously equated with focus. That topic and focus are different can be illustrated by means of question/answer pairs such as those in (21).

(21) a) Did anybody vote for John?

b) i) John, several people voted for.

ii) It was John that several people voted for.

(Rochemont and Culicover 1990, p195, footnote 12)

The cleft construction in English focuses the post-copular position (Rochemont and Culicover 1990, p. 24). Given principle (20), it is inappropriate for information not requested in the question to be focussed, so (ii) is not an appropriate response to the question in (a). That (i), in contrast, is a possible answer for the question in (a) indicates that the topic position is not the focus.

Another common misconception is that the notion topic is to be equated with *given* (that is, background in the focus/background constrast). Although discourse studies do show that topics strongly correlate with given information (Keenan and

Schieffelin 1976), this is not a necessary condition. The sentences in (22) show that topics can easily be focussed.

(22) a) Even MAX I hate to bother.

b) Even in the GARDEN Max reads comic books.

(Jackendoff 1972, p. 251, ex. from (6.99))

Focus is normally realized by intonational prominence -- in other words, the phonological reflex of focus is the pitch accent (Rooth 1985, Selkirk 1984, Pierrehumbert 1980). With these sentences, "even" can associate with a focus on the topicalized constituent (Jackendoff 1972, Rooth 1985). If focus correlates with new information, then in (22) we have new information that is the topic. Similarly, sentences like (23) can be said without any prior mention of "Saturday".

(23) Even on SATURDAY, John goes shopping.

So, although the topic of a sentence does correlate strongly with the notion of given information, this is not a necessary condition.

Following Reinhart (1982), we might assume that the correlation between topic and given information follows from requirements for discourse cohesion associated with topics. Rather than defining topics in terms of the effect of previous discourse

(the notion of given/new), Reinhart proposes that topics should be defined in terms of their effect on the ongoing discourse. (Reinhart 1982, p. 23). Reinhart maintains that if we assume that, during discourse, speakers organize and classify information, topics are one of the means available for signalling under which entry to classify new propositions. This is similar to the claim made in Chafe (1976), that topics provide the frame within which the rest of the sentence is to be interpreted. Reinhart gives the following as evidence for her proposal.

(24) a) As for the Olympic games, it's no wonder that Carter is considering withdrawing the American athletes from them (because they are such a farce).

b) As for the American athletes, it's no wonder that Carter is considering withdrawing them from the Olympic games (because they are so bad that they may lose).

c) As for Carter, it's no wonder that he's considering withdrawing the American athletes from the Olympic games (because he is such a hard-liner).

(Reinhart 1982, p. 27, ex. 46)

The parenthetical "because" clauses suggest different possible explanations for the utterance. Note that these explanations elaborate on some property of the topic. The topic, then, picks out the frame within which the rest of the proposition (the comment) is to be interpreted, and it is also the frame within which the comment is organized in a mental representation of the information contained in the discourse.

A further confusion that can be found is that topics should be equated with contrastiveness (see Chafe 1976). Certainly it is possible to define contrastive so as to apply to all topics. So, for example, when we assert that something happened on Tuesday, we are naming a particular time in contrast to any other time that we might happen to think of. Following Rochemont and Culicover (1990), I will restrict contrastiveness to "contexts of repair". Following Chafe (1976), if we can insert "instead of ..."/"not..." after the focussed constituent, then we have a context of repair -- a contrastive focus. By distinguishing this notion of context of repair, it is possible to identify a systematic class of exceptions to the Syntactic Constraint on Thematic Discontinuity.

Consider the following sentence.

(25) On the bench, John met Mary in the park.

This sentence is normally not acceptable, however it is acceptable in a context of repair where "on the bench" is correcting an erroneous assertion.

(26) On the bench (not on the swings), John met Mary in the park.

It would perhaps be more natural to express this correction with a cleft construction such as (27).

(27) It was on the bench (not on the swings) that John met Mary in the park.

Note, however, that contexts of repair constitute the only class of violations to the Syntactic Constraint on Thematic Discontinuity. I will not be attempting to reconcile these violations with the Constraint, but instead choose to exclude them from consideration. This approach is not without precedent. As discussed in Rochemont and Culicover (1990), contexts of repair can also result in violations of the grammatical rules of stress assignment. They cite, for example, the sentence in (28), where stress is assigned in the compound in violation of normal principles of compound stress.

(28) I didn't say blueBERRY, I said blueBIRD.

It certainly is not a weakness of theories of stress assignment that such examples are excluded. In fact, the violation of the expected stress pattern here carries a particular

pragmatic function, and such violations are limited to a small range of possible contexts. In this sense, a theory that excludes these violations is to be preferred to one that encompasses them without reference to the very restricted contexts that make such statements possible. An explicit characterization of contexts of repair is certainly not part of the theory of stress assignment (or the theory of thematic discontinuity), but is a natural part of a theory of pragmatics. Certainly it is in the domain of a theory of pragmatics to explain the ways in which contexts of repair interact with grammatical principles, so as to allow, or perhaps even require, unexpected or ill-formed expressions.

I will be assuming that topics provide the frame within which the rest of the sentence (the comment) is understood. This is separate from the focus/background distinction, although the comment normally contains a focus.

(29) a) To Mary he gave it.

b) To Mary John gave the beautiful package with the red ribbon.

c) To Mary John will even give a WATCH.

(29)a) is completely unnatural, especially if neither pronoun is focussed. The topicalized construction is more appropriate if the comment contains a focussed expression (a heavy, modified definite NP or a focus associated with "even"). Focus

in the comment thus facilitates topicalization, but topic is not to be equated with non-focussed (given).

Note that the function of the topic as a frame-setting constituent, together with a structural account of the topic constituent (that is, that it is structurally prominent) suggests an explanation of the Syntactic Constraint on Thematic Discontinuity. If a disconstituent is to be topicalized, it must be more coarse-grained since it is the frame within which the comment, containing the finer-grained disconstituent, is to be understood. That the Syntactic Constraint on Thematic Discontinuity applies to cases that do not involve topicalization as normally understood, such as doubling with noun incorporation, suggest that the notion of topic might be broader than has normally been assumed, and that it might figure more prominently in consideration of structural configuration than has been thought. In particular, the common claim that subjects are some sort of default topic might be made to follow from the structural prominence of subjects. This is entirely speculative, and has rather more far-reaching consequences than can be dealt with here.

§3.3.1 Inventory of Topic Constructions in English.

There are a number of topic constructions that will be under consideration in the following discussion. These are itemized, with illustrative examples, in the following:

(30) i) Argument topicalization

e.g. John, I like.

ii) PP topicalization

e.g. On Tuesday, I met Mary.

iii) Disconstituent PP topicalization

e.g. On Tuesday, I met Mary at noon.

iv) Left dislocation

e.g. John, I like him.

v) Coreferential As-For

e.g. As for John, I like him.

vi) Generic As-For

e.g. As for fruit, I like bananas.

vii) Discourse As-For

e.g. As for the meeting, I'm exhausted.

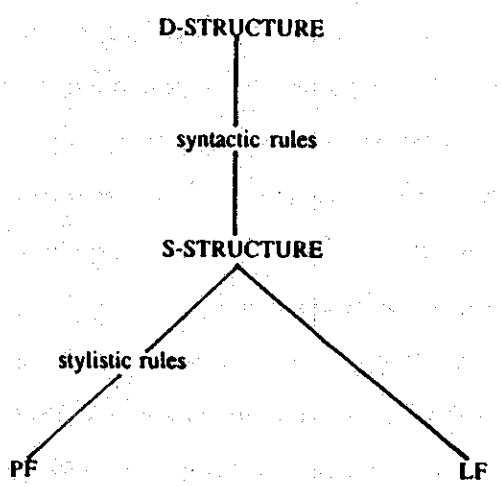
Once again, I will be excluding discourse "as-for" topics from consideration, restricting my attention to topics that are licensed within the sentence. That I am excluding discourse "as-for" topics from consideration does not mean that I am denying that topics have a discourse function. The appropriate use of any topic certainly involves discourse factors, but I am primarily concerned with the relationship between the topic and the comment, and so I will consider only those cases where this relationship is clear within the sentence.

§3.3.2 The History of Topics in Generative Grammar

§3.3.2.1 Stylistic Rules vs. Syntactic Rules

Chomsky and Lasnik (1977) and Rochemont (1978) noted that there is a set of transformations that pattern together in interesting ways, suggesting a distinction between stylistic rules and syntactic rules. In current GB theory, schematically represented in (31), stylistic rules would apply between S-Structure and PF, while syntactic rules would apply between D-Structure and S-Structure.

(31)



The claim that stylistic rules (including topicalization) are separate from syntactic rules was motivated largely by the fact that the output of stylistic rules is

frozen.[1] The output of stylistic rules cannot serve as input to any further syntactic transformations -- a fact that is accounted for if these transformations are segregated in a post-s-structure component. Stylistic Rules were also assumed to have no effect on the logical representation of a sentence, affecting only the interpretation of the focus of the sentence. This was taken as justification for placing them at PF. (Chomsky and Lasnik 1977, Rochemont 1978)

It has since been demonstrated that stylistic rules do affect the logical representation of the sentence, interacting in crucial ways with the scope of negation and possibilities for coreference (see Gueron 1980, Taraldsen 1981). This clearly indicates that these rules do not apply at PF, where they would have no effect on the LF interpretation. Focus has clear implications for LF -- see Rooth (1985) for an extension of Montague's PTQ semantic framework to include certain focus phenomena. It is quite clear, then, that it is not desirable to segregate stylistic rules in a separate component from syntactic rules. (see also Rochemont and Culicover 1990, Newmeyer 1987). But a problem remains: If these rules are syntactic, how do we account for their frozen character with respect to other syntactic transformations?

---

1. Compare, for example, the following sentences:

(i) Mary gave to John a present that was wrapped in newspaper.
(ii) *Who did Mary give to a present that was wrapped in newspaper.

In (i) we have an example of the stylistic rule of Heavy NP Shift. The unacceptability of (ii) shows that the output of this stylistic rule cannot undergo wh-movement. But compare Rochemont and Culicover (1991) for a different approach to Heavy NP Shift.

An early attempt to characterize this behaviour was the Freezing Principle (Wexler and Culicover 1980). The Freezing Principle is defined as follows:

(32) If the immediate structure of a node in a phrase-marker is nonbase, that node is frozen.

(33) Freezing Principle

If a node A of a phrase-marker is frozen, no node dominated by A may be analyzed by a transformation.

(Wexler and Culicover 1980, p. 119)

The Freezing Principle prevents any transformation from altering a structure that has already been transformed into a nonbase configuration. So, stylistic rules, by creating a configuration in the clause that is not derivable as a base configuration, are frozen with respect to any other transformation.

More recently, attempts have been made to treat stylistic rules as regular syntactic transformations, accounting for their unique properties with independently motivated principles of grammar such as subjacency and the ECP (Rochemont and Culicover 1990, Newmeyer 1987, Lasnik and Saito forthcoming). In fact Newmeyer (1987) concludes that there is little reason for treating any rule as stylistic in the sense of Chomsky and Lasnik (1977).

I will adopt this approach and assume that the instances of topicalization and PP reordering that I will be considering are not stylistic rules in the sense of Chomsky and Lasnik (1977), but are to be accounted for by the principles of grammar.

§3.3.2.2 Base Generation vs. Movement

Since at least the work of Ross (1968), it has been accepted that there are two types of clause-initial topic-like constructions -- those that are subject to the various island constraints (chopping rules in Ross 1968) and those that do not seem to be subject to these constraints (copying rules in Ross 1968). Topicalization, as illustrated in sentence (34), is an example of a chopping-rule. This contrasts with left-dislocation, illustrated in sentence (35), which is a copying rule.

(34) John, I really like. topicalization

(35) John$_i$, I really like him$_i$. left dislocation

Topicalization leaves a gap in the sentence, while with left dislocation there is no gap, but rather a coreferential pronoun in an argument position. The contrast between these two types of topics is highlighted by the differences between the sentences in (36) and those in (37).

(36) a) John$_i$, I know a man [who met him$_i$ in the park].

b) John$_i$, I heard the claim [that he$_i$ met Mary in the park].

c) John$_i$, I wonder why/whether he$_i$ met Mary in the park.

d) John$_i$, for Mary to meet him$_i$ in the park would be a pity.

(37) a) *John, I know a man [who met ___ in the park].

b) *John, I heard the claim [that Mary met ___ in the park].

c) *John, I wonder why/whether Mary met ___ in the park.

d) *John, for Mary to meet ___ in the park would be a pity.

The sentences in (36) show that left dislocation is not subject to island effects, while sentences like (37) show that the analogous sentences with topicalization are not acceptable. Sentence (37)a) involves extraction from a relative clause, and sentence (37)b) involves extraction from an NP-complement clause. These violate the Complex NP Constraint (Ross 1968), now subsumed within the barriers framework under subjacency. Sentence (37)c) involves extraction from an embedded question (a wh-island), and sentence (37)d) shows extraction from a sentential subject. These are all islands to extraction (now analyzed as subjacency violations) giving strong support to a movement analysis of topicalization. The absence of these effects with left dislocation suggests, by contrast, that there is no movement involved in this construction.

A similar contrast is observed in the following two sentences. (see Lasnik and Saito forthcoming).

(38) John$_i$, I think that he$_i$ likes Mary.

(39) *John, I think that ___ likes Mary.

Sentence (38) shows that left dislocation is immune to the that-trace effect, while the corresponding topicalization in (39) is unacceptable when the resulting configuration would violate the that-trace filter (now analyzed as following from the ECP).

Let's briefly consider how the various topic constructions in (30) behave with respect to island effects and the that-trace effect.

§3.3.2.2.1 PP Topicalization

Topicalized PP's, whether they are disconstituents or not, clearly exhibit island effects. Consider the sentences in (40) and (41).

(40) a) I know a man [who met Mary in the park on the bench].

b) *In the park, I know a man [who met Mary on the bench].

(41) a) I believed the claim [that John met Mary in the park on the bench].

b) *In the park, I believed the claim [that John met Mary on the bench].

PP topicalization, like argument topicalization, is clearly subject to Ross' Complex Noun Phrase Constraint, since PP's cannot be extracted from either a relative clause or an NP complement clause.

(42) a) I don't know why/whether John met Mary in the park on the bench.

b) *In the park, I don't know why/whether John met Mary on the bench.

(43) a) [For John to meet Mary in the park on the bench] would be a pity.

b) *In the park, [for John to meet Mary on the bench] would be a pity.

Embedded wh-questions and sentential subjects are also islands for extraction of the topicalized PP, showing that PP topicalization patterns with argument topicalization, but not with left-dislocation, in terms of island effects.

Since adjuncts are immune to the that-trace effect (first noted by Huang 1982), adjunct PP's that are topicalized do not show any that-trace effects. Argument PP's are lexically governed by the predicate, so when they topicalize they will not trigger the that-trace effect either. I will have more to say about adjuncts and the that-trace effect in later sections.

§3.3.2.2.2 "As-for" Topics

"As-for" topics, whether they are generic or coreferential, pattern with left dislocations in being immune to the island effects. Consider the sentences in (44) to (47).

(44) a) As for dogs, I know a man who likes dobermans.

b) As for John, I know a man who likes him.

(45) a) As for dogs, I believed the claim [that John likes dobermans].

b) As for John, I believed the claim [that Mary likes him].

(46) a) As for dogs, I don't know why/whether John likes dobermans.

b) As for John, I don't know why/whether Mary likes him.

(47) a) As for dogs, [for John to like dobermans] would be a pity.

b) As for John, [for Mary to like him] would be a pity.

The licensing pronoun or disconstituent can be in a relative clause, an NP complement clause, an embedded wh-clause, or a subject clause. All of these are islands to extraction, and thus, not surprisingly, "as-for" topics pattern with left dislocation rather than with topicalization.

Similarly, we can see that these topics are immune to the that-trace effect. This is illustrated by the acceptability of the sentences in (48). Contrast this with the unacceptable examples in (49), where topicalization leaves a gap that violates the that-trace filter.

(48) a) As for John, I believe that he likes Mary.

b) As for dogs, I believe that a doberman bit John.

(49) a) *John$_i$, I believe that t_i likes Mary.

b) *A doberman$_i$, I believe that t_i bit John.

§3.3.2.2.3 Summary

In (50) is given a catalogue of behaviour for the various types of topics under consideration.

(50)	Exhibits Island Effects	Exhibits That-Trace Effect
Argument topicalization	yes	yes
PP topicalization	yes	no
Disconstituent PP topicalization	yes	no
Left dislocation	no	irrelevant
Coreferential "As-for"	no	irrelevant
Generic "As-for"	no	irrelevant

In the following discussion, I will assume that any arguments for a contrast between topicalization (argument topics) and left-dislocation will extend to account for differences between argument topics and topicalized PP's (disconstituent or not) on the one hand, and left dislocations and "as-for" topics (coreferential or generic) on the other. Later we will see that it will be necessary to make further distinctions among these sub-classes of topics. As far as movement is concerned, we need only distinguish those topics associated with a gap (argument topics, topicalized PP's) from those that do not have a gap (left dislocations, "as-for" topics). Any contrast with respect to movement between topicalization and left-dislocation will extend in the obvious way to these other cases.

§3.3.2.3 Topicalization as Wh-Movement

Chomsky (1977) recasts the distinction that Ross made between chopping and copying rules in terms of a distinction between a topic construction derived by a movement transformation (topicalization) and one that does not involve movement (left-dislocation). Chomsky proposed the base rules in (51) to generate the topic in both left-dislocation and topicalization.

(51) S" --> TOP S'

S' --> COMP $\left\{ \begin{array}{c} S" \\ S \end{array} \right\}$

To account for the difference between topicalization and left-dislocation, Chomsky proposed that in topicalization, a wh-operator moves to Comp, leaving behind a trace. This wh-operator is subsequently deleted. Left-dislocation, on the other hand, simply involves base-generating a topic. No movement occurs. This predicts that island effects should be observed with topicalization but not with left dislocation, consistent with Ross' observations.

Chomsky's analysis of the difference between left-dislocation and topicalization implies that left-dislocation should be possible wherever topicalization is possible. Given the base rules in (51), we would expect left-dislocations to occur in embedded constructions since topicalization is possible in embedded constructions, and the topic NP, in either case, is base-generated in TOP. Since the S' rule in (51) allows for the reintroduction of S", we would expect all topics to be equally possible in embedded clauses. We would also expect to find multiple topics in both embedded and matrix clauses.

§3.3.2.4 Topicalization as Adjunction to IP

Baltin (1982) observes that there is a difference in distribution between topicalized constructions and left-dislocated constructions that is not accounted for under Chomsky's analysis. In particular, left-dislocated constructions are not permitted

in certain embedded constructions, as shown in (52). Topicalization, on the other hand, can apply within a comparable embedded construction, as shown in (53).

(52) a) *He's a man to whom$_i$ as for liberty, we could never grant it t_i.

b) *He's a man to whom$_i$ liberty, we could never grant it t_i.

(Baltin 1982, p21 exx. (85) and (86))

(53) He's a man to whom$_i$ liberty$_j$, we could never grant t_j t_i.

(Baltin 1982, p. 17, ex. (60))

Since the topic in examples like (53) is to the right of the complementizer, Baltin proposes that topicalization is adjunction to S (in our terms, IP). Under this analysis, the ungrammaticality of the sentences in (52) is due to the fact that S" is a bounding node for subjacency. Left-dislocated topics involve an S" which, as a bounding node, prevents wh-movement such as in (52). Topicalization, on the other hand, does not involve an S" projection since it is adjunction to S. Baltin concludes, then, that there is no subjacency effect with relativization (i.e. wh-movement) over adjoined topics, while there is a subjacency effect with wh-movement over base-generated topics, thus accounting for the difference in acceptability between (52) and (53).[2]

2. There is much controversy in the literature about the grammaticality of sentence (53). Baltin himself points out that there is no common agreement about the acceptability of such constructions, a difference that he attributes to an idiolectal (continued...)

As Baltin himself points out, this may be the wrong way to distinguish left-dislocated constructions from topicalized constructions, since left-dislocations are independently odd in embedded constructions. This is demonstrated by the unacceptability of the examples in (54).

(54) a) *That as for Max, we can't stand him is obvious.

b) ?That Max we can't stand him is obvious.

(Baltin 1982, p21, ex. from footnote 13)[3]

Lasnik and Saito (forthcoming) and Rochemont (1989) take the approach suggested here, restricting S" (base-generated topics) to matrix sentences only. Lasnik

2.(...continued)
difference in choice of bounding nodes for subjacency. Lasnik and Saito (forthcoming) and Rochemont (1989) demonstrate that this contrast is not readily reproduced in parallel examples, citing, for example, sentences like the following:

i) *He's a man who liberty we would never grant to.
ii) ??He's a man from whom money we could never take.
(Rochemont, 1989, p166, exx. 6 a,b)

These authors also point out that if a difference in bounding nodes accounts for the unacceptability (for some speakers) of these constructions, then we would expect this to extend uniformly to other similar examples of subjacency violations. This does not seem to be the case. There is no correlation between speakers' judgements on (53) and their judgements on sentences like the following where we have parallel subjacency violations.

i) *What do you wonder who gave to Bill.
ii) *A book on linguistics John said that to Bill he would never give.
(Rochemont 1989, p167, eg 7a, 8a)

3. The judgements given are Baltin's -- I find both examples unacceptable.

and Saito (forthcoming) give the examples in (55) as evidence in support of such a restriction.

(55) a) I believe that this book you should read.

b) *I believe that this book you should read it.

c) That this solution I proposed last year is widely known.[4]

d) *That this solution, I proposed it last year is widely known.

Since none of these constructions involves wh-movement, the subjacency account that Baltin proposed cannot be extended to account for these contrasts.

Lasnik and Saito conclude that embedded topicalization must involve S (IP) adjunction, while matrix topicalization can involve either base-generated S" topics, with wh-movement of an empty wh-operator to Comp, as Chomsky proposed, or adjunction to S. They account for this distinction by a filter, such as the one in (56), that would block base-generated topics in embedded clauses.

(56) *[$_S$ COMP S"]

4. The judgement here is Lasnik and Saito's -- I do not find this sentence acceptable, although I do agree that there is a clear contrast between the (a) and (b) sentences, and a weaker relative contrast between (c) and (d).

Furthermore, under this analysis, they eliminate the possibility of multiple base-generated topics, while allowing a single instance of left-dislocation to co-occur with topicalization, but only in matrix clauses. They cite examples like (57) in support of this claim.[5]

(57) a) $John_j$, $Mary_i$, he_j likes t_i.[6]

b) *$John_j$, $Mary_i$, he_j likes her_i.

This claim has immediate consequences for certain long-distance topicalized constructions. Consider the following sentences from Lasnik and Saito (forthcoming).

(58) a) John said that this $book_i$ he thought you would like t_i.

Since "this book" is in an embedded clause, it must be adjoined to S. This example must therefore involve long-distance movement. Lasnik and Saito reject successive

5. See chapter 2, §2.4.3 for evidence that multiple base-generated topics are possible, at least when they are all disconstituents of a single role.

6. I disagree with Lasnik and Saito, and find this sentence unacceptable, although I do agree that it is better than (b). I find that this example improves somewhat with a coreferential "as for" topic, as in (i), but find examples with generic "as for" considerably improved (see (ii)):

(i) As for John, Mary he likes.
(ii) As for dogs, dobermans I like.

cyclic adjunction to S (IP) since this would fail to account for the wh-island effect that is illustrated in (59).

(59) *This $book_i$ I wonder $where_j$ John put t_i t_j.

Instead, they propose that long-distance movement of the topic must be through COMP -- an option that is not possible if COMP contains a wh-phrase -- and hence we have the desired contrast in terms of subjacency.

Lasnik and Saito (forthcoming) and Rochemont (1989) explore topicalization in some detail. Lasnik and Saito maintain that topicalization provides a crucial test case for the correct formulation of subjacency and the ECP. I agree completely with this. However, the assumptions that they make about base-generated topics have resulted in their excluding from consideration a number of further crucial test cases.

Following Baltin (1982), Rochemont (1989), and Lasnik and Saito (forthcoming) I will assume that moved topics involve adjunction to IP. Lasnik and Saito also allow matrix topics to be either adjoined to IP or base-generated under S", with wh-movement of an empty operator to COMP. It is not immediately clear how we might exclude this possibility without stipulation, so I will accept that this is a possibility, but will not discuss it further. It is not clear just what sort of projection S" would be. It

might perhaps be a CP with an adjoined topic, which would only be possible in matrix clauses where the CP is not an argument. See Rochemont (1989) and also §3.3.10.

In the following section I will challenge the assumption that there are no base-generated embedded topics. This result will prove crucial to the analysis that I will be developing in the remainder of this chapter.

§3.3.3 Base-Generated Topics in Embedded Constructions.

Throughout the literature, the only base-generated topics that are considered in any detail are left-dislocations and coreferential "as-for" topics. These do not readily occur in embedded contexts, as we have already established. This is illustrated in (60).

(60) a) *It is obvious that as for John, Mary likes him.

b) *It is obvious that John, Mary likes him.

c) *I believe that as for John, Mary likes him.

d) *I believe that John, Mary likes him.

As we have seen, it is on the basis of evidence such as this that Lasnik and Saito (forthcoming) and Rochemont (1989) restrict base-generated topics to matrix clauses.

The unacceptability of the sentences in (60) contrasts markedly with base-generated generic "as-for" constructions, which are grammatical in embedded clauses. See, for example, the sentences in (61).

(61) a) It is obvious that as for dogs, John likes dobermans.

b) I believe that as for dogs, John likes dobermans.

It appears, then, the restriction against base-generated topics applies only to coreferential base-generated topics.

§3.3.3.1 A Binding Theory Puzzle

There is some evidence that an explanation might be found within the Binding Theory for this difference between coreferential and non-coreferential base-generated topic constructions. I will essentially be following an early version of the binding framework, as proposed in Chomsky (1981).

Lasnik and Saito point out that with IP adjoined embedded topics, the topic appears to have escaped from its governing category. They cite examples like the following:

(62) a) *John thinks that Mary likes himself.

b) John thinks that himself$_i$, Mary likes t_i.

Here, a topicalized NP is realized as an anaphor taking an antecedent in the higher clause, a situation that is excluded by Condition A of the Binding Theory when the constituent remains in object position. Topicalization frees the topic from the lower governing category, allowing it to have an antecedent in the higher clause.

Lasnik and Saito point out that a topicalized anaphor is not free from all binding requirements (see (63)) or from all locality requirements (see (64)).

(63) *Himself$_i$, Mary likes t_i.

(64) *John$_i$ thinks that Mary said that himself$_i$, Susan likes t_i.

They propose that a topicalized anaphor has a larger governing category, that is, one that includes the next higher clause.

Lasnik and Saito use this evidence to exclude "short" topicalization of a subject. They claim that the structure in (65) is impossible due to ECP considerations, although it would involve string-vacuous movement and cannot be distinguished from the obviously grammatical non-topicalized sentence.

(65) *John$_i$ [t_i left]

They argue that since sentence (62)b) is acceptable, the fact that (66) is unacceptable must be accounted for by the trace in subject position, rather than by the binding theory. By analogy, the subject trace in (65) would make the sentence ungrammatical.

(66) *John$_i$ thinks that himself$_i$, [t_i likes Mary]

I am convinced by Lasnik and Saito's argument that there is a more inclusive governing category for embedded topics, and would like to suggest that this more inclusive nature of the governing category of a topic provides an explanation for the unacceptability of coreferential base-generated topics in embedded constructions.

Following a suggestion in chapter 2, §2.3.2.1.1 (see also §3.3.7.2), I will assume that the base-generated topic constituents under consideration here are topics which are assigned a role variable that must be bound by either a coreferential or a disconstituent role-bearing element in the "comment".

Base-generated topics are usually R-expressions -- that is, they are referentially independent. However, base-generated topics are not interpreted independently since they have a role variable which must be bound. So, a base-generated topic is an R-expression that must have its role bound by a role-bearing constituent in order to be

interpreted. This creates a tension in binding requirements. I claim that these conflicting requirements are the reason that base-generated coreferential topics must occur outside the matrix IP.

Consider the following matrix topics.

(67) a) John$_i$, he$_i$ likes Mary.

b) As for John$_i$, he$_i$ likes Mary.

(68) a) *John$_i$, himself$_i$ likes Mary.[7]

b) *As for John$_i$, himself$_i$ likes Mary.

(69) a) Himself$_i$, John$_i$ likes Mary.

b) As for himself$_i$, John$_i$ likes Mary.

(70) a) *He/him$_i$, John$_i$ likes Mary.

b) *As for him$_i$, John$_i$ likes Mary.

The contrast between (67) and (68) shows either that the topic is outside the governing category of the subject or that the topic is not a possible binder, otherwise

7. Although this sentence does have a grammatical (appositive) reading, I am excluding that reading and judging its grammaticality on the topicalized reading.

a pronoun would not be acceptable, and an anaphor should be acceptable. From (67) and (69), we see that a base-generated coreferential topic can occur either as an R-expression or as an anaphor. There is no complementarity between R-expressions and anaphors in this environment.

Although the proposal that I will be making here cannot be accommodated by Binding Theory in its current form, I will speculate for a moment on a possible explanation for the matrix-only restriction on coreferential topics.

A coreferential base-generated topic has a variable role that must be bound by a proform in the "comment". This proform, in turn, receives its referential interpretation from the topic. What we find is a symmetric relationship, as depicted in (71).

(71) topic proform

↑ ——— role

——— reference ↑

The topic has its role bound by the proform, and yet at the same time it binds the reference of the proform in the comment. (See Higginbotham (1983) for a Linking Theory alternative to Binding Theory that might provide a more natural framework within which to state these relationships.)

With a disconstituent topic, only one of these links is made. The role of the disconstituent in the comment binds the role of the topic. The reference of the disconstituent is not bound as it is not coreferential with the topic, although the reference of the disconstituent is not entirely independent of the reference of the topic, in keeping with its interpretation as a disconstituent. So, in the case of a disconstituent topic, its role is bound by the disconstituent in the comment, but it does not bind the reference of this disconstituent.

A coreferential base-generated topic therefore has inherent reference but a bound role. We might say that such topics are [-a, -p] *binders* with respect to reference, but possibly [+a] with respect to role. In a spirit similar to the PRO Theorem (Chomsky 1981), we might claim that this contradiction forces coreferential base-generated topics to occur outside the largest governing category of the sentence -- that is, outside the matrix IP.[8] Notice that unlike the PRO Theorem, this does not imply that base-generated topics be ungoverned. In fact, we will later see evidence that they are governed. In this case, the binding paradox has a purely structural solution. Base-generated coreferential topics that are R-expressions cannot have a governing category.

8. In Chomsky (1981) it is proposed that "a root sentence is a governing category for a governed element" (p. 220, principle 99).

This proposal is, at best, only a sketch of the sort of analysis that might account for the fact that coreferential base-generated topics occur only in matrix clauses. It certainly hinges on the Binding Theory being able to accommodate the sorts of distinctions suggested here. Binding Theory, in the form assumed here, does not readily accommodate the distinction between a bound role and bound reference. The main point here is that an explanatory account of the restricted distribution of coreferential base-generated topics is not out of the question. If the approach suggested here could be made to work, it would correctly exclude coreferential base-generated topics in embedded contexts, while allowing disconstituent "as-for" topics that involve cumulative reference rather than coreference.

Setting this aside for now, I return to thematic discontinuity, showing that the Syntactic Constraint on Thematic Discontinuity provides a crucial test that allows us to infer that base-generated and adjoined topics are structurally distinct.

§3.3.4 TopP and IP Adjunction

In order to characterize the difference between base-generated topics and adjoined topics, we need to look more closely at the notion of X-command in the constraint in (2), repeated here as (72).

(72) SYNTACTIC CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents expressing the role Θi, with

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

iff Xj X-commands Xj+1, for $1 \leq j \leq n-1$

Restricting attention for the moment to adjunct PP's, the X-command relation must be an asymmetric structural relation, suggestive of the various types of command that have been used throughout the literature. This relation must hold as follows:

(73) (A) A topicalized PP asymmetrically X-commands any post-verbal PP's.

(B) A topicalized PP and the subject X-command each other.

(C) All post-verbal PP's X-command each other.

A considerable amount of evidence in support of (A) was developed in chapter 2. An example is repeated in (74).

(74) a) In the park, John met Mary on the bench.

b) *On the bench, John met Mary in the park.

Evidence in support of (B) can be found in the following sentences, which seem not to exhibit the asymmetry in (74).

(75) a) At dawn, the summer is beautiful.

b) In the summer, dawn is beautiful.

(76) a) In my backyard, the flowerbed is swarming with bees.

b) In the flowerbed, my backyard is swarming with bees.

Sentence (75)a) is not asserting that all of the summer is beautiful, but rather that only that subpart of summer identified by "at dawn". Any other time during the summer may or may not be beautiful. Similarly, (76)a) is not asserting that all of my backyard is swarming with bees, but rather only that subpart of my backyard identified by the topicalized PP "in the flowerbed". Again, other regions of my backyard may or may not be swarming with bees.

In support of (C) we can cite the relatively free order of post-verbal PP's.

So, if topicalized PP's are adjoined to IP and subjects are in the specifier of IP, we need mutual X-command between an adjunct of a projection and that projection's specifier. If post-verbal PP's are adjoined to VP, then we need all adjuncts of a

projection to X-command each other. Finally, we need an IP-adjoined position to asymmetrically X-command an adjunct of a lower projection, such as VP.

§3.3.4.1 Dominance and M-Command

Chomsky (1986a) makes a number of assumptions about dominance, m-command and government with respect to adjunction structures. Following May (1985), Chomsky assumes that the structural relationship of dominance is such that an adjoined constituent is not dominated by either the phrasal projection to which it is adjoined or the projection introduced to accommodate it. These are two segments of the same projection, and dominance, in Chomsky's use of the term, must hold of all segments of a projection. I will refer to this subtype of the traditional notion of dominance as complete dominance, although Chomsky does not make this terminological distinction and, instead, replaces the traditional notion of dominance with the revised notion.

(77) Complete Dominance: α completely dominates β if and only if β is dominated by every segment of α.
(cf. Chomsky 1986a, p.7)

In an adjunction structure such as (78), β is not completely dominated by α, since there is a segment of α that does not dominate β. Although β is not completely

dominated by α, I will continue to assume, contra Chomsky, that β is dominated by the highest segment of α.

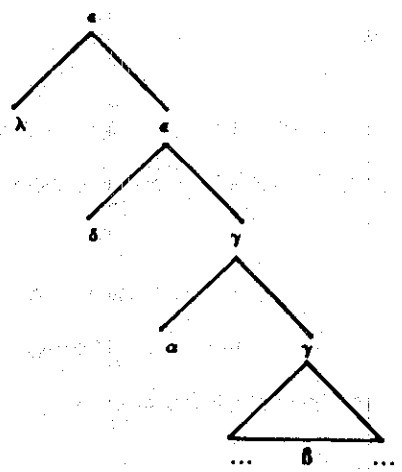
(78) $[_\alpha\ \beta\ [_\alpha \ldots]]$

Since, according to Chomsky, the notion of complete dominance replaces the more traditional notion of dominance, it must figure in Chomsky's definition of 'm-command', given below.

(79) α m-commands β iff α does not completely dominate β, and every maximal projection, γ, that completely dominates α completely dominates β.
(Chomsky 1986a, p. 8, terminology revised).

Now, given this definition of 'm-command', let us consider the m-command relations that obtain between λ, δ, α and β in an adjunction structure such as (80) (see also Chomsky 1986a, p.9 for discussion).

(80)



In this configuration, we have the following dominance relations:

γ completely dominates ß, but not α

ε completely dominates δ, α and ß, but not λ

According to Chomsky's definition, then, we have the following m-command relationships:

λ m-commands δ, α and ß

δ m-commands α and ß, but not λ

α m-commands δ and ß, but not λ

ß m-commands none of α, δ or λ

The fact that α m-commands δ is an interesting case that Chomsky did not consider. Here, since m-command is defined in terms of complete dominance (which Chomsky claims replaces the traditional notion of dominance altogether), the only projection that completely dominates α is ε (and, of course, any higher projection). But, since ε completely dominates δ (as does any higher projection), then α m-commands δ. In fact α governs δ in this configuration since there can be no projection that would count as a barrier for δ that could exclude α. In general, under Chomsky's proposal, m-command, and also government, can obtain between an adjoined constituent and all constituents in the next higher projection (except for adjuncts of that projection). This is a consequence of Chomsky's decision not to distinguish complete dominance from the traditional notion of dominance. In order to exclude such upward government by an adjunct, we need to recast the definition of 'm-command' as in (81). This will prove to be a necessary revision, as we will see at the end of this section in the discussion of (102).

(81) M-command (revised to prevent upward m-command by an adjunct):

α m-commands ß iff α does not dominate ß, and every maximal projection, γ, that dominates α completely dominates ß.

Now, looking again at the structure in (80), the higher γ is a projection that dominates α (in the traditional sense of dominate), but this projection does not dominate, let

alone completely dominate δ, so α does not m-command δ. This definition also prevents an adjunct from m-commanding another adjunct of the same projection.

Even revised in this way, the definition of 'm-command' will not give us the structural distinctions that we need to satisfy the requirements set out in (73). I propose the following definition of 'm-command', to replace the definition in (81). The definition of 'exclude' is taken from Chomsky (1986a), repeated below as (83).

(82) M-command (revised):

α m-commands β iff α does not dominate β and for all γ, γ a maximal projection, such that γ dominates α, γ does not exclude β.

(83) α excludes β if no segment of α dominates β. (Chomsky 1986a, p. 9)

So, again with respect to the configuration in (80), we now have the following m-command relationships between λ, δ, α and β:

λ m-commands δ, α and β

δ m-commands α, β and λ

α m-commands β, but not λ or δ

β m-commands α, but not δ or λ

The difference then is that under this definition there is mutual m-command between an adjunct and constituents completely dominated by the projection to which the adjunct is adjoined.

According to this definition, there would be mutual m-command between all adjuncts of the same projection as well, a case that is not considered in the schematic configuration in (80), but is readily verifiable since all adjuncts of the same projection are excluded by exactly the same projections.

This gives us the result that we need for the conditions in (73). There is mutual m-command between the topicalized PP, which is adjoined to IP, and the subject, which is the specifier of IP. Also, since all adjuncts of a single projection m-command each other, then we have mutual m-command among all the VP adjuncts, allowing free movement or base-generation of any PP in a clause-final, VP-adjoined, focussed position. Also, as desired, we have asymmetric m-command between the topicalized PP which is adjoined to IP, and the VP adjuncts.

This analysis has some consequences for the analysis of predicate adjective constructions. Consider the following examples.

(84) a) Summer is beautiful at dawn.

b) Dawn is beautiful in the summer.

(85) a) My backyard is crawling with ants in the flowerbed.

b) ??The flowerbed is crawling with ants in my backyard.

In the predicate adjective construction there is apparently no asymmetry between the subject NP and a disconstituent PP following the predicate-adjective. While I do not have a detailed account of the attachment of adjuncts in predicate adjective constructions, it seems that the clause-final PP in a predicate-adjective construction is attached higher in the structure than are VP-adjunct PP's. This would follow if there were no VP in predicate-adjective constructions, and these modifiers were generated as adjuncts to IP. Further support for such a treatment comes from a consideration of the sentences in (86) and (87), compared with (88) and (89).

(86) a) In Toronto, the summer is beautiful in Chinatown.

b) In Chinatown, the summer is beautiful in Toronto.

(87) a) In the summer, Toronto is beautiful at dawn.

b) At dawn, Toronto is beautiful in the summer.

(88) a) In Toronto, Mary met John in Chinatown.

b) *In Chinatown, Mary met John in Toronto.

(89) a) In the summer, Mary woke up at dawn.

b) *At dawn, Mary woke up in the summer.

The judgements here are subtle, but the sentences in (86) and (87) do not seem to invoke the asymmetry that we find with the VP adjuncts in (88) and (89). This suggests that locative and temporal PP's cannot be base-generated as AP-adjuncts, and that such PP's in predicate-adjective constructions are actually IP adjuncts, giving them the structural prominence they need to enter into mutual m-command with the subject (as in (84)) and with a topicalized IP-adjoined constituent (as in (86) and (87)).

Returning to the revised definition of 'm-command', it is now incumbent upon me to show that this will have no negative consequences for the definition of 'government', which is the main use that is made of m-command in the theory.

The crucial difference between the revised definition of 'm-command' and Chomsky's original formulation (apart from the prevention of the upward m-command by an adjunct) is that now there is mutual m-command between adjuncts of the same projection and between an adjunct and a constituent in the adjoined projection (provided it is not inside a lower projection). Let us now consider Chomsky's definition of 'government', given in (90).

(90) α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α.

Notice that under this definition, with the revised version of m-command, there is mutual government between adjuncts of the same projection and between an adjunct and a constituent in the projection that it is adjoined to. If we wish to exclude this possibility, we need to add an additional clause to the definition of 'government', as in (91). Although it is not clear that this revision has any empirical consequences, I will adopt the revised definition of 'government' to keep it descriptively equivalent to the definition proposed in Chomsky (1986a).

(91) α governs β iff

i) α m-commands β

ii) there is no γ, γ a barrier for β, such that γ excludes α,

and iii) for all maximal projections ϵ, if ϵ completely dominates α, then ϵ completely dominates β.

According to this definition, a head will not govern a constituent adjoined to its maximal projection.

The point is that we can redefine government so as to keep it descriptively equivalent to government in Chomsky (1986a), while defining m-command to allow for

mutual m-command between an adjunct of IP and the specifier of IP, and between separate adjuncts to a single projection. This allows us to restate the Syntactic Constraint on Thematic Discontinuity in (2), with X-command replaced by m-command, as in (92).

(92) SYNTACTIC CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents expressing the role Θi, with

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

iff Xj m-commands Xj+1, for $1 \leq j \leq n-1$

Thus, with a revised version of m-command, we can ensure that a topicalized PP that is adjoined to IP, and the subject of that IP, m-command each other, predicting the symmetry that we find between a topicalized PP and its disconstituent in subject position. However, we must now deal with the asymmetry illustrated in (93) and (94).

(93) a) As for fruit, bananas are wonderful.

b) As for summer, dawn is beautiful.

(94) a) *As for bananas, fruit is wonderful.

b) *As for dawn, summer is beautiful.

If we are correct in treating generic "as-for" topics as disconstituents of a role in the "comment", then we need to distinguish this asymmetric distribution from the symmetric distribution of subjects with topicalized PP's. The contrast in (93) and (94) shows that there cannot be mutual m-command between the generic "as-for" topic and the specifier of IP. If these topics are base-generated adjuncts to IP, then they should mutually m-command the subject, but the evidence above suggests that asymmetric m-command is required here. Notice that we cannot base-generate these topics under S" (Chomsky's (1977) proposal) since, when they occur in embedded contexts, they can follow the complementizer:

(95) I believe that as for dogs, John likes dobermans.

There are two possibilities that would give us the desired result. First, it might be that base-generated adjunction is somehow more real, and counts as a separate projection in a way that derived adjunction does not, at least with respect to the definition of 'm-command'. This approach creates a number of problems. Theory-internally, it is not really a satisfactory approach, since it requires some sort of marking on the adjunction projections to indicate whether they are present at d-structure. M-command is a purely configurational notion, but in this case, it would also need to be sensitive to the derivational history of the construction.

Another problem with this approach is that it has serious consequences for post-verbal adjuncts, since these are base-generated as well. If, as we have so far claimed, base-generated adjuncts of a single projection m-command each other, then the derivation of a sentence like (96), making the assumptions about the deep structure positions of these PP's that was discussed in §3.2, would involve nothing more than movement of "in the park" up to a derived position at the right (for end-focus). This derivation is shown in (97).

(96) John met Mary in Toronto at 3 o'clock on Tuesday in the park.

(97) John [[[[[[met Mary] t_i] in Toronto] at 3 o'clock] on Tuesday] in the park$_i$]

Alternatively, (96) might be base-generated as it is, with "in the park" receiving an end-focus interpretation.

If, however, base-generated adjunction involves a separate projection, eliminating the possibility of mutual m-command, the derivation of (96) becomes much more complex.

First of all, the PP "in the park" could not be base-generated in the higher position, since it would then violate the Syntactic Constraint on Thematic Discontinuity. We would need to derive the alternative order by move-α.

In fact, the situation is worse than that. Suppose that "in the park" moved as is shown in (97). While the adjunction structure created by movement would not create a separate projection, the structure would nonetheless violate the Syntactic Constraint on Thematic Discontinuity. This is because there are two other base-generated adjuncts intervening between "in Toronto" and "in the park". These other adjuncts give rise to two separate projections, preventing "in Toronto" from m-commanding "in the park". In order to have the PP "in Toronto" m-command the PP "in the park" in a sentence like (96), we would have to move all of the adjunct PP's up to derived positions as adjuncts of the topmost VP. This derivation is shown in (98).

(98) John $[[[[[[[[[[\text{met Mary}]\ t_i]\ t_j]\ t_k\ ]t_l\ ]$ in Toronto$_j]$ at 3 o'clock$_k]$ on Tuesday$_l]$ in the park$_i]$

This derivation would convert what was a base-generated adjunction structure to a derived adjunction structure giving mutual m-command where previously there was asymmetric m-command.

This derivation is, however, motivated only by the assumption that base-generated adjunction projections are distinct with respect to m-command. That is, we have no independent motivation for such a derivation. The facts of English PP order indicate that the order of adjunct PP's post-verbally is quite free. This is accounted for if there is mutual m-command among adjuncts, even when they are base-generated.

Without further discussion, I will reject the proposal that the asymmetry found contrasting (93) and (94) is due to a difference between base-generated and derived adjunction.

Another proposal, which will be seen to have some nice consequences later on, is that base-generated topics involve a separate functional projection, say TopP. This projection is intermediate between CP and IP in the configuration of the clause. It has no lexical head; the topic occurs as the specifier of TopP.

It is possible that in languages with overt topic markers (e.g. wa in Japanese), that this is the head of TopP. My concern here will be for English topicalization -- no claim is being made about this analysis for languages that are more topic prominent than English, although it would be interesting to test some of the predictions of the approach that will be developed here on topic prominent languages.

It is possible that English does have a limited number of topic markers in colloquial speech. As suggested in Speas (1986) (p. 204-205), it is possible that "man" is a topic particle in the following examples:

(99) a) This place, man, I really hate it.

b) My car, man, I thought it would never make it over here.

(examples from Speas, 1986, p. 204 ex. 2.90)

Notice that this topic particle cannot occur between argument topics and the comment containing a gap:

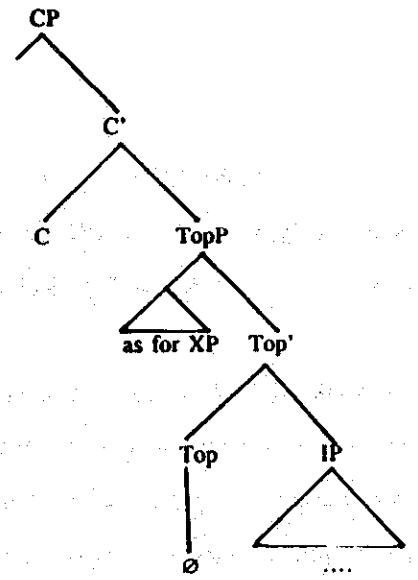
(100) a) *This place, man, I really hate.

b) *My car, man, I thought would never make it over here.

It is also possible that, if this is the correct analysis of such particles, it could be extended to include the (closed) class of exclamatives (e.g. gee, gosh, ...).The fact that they are a closed lexical class lends credence to the idea that they might be functional heads.

The structure that I propose for sentences that have base-generated topics is as in (101).

(101)



Given this structure, the asymmetric relationship between a base-generated topic and the subject is directly accommodated by the definition of 'm-command'. Base-generated topics are not IP adjuncts at all, but rather are specifiers of a separate functional category altogether.

Note that I crucially cannot permit mutual m-command between an adjunct and a constituent in the next higher projection, as was allowed in Chomsky's original definition of 'm-command'. Consider the sentences in (102).

(102) a) As for summer, in the early morning I went swimming.

b) *As for the early morning, in summer I went swimming.

In these sentences we have a base generated topic in the specifier of TopP, as well as an IP adjunct. The asymmetry illustrated in (102) shows that there must be asymmetric m-command between the adjunct PP and the "as-for" topic, which under my analysis is a constituent in the next higher projection.

There are thus two types of topics: base-generated topics that involve a separate functional projection (TopP), and derived topics that are adjoined to IP.

In what follows, I will consider how these two topic constructions interact with principles of bounding (subjacency) and the ECP. I have already demonstrated that non-coreferential base-generated topics can occur in embedded contexts. As far as I am aware, these constructions have been completely neglected in the literature. I will demonstrate that embedded TopP topics provide crucial evidence as to the correct formulation of the ECP, and in addition that they lead to a derivationally simple approach to some problems with the ECP.

In the next section I will review recent theories of bounding and the ECP, providing the theoretical context within which my proposals on topicalization are made.

§3.3.5 Bounding and the ECP

In recent years the theory of movement has undergone a conceptual shift from specialized movement rules with specific structural descriptions towards a maximally general movement rule (move-α). Move-α would overgenerate drastically, but for the actions and interactions of principles of grammar that conspire, as it were, to ensure that only well-formed representations are licensed. The two fundamental principles of grammar that ensure that instances of move-α are well-formed are the theory of bounding (subjacency) and the empty category principle (ECP).

Subjacency is a characterization of the locality required between successive traces in the application of move-α. The ECP is a well-formedness condition on traces in particular configurations.

I will be assuming a basic familiarity on the part of the reader with these principles. However, I will briefly review the form that these principles take in Chomsky's (1986a) *Barriers* framework.

§3.3.5.1 *Barriers*

In *Barriers*, Chomsky explores the possibility of unifying subjacency with government, characterizing these two local relations in terms of the common notion of "barrier".

Chomsky proposes the following definitions of 'subjacency' and 'government' (the definition of 'exclude' was given earlier, but is repeated below).

(103) α excludes β if no segment of α dominates β. (Chomsky 1986a, p. 9)

(104) β is n-subjacent to α iff there are fewer than n+1 barriers for β that exclude α.
(Chomsky 1986a, p. 30, (59))

(105) α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α.
(Chomsky 1986a, p. 9, (18))[9]

9. In §3.3.4.1, I revised this definition in keeping with the revised definition of 'm-command' presented there. For the purposes of this discussion I will revert to Chomsky's formulation of 'government'.

'Excludes' in these definitions affects their application only with respect to adjunction structures. An adjoined projection will not figure as a separate barrier in the definitions of 'subjacency' or of 'government'.

According to (104), when there are no barriers between β and α there is 0-subjacency and this is the best possible case of movement. Chomsky assumes that when 1-subjacency holds, the sentence is still well formed, but for n > 1 the sentence would contain a subjacency violation, and as a result, would be ungrammatical.

Antecedent government is a special case of government, with the added condition that it apply to a link (α, β) in a chain derived by the application of move-α.

Barrier, the unifying concept here, is defined in (109). Preliminary definitions are given in (106) to (108).

(106) α Θ-governs β iff α is a zero-level category that Θ-marks β, and α and β are sisters.
(Chomsky 1986a, p. 15, (27))

(107) α L-marks β iff α is a lexical category that Θ-governs β.
(Chomsky 1986a, p.15, (28))

(108) γ is a Blocking Category for β iff γ is not L-marked, and γ dominates β.

(Chomsky 1986a, p. 14, (25))

(109) γ is a barrier for β iff (a) or (b):

a) γ immediately dominates δ, δ a Blocking Category for β;

b) γ is a Blocking Category for β, $\gamma \neq$ IP.

(Chomsky 1986a, p. 14 (26))

The two clauses in the definition of 'barrier' define two ways that a category can become a barrier. Clause (a) defines inherited barrierhood. If a projection dominates a blocking category, then it is a barrier. This is the only way that IP can become a barrier. Clause (b) defines inherent barrierhood. All blocking categories except IP are inherent barriers.

The ECP is a well-formedness condition applying to empty categories that are derived by movement. The ECP is stated in (110).

(110) The Empty Category Principle: Every trace must be properly governed.

(Chomsky 1986a, p. 16)

(111) α properly governs β iff either (a) or (b)

a) α Θ-governs β

b) α antecedent governs β.

(Chomsky 1986a, p. 17, (31))

In addition, Chomsky makes the following claims:

(112) a) Adjunction is possible only to a maximal projection that is a non-argument. (Chomsky 1986a, p. 6)

b) Wh-operators cannot adjoin to IP. (Chomsky 1986a, p. 5)

c) I does not L-mark VP. (Chomsky 1986a, p. 69)

d) Wh-movement is to the specifier of CP. (Chomsky 1986a, p. 4)

e) Adjunction to VP provides an "escape hatch" for subjacency. (Chomsky 1986a, p. 29)

I refer the reader to Chomsky (1986a) for motivation of these proposals and details about how they apply and interact. Since my point of departure will be the analysis proposed in Lasnik and Saito (forthcoming), I will now outline Lasnik and Saito's approach to subjacency and the ECP, and discuss how it departs from the Chomsky (1986a) *Barriers* framework.

§3.3.5.2 *Move-α*

Move-α, a forthcoming monograph by Howard Lasnik and Mamoru Saito, extends the empirical coverage of the ECP and subjacency to cover, among other phenomena, derived topicalization. In the following, I will first summarize the revisions to the assumptions and definitions from *Barriers* that Lasnik and Saito adopt. Then I will show how these assumptions apply and interact through some examples.

Lasnik and Saito make the following claims:

(113) a) There are no base-generated embedded topics.

b) The definition of 'barrier' is revised to:

α is a barrier for ß iff
- i) α is X^{max}.
- ii) α dominates ß.
- iii) α is not L-marked.

c) IP is not L-marked.

VP is L-marked.

d) The definition of 'Subjacency' is revised as follows:

ß is subjacent to α if for every γ, γ a barrier for ß, the maximal projection immediately dominating γ dominates α.

e) Only traces in X^o categories can antecedent govern, where antecedent government is defined as follows:

α antecedent governs ß if
- i) α binds ß, and
- ii) ß is subjacent to α.

Let us consider each of these in turn. Assumption (a) was discussed in §3.3.3, where it was shown to be true only for coreferential topics. It is clear that assumption (a) must be abandoned, and this will figure prominently in the analysis that I will be developing.

The revised definition of 'barrier' in (b) has eliminated the need for blocking categories. IP is no longer a defective category, and all barriers are inherent barriers. In other words, this definition has eliminated the possibility of inherited barrierhood. Under this definition of 'barrier', it is essential that L-marking delimit exactly the class of potential barriers.[10] In order to make the revised notion of barrier work, Lasnik

10. It should be noted, however, that in some sense this theory returns to an earlier stage when bounding nodes were simply listed. If there are no clear criteria as to what will count as L-marking, then those nodes that are L-marked need to be stipulated as such. The extension of L-marking to the relationship between the non-lexical Infl and the VP is a step away from a systematic account of L-marking. If Infl (continued...)

and Saito need to assume that VP is L-marked, and therefore is not a barrier. This means that successive cyclic adjunction to VP is not needed for a constituent to "escape" from VP. They thus reject Chomsky's assumption (e) in (112). Furthermore, they reject Chomsky's assumption (c) in (112), claiming that INFL does L-mark VP, opening up the possibility that functional heads can L-mark their complements.

The revised definition of 'subjacency' in (d) differs from Chomsky's definition in that a projection derived by adjunction could potentially count as a separate projection for subjacency (notice that Lasnik and Saito's definition does not have an "excludes" clause). This is necessary to account for what are referred to as "topic-islands". When an argument in a lower clause topicalizes by adjunction to IP, the lower clause is an island to further extraction. Rochemont (1989) and Rochemont and Culicover (1990) also provide an account of topic-islands in terms of subjacency, adopting this same assumption: a projection introduced by adjunction can count as a separate projection in terms of the definitions of 'subjacency' and 'barrier'. The topic-island phenomenon is illustrated in the following examples:

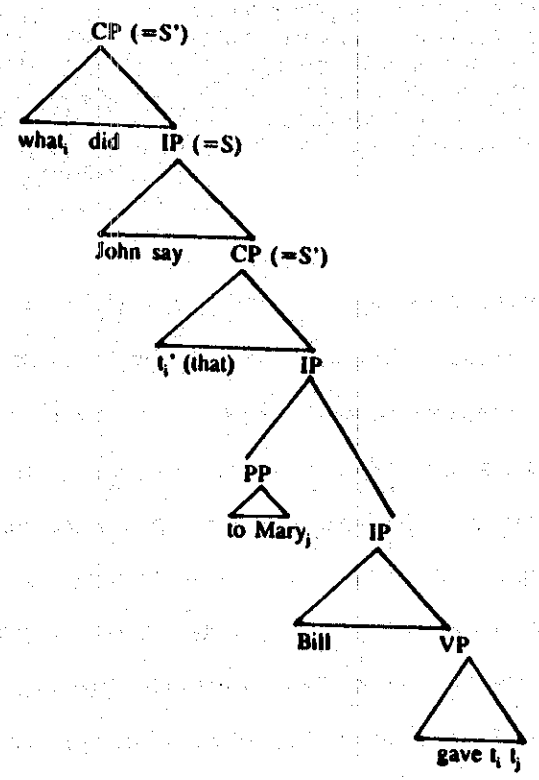
10.(...continued)
can L-mark, we need to consider seriously what other functional projections might L-mark. This may be necessary anyway, if we are to use an attenuated IP structure. Lasnik and Saito suggest that this problem might be averted if we consider L-marking to be irrelevant for VP. Under this suggestion, a non-L-marked projection would be a barrier only if L-marking is relevant for that projection. Hence VP would never be a barrier. Again, it is not clear how we would in general determine whether L-marking is relevant for a projection. (Why, for example, is L-marking relevant for IP?) If L-marking is relevant for certain (stipulated) projections, then L-marking is an ad-hoc diacritic.

(114) a) What$_i$ did John say (that) Bill gave t_i to Mary ?

b) *What$_i$ did John say (that) to Mary$_j$ Bill gave t_i t_j?

Such contrasts as this have led to the claim that embedded clauses that have undergone topicalization are islands to further extraction. Lasnik and Saito (forthcoming) and Rochemont (1989) analyze this phenomenon as a subjacency violation. They assume that topicalization involves adjunction to IP, creating a new IP node that is a barrier preventing any other extraction from the embedded clause. So, for example, the sentence in (114)b) would be derived as illustrated in (115).

(115)



In (115) the subjacency violation occurs between t_i and t_i'. Since VP is L-marked, it is not a barrier. But IP is not L-marked, and as such is a barrier. Movement over one barrier would not violate subjacency. This means that the extra barrier introduced by adjunction of the topic must itself not be L-marked and must therefore be able to count as a barrier. I will be adopting this account of the topic-island effect. Note that this crucially requires that IP adjunction not be allowed for wh-movement. In other words, Lasnik and Saito must adopt Chomsky's assumption (b) in (112).

In (e), Lasnik and Saito restrict antecedent government to X° categories, and this requires that they reject Chomsky's assumption (d) in (112). Instead they assume that wh-movement is to COMP, an X° category, where it can antecedent govern.

Lasnik and Saito's formulation of the ECP follows Lasnik and Saito (1984) and Chomsky (1986a) in being expressed as a disjunction of lexical and antecedent government. There are some additional assumptions that Lasnik and Saito make in formulating the ECP that I will note here.

First, in order to account for complement/non-complement asymmetries (as illustrated in the superiority paradigm in (116)), Lasnik and Saito assume that objects are lexically governed by the verb, while subjects and adjuncts are not properly governed through lexical government. Instead, they satisfy the ECP by antecedent government. So, complements are lexically governed, non-complements are antecedent governed.

(116) a) i) Who will eat what?

ii) *What will who eat?

b) i) Why did you eat what?

ii) *What did you eat why?

There are also cases where the behaviour of adjuncts diverges from the behaviour of subjects. This is illustrated in the that-trace paradigm in (117). It is clear that subjects but not adjuncts invoke a violation of the that-trace filter.

(117) a) i) What$_i$ did you say that John ate t_i?

ii) What$_i$ did you say John ate t_i?

b) i) *Who$_i$ did you say that t_i ate the banana?

ii) Who$_i$ did you say t_i ate the banana?

c) i) Why$_i$ did you say that John ate the banana t_i?

ii) Why$_i$ did you say John ate the banana t_i?

In order to account for both the superiority facts and the that-trace facts under the ECP, it is necessary to make two distinctions: a complement/non-complement distinction and an argument/non-argument distinction.

The complement/non-complement distinction is made by appealing to lexical versus antecedent government. The subject and any adverbial adjuncts are not lexically governed by the verb, and must therefore satisfy the ECP through antecedent government.

The argument/non-argument distinction is accommodated by assuming that only traces in argument positions, that is, subject and object position, must satisfy the ECP

at s-structure. Non-argument positions include adjunct positions and intermediate traces in COMP. These must satisfy the ECP at LF, but not at s-structure. This is implemented through γ-marking. A trace is marked $[+\gamma]$ if it is properly governed (either lexical or antecedent) and $[-\gamma]$ otherwise. Only arguments receive a γ-feature at s-structure. At LF γ-features are assigned to non-argument traces. Under this approach, the ECP reduces to the filter in (118).

(118) * .....t$[-\gamma]$ .....

Lasnik and Saito further assume that deletion is possible (delete-α), subject to recoverability conditions. They argue that independent principles of the grammar essentially restrict delete-α to deletion of the semantically empty "pure" complementizer ("that") and intermediate traces in COMP. They also assume that insertion of semantically empty constituents is possible (i.e. "that" can be inserted at s-structure). They suggest that a generalization of deletion, insertion and movement might be possible, proposing "Affect-α". Of course, "Affect-α" would be highly restricted by the principles of grammar, just as move-α is in Chomsky's approach.

With these assumptions, Lasnik and Saito can account for a number of asymmetries. Consider the standard that-trace effect:

(119) a) *Who$_i$ did you say [that [t_i left]]

b) Who$_i$ did you say [t_i' [t_i left]]

In (119)a), the subject trace requires an intermediate trace to satisfy the ECP. Lasnik and Saito assume that "that" is inserted at s-structure. If the wh-word moved to COMP, as required by both subjacency and the ECP, then the derivation goes through without any violation (as in (119)b)). If, however, "that" is inserted and occupies COMP at s-structure, then the single position in COMP is filled and there can be no intermediate trace in COMP. The subject trace, being in an argument position, is marked [-γ] at s-structure and violates the ECP. Subject/object asymmetries are accounted for since the intermediate trace in COMP is not required for an object trace to be properly governed (it is lexically governed by the verb). "That" may or may not be inserted; either way the derivation satisfies the ECP. This analysis forces subjacency to be a constraint on movement and not on s-structure representations, since intermediate steps in a derivation that are required to satisfy subjacency are not necessarily preserved in the form of intermediate traces at s-structure.

Lasnik and Saito extend this analysis to account for the following contrast with long distance topicalization.

(120) a) John$_i$ I think [t_i [t_i won the race]].

b) *John$_i$ I think [that [t_i won the race]].

To account for this contrast, Lasnik and Saito assume that long-distance movement of the topic must go through COMP in order to satisfy the ECP. Making this assumption, the explanation of the contrast in (120) is identical to the explanation for the standard that-trace effect with wh-movement out of a subject position.

A derivation for (120)b) that Lasnik and Saito crucially must exclude is shown in (121).

(121) John$_i$ I think [that [$_S$ t_i' [$_S$ t_i won the race]]]

Since topicalization involves adjunction to S (IP), there is no reason in principle that long-distance topicalization should not involve S adjunction in the lower clause. The subject trace would then be antecedent governed by the intermediate trace at s-structure, and would be marked [+γ]. The intermediate trace could then delete at LF. If such a derivation were possible, the sentence should be grammatical. To exclude this possibility, Lasnik and Saito make crucial use of their assumption that an antecedent governor must be an X° category. An intermediate trace in COMP qualifies as an antecedent governor, but not an intermediate trace adjoined to S.

Now consider how Lasnik and Saito account for the following s-structure:

(122) Who$_i$ do you think [that [Mary said [t_i' [t_i left early]]]]

Lasnik and Saito argue that since intermediate traces are non-arguments, they must satisfy the ECP at LF. It is clear in the above sentence how the subject trace, t_i, is antecedent governed at s-structure by t_i'. The potentially offending trace is the intermediate trace, t_i', but this can delete at LF, and hence there is no violation. In this way, Lasnik and Saito account for the absence of long-distance that-trace effects. Lasnik and Saito suggest another possible analysis of (122). In order to have t_i' satisfy the ECP if it is present at LF, "that" could delete at LF (being semantically empty). "Who" could then move down from the matrix COMP to the position vacated by the deleted "that", and then "who" could move back up to the matrix COMP. This movement would produce a trace in the COMP position that could antecedent govern t_i', satisfying the ECP at LF.

Although this complicated derivation is not required for the example in (122), Lasnik and Saito are forced to propose an equally complicated account of the immunity of adjuncts to the that-trace effect (first noticed by Huang 1982). Consider the sentences in (123).

(123) a) Why$_i$ do you think [that [he left t_i]]

b) *Why$_i$ do you wonder whether [he left t_i]

In (123)a) the trace, t_i, is an adjunct trace and hence (being a non-argument) is not γ-marked until LF. In order for t_i to be γ-marked at LF there must be an intermediate trace in the embedded COMP at LF. Since adjunct traces can only be properly governed through antecedent government, this intermediate trace would be necessary to ensure that t_i is properly governed. If there were an intermediate trace in the embedded COMP at LF, it would be antecedent governed by "why" in the matrix COMP, and hence would satisfy the ECP. At s-structure there is no intermediate trace in the embedded COMP, because "that" has been inserted into a COMP that has only one position. To solve this dilemma, Lasnik and Saito propose that at LF, "that" deletes, "why" moves down to the vacated COMP position and then back to the matrix COMP, leaving a trace that γ-marks t_i at LF. In this way the ECP is satisfied at LF.

Notice the contrast between sentences (123)a) and (123)b). "Whether" is a COMP that, unlike "that", does have semantic features, and as such cannot be deleted during the course of the derivation. This predicts that (123)b) is an ECP violation -- there is no way that t_i can be γ-marked at LF.

Note also that we cannot delete the adjunct trace in these sentences, whereas we could delete the intermediate trace in (122). If there were no trace outside COMP

then this sentence would be using "why" as a vacuous quantifier, an option excluded by the Principle of Full Interpretation (Chomsky 1986b, pp. 98-99).

Lasnik and Saito's account does account for the data. But at what cost?

Since the ECP is applied at s-structure and at LF, γ-marking is indelible. That is, an argument trace that is γ-marked at s-structure must retain its γ-feature at LF since the Projection Principle would prevent the deletion of such traces. So, this trace must continue to satisfy the ECP at LF. The γ-feature on an argument trace at LF is essentially the memory of having been properly governed at s-structure. γ-marking is, in fact, a derivational feature -- certainly a powerful syntactic device. If an alternative account will give us the empirical coverage without employing such a device, then (all else being equal) the alternative is to be preferred.

A similar problem is embodied in the necessity that subjacency constrain movement and not representation. Recall that in the derivation of sentences that contain a "that" in the embedded clause, subjacency is satisfied at the pre-s-structure representation prior to "that" insertion. At s-structure "that" is inserted into a COMP that has only one position and hence the intermediate trace and "that" cannot simultaneously exist in this COMP. So, at s-structure there is an apparent subjacency violation. However such examples are not subjacency violations, a fact accounted for

only if subjacency is satisfied during the derivation, and need not be satisfied on the s-structure representation. This is the approach defended by Lasnik and Saito.

This approach to subjacency forces a proliferation of levels of representation in the course of the derivation. Each level has one and only one purpose -- to break move-α up into steps so that subjacency can apply to each step. What this proposal fails to explain is why no other conditions of grammar apply to these new levels of representation. There is no independent motivation for these levels of representation.

So, although Lasnik and Saito maintain that the principles behind their account of the ECP are simple, and that it is only the derivation that is complicated, I submit that, although the principles are superficially simple, they employ powerful devices. If an empirically adequate account can be made to work without these powerful devices, all else being equal it should be preferred.

Proper Government is a somewhat elusive concept, due to its disjunctive nature. The disjunction of lexical and antecedent government is odd since it is not clear why a relationship in terms of Θ-marking (lexical government) should have the same effect as a relationship that is stated in terms of binding (antecedent government). Of the two types of proper government, antecedent government has led to the most controversy.

In Chomsky (1986a), although much of the Lasnik and Saito (1984) approach is assumed, Chomsky diverges from Lasnik and Saito (forthcoming) in assuming that wh-movement is to the specifier of CP. This forces Chomsky to provide a different account of asymmetries in antecedent government than that proposed in Lasnik and Saito. Chomsky invokes what he refers to as the Minimality Condition to account for the that-trace effect with subject traces. The Minimality Condition is stated in (124). According to this Condition, an intermediate trace can count as an antecedent governor if and only if there is no closer potential governor.

(124) Minimality Condition

In the configuration $\ldots\alpha\ \ldots[_{\gamma}\ldots\delta\ldots\beta\ldots]$, α does not govern β if γ is a projection of δ that excludes α.

(Chomsky 1986a, p.42)

The result of this condition is that a "closer" governor (δ in the above) can prevent α from governing β. According to this approach, the that-trace effect can be accounted for since the overt COMP "that" counts as a closer governor, preventing the trace in the specifier of CP position from governing the trace in subject position. Although "that" is a closer potential governor, it does not actually lexically govern the trace, hence the subject trace violates the ECP. An empty complementizer, on the other hand, does not block antecedent government between the trace in the specifier

of CP and the subject trace. The subject trace is therefore antecedent governed and satisfies the ECP.

Other approaches attempt to eliminate the disjunctive nature of the ECP. Aoun, Hornstein, Lightfoot and Weinberg (1987), for example, suggest that lexical government is required of traces that are visible at PF, while generalized binding applies to all anaphors (including empty ones) at LF. This approach essentially splits the two clauses in the definition of 'proper government' into two independent principles applying to different levels of representation.

Another approach to the ECP is developed in Rochemont and Culicover (1990). Since my approach will be closer to theirs than to Aoun, Hornstein, Lightfoot and Weinberg's, I will now discuss their proposal.

§3.3.5.3 Rochemont and Culicover's Approach to the ECP

Rochemont and Culicover suggest that proper government cannot be satisfied merely by antecedent government, but also requires lexical government. That is, they assume a conjunctive version of the ECP. Rochemont and Culicover depart from the analysis in Lasnik and Saito (forthcoming) by assuming (following Chomsky) that wh-movement is to the specifier of CP. They suggest that an empty COMP can serve as a lexical governor for a subject trace. Adopting a variant of the COMP-indexing

mechanism in Lasnik and Saito (1984), they propose that an empty COMP may be coindexed with a phrase in the specifier of CP position (a form of spec-head agreement, as in Chomsky 1986a). Such a coindexed empty COMP may serve as a lexical governor. Overt complementizers cannot undergo COMP-indexing, and thus cannot lexically govern. This accounts quite nicely for the that-trace effect, but entails a departure from the standard analysis of lexical government. Under their approach, lexical government is not limited to Θ-government, since the empty complementizer does not Θ-govern the subject trace. In fact, lexical government here is a special case of head government.

Rochemont and Culicover's conjunctive ECP also applies to intermediate traces. Since intermediate traces are subject to the ECP, then they must be lexically governed. In the grammatical representation in (125), this would require that "think" lexically govern t3 and "believes" lexically govern t2. If Θ-government is no longer required for lexical government, then this is possible.

(125) Who$_i$ do you think $[_{CP}$ t3$_i$ [that [Mary believes $[_{CP}$ t2$_i$ [e [t1$_i$ left]]]]]]

If we assume, following Stowell (1981) and Aoun, Hornstein, Lightfoot and Weinberg (1987), that the null variant of the complementizer "that" is possible only when governed, then this account gains some support. Non-bridge verbs (e.g. "quip") do not govern the complementizer. Clauses embedded under such verbs do not allow

an empty complementizer, nor do they permit wh-extraction. Consider the following examples:

(126) a) Fay quipped *(that) Kay left.

b) Fay believed (that) Kay left.

c) *Who$_i$ did Fay quip $[_{CP}$ t$_i$ [that Kay left t$_i$]]

(Aoun, Hornstein, Lightfoot and Weinberg 1987, p. 544, ex. 15)

Since such non-bridge verbs as "quip" do not govern their complements, they cannot be lexical governors. As a result, the intermediate trace in the specifier of CP is not lexically governed and violates the ECP regardless of the fact that this trace is antecedent governed by "who" in the matrix clause.

§3.3.6 Theoretical Assumptions

I will also adopt the conjunctive version of the ECP. Rochemont and Culicover assume that adjunct traces are adjoined to VP and lexically governed by the verb. I reject this assumption. This means that an adjunct trace will never satisfy the ECP. In §3.3.6.1 I will show that this is not necessarily a problem for local movement of adjuncts. However it would seem to be a serious problem for wh-movement since the Principle of Full Interpretation requires that a wh-operator bind a variable. The

conjunctive version of the ECP seems to rule out wh-movement of adjuncts altogether.[11] I will accept this for now, and return to demonstrate in §3.3.8 that this is not as serious as it may seem. The version of proper government that I am adopting is stated in (127).

(127) A trace, t, is properly governed only if both (a) and (b).

a) t is lexically governed

b) t is antecedent governed.

Lexical government is not limited to Θ-government, but also includes what I will refer to as "exceptional" government, a relation between certain X^o heads and the specifier of their complement. It is also not limited to lexical heads, but extends to functional heads as well.

(128) α lexically governs ß only if either α Θ-governs ß or α exceptionally governs ß.

It is likely that these two clauses might be brought together when exceptional government is fully understood.

11. For another approach, see Rizzi, 1990.

If we abandon Lasnik and Saito's assumption that only X^o categories can antecedent govern, then we can maintain their definition of 'antecedent government', repeated here as (129).

(129) α antecedent governs ß if i) α binds ß, and

ii) ß is subjacent to α.

It should be noted, however, that if move-α obligatorily leaves a trace, and if traces can not be deleted during the course of the derivation, antecedent government is vacuously satisfied by proper movement. In this way, proper government might be reduced to lexical government alone.

Following Chomsky, I will assume that adjunction is possible only to maximal projections that are not arguments (assumption (a) in (112)). This restriction rules out adjunction to an embedded CP, if it is an argument, and to NP, but allows adjunction to VP, IP and other non-argument projections. I will assume that this restriction applies only to derived adjunction, and that base-generated adjunction is possible with any XP. This qualification is necessary to allow, for example, base-generated "only" and "even" as adjuncts on argument NPs. Consider the sentences in (130).

(130) a) John gave only/even HIS daughter a new bicycle.

b) John gave only/even his DAUGHTER a new bicycle.

(Jackendoff 1972, p. 248, ex. 6.91)

The position of "even" or "only" in these sentences is not typical of adverbs in English, since it comes between the verb and direct object. "Even" and "only" in (130) have scope over the object NP -- they must associate with a focus within the object NP. This suggests that "even" and "only" adjoin to NP[12], but clearly the object NP is an argument in these examples.

I will also assume, following Chomsky, that wh-movement is to the specifier of CP, not the X° category, COMP, as assumed in Lasnik and Saito. This assumption is also in keeping with the approach taken in Rochemont (1989) and Rochemont and Culicover (1990).

Following Lasnik and Saito, I reject assumptions (c) and (e) in (112). I will assume, contra assumption (c), that certain functional heads (for example, INFL) are capable of L-marking, and that this will allow us to correctly delimit the class of barriers so that "escape hatch" adjunction (assumption (e)) is not needed. Note that

12. Another possibility that would not require adjunction to NP in these cases would be to treat "only" and "even" as adjoined to the head of a determiner phrase. See Abney (1987) for the proposal that NPs are actually complements of the projection of the determiner.

in Chomsky (1986a), assumption (b) in (112), that wh-operators cannot adjoin to IP, was needed to prevent "escape hatch" adjunction to IP by wh-phrases, voiding the barrierhood of IP. Since "escape hatch" adjunction no longer plays a role for the purposes of subjacency, I assume that successive cyclic adjunction to IP is a possibility, but is completely irrelevant. Since the conjunctive version of the ECP requires both lexical government and antecedent government, the introduction of an additional antecedent will not be sufficient to repair an ECP violation. It may prove difficult to exclude in principle the possibility of successive cyclic adjunction to IP without stipulation, but adjunction of this sort would not save an ill-formed derivation. If we introduced an adjoined projection as an intermediate step to satisfy the subjacency condition, we might at the same time be introducing an ECP violation, since this intermediate trace would not (necessarily) be lexically governed. I will simply disregard this possibility. An intermediate adjoined trace cannot possibly help in the derivation, and if introducing such a spurious trace would result in a violation for a derivation that would otherwise be acceptable, then there is an acceptable derivation and we can discount any such spurious offending traces.

As already mentioned, I adopt the revised definitions of 'barrier' and 'subjacency' in Lasnik and Saito. This allows the projection introduced by adjunction to count as a separate projection, bringing the topic-island effect into the empirical domain of the subjacency condition.

Having eliminated the need for escape-hatch adjunction, we still have adjoined projections that are introduced when, for example, a topic has moved and actually surfaces in a position adjoined to IP. In addition, base-generated adjunction to VP arises with PP adjuncts. Since base-generated adjuncts to VP do not impede extraction from the VP, we must assume that when a projection is L-marked, all of its segments are L-marked. This ensures that when a VP is L-marked, all segments of that VP that are necessary to accommodate any base-generated adjuncts are also L-marked. Since IP is not L-marked, then any additional segments of IP introduced in the course of a derivation will not be L-marked.

Notice that the consequences of this approach are essentially the same as those of the Freezing Principle. VP adjuncts can be base-generated, and the additional segments of VP do not create a frozen VP. In other words, a VP does not become an island for extraction by virtue of having PP adjuncts. In addition, a VP does not become an island for extraction by derived VP adjunction. See, for example, the analysis of Heavy NP Shift in Rochemont and Culicover (1991). When an IP projection is created by adjunction in the course of the derivation, a frozen IP results. This is the topic island effect. Although the results are the same as with the Freezing Principle, they have been shown to follow from independent principles of grammar, rather than through a stipulation specific to the phenomenon.

The approach taken here differs from the Freezing Principle with respect to base-generated adjunction to a non-L-marked projection, if this exists. If, for example, it is possible to have a base-generated constituent adjoined to IP, the assumptions that I am adopting would predict that this IP should be an island to extraction, since there would be an additional non-L-marked projection. Wexler and Culicover's Freezing Principle would predict that this configuration, being a base configuration, should not be an island. Rochemont and Culicover (1990) analyze extraction from the subject, as in (131), as possibly involving a base-generated adjunct of IP (see also Baltin 1984, 1987, Newmeyer 1987).

(131) A man walked into the room with blond hair.

The adjunction of an extraposed phrase from the subject results in an IP that is an island to further extraction, as shown in (132).

(132) *Where did a man walk with blond hair.

If this construction is base-generated, then even base-generated adjunction to IP results in a "frozen" IP (contra Wexler and Culicover).

All of these assumptions have precedents in the literature. Where I will be diverging most clearly from other current analyses is in rejecting the assumption that

base-generated topics are not permitted in embedded contexts. As discussed in §3.3.3.1, this restriction applies only to base-generated coreferential topics. Base-generated disconstituent topics are permitted in embedded contexts, with some surprising results.

Throughout the following discussion I will be assuming, as argued in §3.3.4, that there are two types of topic configurations: TopP, which accommodates base-generated topic, and a derived topic position adjoined to IP. Derived topics, then, introduce an IP barrier between IP and CP, but this is not an independent functional projection. Base-generated topics involve a separate functional projection with its own functional head. We will explore some of the properties of this functional projection in §3.3.7.

§3.3.6.1 Local Movement of Adjunct PP's

If we assume that all non-argument PP's are base-generated as VP adjuncts in the hierarchy proposed in §3.2, then there are two clause-internal derived positions that such adjunct PP's can be moved to: adjoined to IP, or adjoined to the outermost VP. An IP-adjoined PP is interpreted as topicalized, and a derived VP-adjoined PP as focussed.

If we accept the conjunctive version of the ECP, it would seem that such movement rules should result in ECP violations. Adjunct traces are not lexically governed, and the conjunctive version of the ECP requires that all traces be lexically governed.

Wh-movement must leave a trace, by the Principle of Full Interpretation -- otherwise there would be an instance of vacuous quantification. NP-movement must leave a trace by the principles of argument structure and the Projection Principle. Topicalization of an argument must leave a trace, also by principles of argument structure and the Projection Principle. These traces are all subject to well-formedness conditions, such as the subjacency condition and the ECP.

Adjunct PP's are not subject to either argument structure requirements or the Projection Principle, since they are not subcategorized. If we assume that topic and focus are not operators in the sense that wh-operators are, then the Principle of Full Interpretation will not require that a PP in these positions bind a variable. It seems that there is no reason that local movement of PP adjuncts to topic or focus positions should leave a trace. If this is so, then there is no need to worry about the apparent immunity to the ECP of traces of local adjunct movement -- there are no traces, and hence no ECP violations.

If we are correct in this approach, then it is a philosophical issue whether these adjuncts actually move. If there are no traces of such movement, then we could simply base-generate the PP adjunct directly as an adjunct to IP or as an outermost adjunct to VP. These positions would have a special interpretation (topic and focus, respectively).

However, adjunct PP's cannot be generated just anywhere. They must be generated within the clause that they modify. If this were not the case, then the subjacency facts from §3.3.2.2.1 would not be explained. So, from now on I will assume that PP adjuncts are base-generated in the clause that they modify either as an adjunct to IP, or as an adjunct to VP (in any order), with well-defined consequences for the interpretation of topic and focus.

§3.3.7 Embedded Topics

As Newmeyer (1987) points out, the possibility of topicalization in an embedded clause is somehow related to properties of the higher verb. Newmeyer cites the contrast in (133) as an example.

(133) a) *John regrets that beans he used to eat.
(Newmeyer 1987, p. 301, ex. 19a)

b) Sam insisted that liver he would never eat.
(Newmeyer 1987, p. 302, ex. 24a)

Following Hooper and Thompson (1973), Newmeyer assumes that topicalization is a root transformation that can apply in subordinate clauses only when these clauses are the complements of *assertive* verbs (e.g. insist, say). The question of whether embedded topicalization constructions are islands is independent of the nature of the constructions that permit embedded topics (see also Rochemont 1989). For now, I will limit my attention to embedded topic constructions under assertive (bridge) verbs.

Except for coreferential, base-generated topics, we find the full range of topic constructions in the complements of "say" and "think". This is illustrated in the paradigm in (134).

(134) a) John said/thought that Mary he met in the park.

b) John said/thought that in the park he met Mary (on the bench).

c) *John said/thought that Mary he met her in the park.

d) *John said/thought that as for Mary, he met her in the park.

e) John said/thought that as for dogs, Mary gave a doberman to Bill.

§3.3.7.1 Some Idiolectal Variation in English

In this section, I will present the results of an informal survey of 27 individuals, and demonstrate that, although there is considerable idiosyncratic variation among individuals with respect to embedded topic constructions, there is also a certain degree of uniformity. I will then provide an account of the most permissive judgements, offering some speculation on how the theory might accommodate the idiolectal variation found with these constructions.

The variation discussed here is not dialectal, but rather an idiosyncratic variation between individuals. It should also be pointed out that the judgements reported in the most permissive and least permissive ends of the scale were so clear to the speakers that they were convinced that their judgements would be uncontroversial. Given the peripheral nature of the topic constructions under consideration, it is perhaps not surprising that we find this range of idiolectal variation.

Twenty-seven native speakers of English (15 linguists, 12 non-linguists) were asked for comparative judgements on a range of sentences. The sentences under consideration here involve embedded topic constructions of the following five types:

i) topicalized argument.

ii) topicalized PP (non-disconstituent).

iii) topicalized PP (disconstituent).

iv) topicalized PP (non-disconstituent) with another adjunct PP in the clause.

v) base-generated generic "as-for" topic.

These topic constructions are embedded in the following three contexts:

I) a simple embedded topic

(A clause in which no (other) transformation involving the arguments and adjuncts has applied.)

II) a typical topic-island structure with wh-movement of a VP-internal argument

(The wh-moved element is not a thematic disconstituent of the same role as the topic. This construction would be expected to satisfy the ECP, but violate subjacency.)

III) a typical topic-island structure with wh-movement of the subject

(Again, the wh-moved subject is not a disconstituent of the same role as the topic. This construction would be expected to violate both the ECP and subjacency.)

I will consider the full range of topic types for each of contexts I through III in turn.

I) simple embedded topics

(i) I thought that the gold watch, John gave to Bill.

(ii) I thought that on Tuesday, John met Bill.

(iii) I thought that on Tuesday, John met Bill at noon.

(iv) I thought that on Tuesday, John met Bill in the park.

(v) I thought that as for fruit, John gave an orange to Bill.

The 27 speakers found all of these constructions acceptable. Some speakers found (i) and (v), in particular, quite awkward, and had difficulty imagining a context where these sentences would be appropriate, but nevertheless considered them acceptable.[13]

13. In this informal survey, there were 2 individuals who rejected embedded (and matrix) topicalized arguments altogether. Since I was mainly concerned with comparative judgements on different topic constructions, I excluded these two individuals' judgements from the 27 reported here. It is important for a later point, however, that even individuals who did not allow topicalized arguments, did allow PP topicalization and base-generated topics.

II) a typical topic-island structure with wh-movement of a VP-internal argument

(i) To whom did you think that the gold watch, John gave?

(ii) Who did you think that on Tuesday, John met?

(iii) Who did you think that on Tuesday, John met at noon?

(iv) Who did you think that on Tuesday, John met in the park?

(v) To whom did you think that as for fruit, John gave an orange?

The following range of judgements was reported:

* = ungrammatical

?* = marginally ungrammatical

? = marginally acceptable

ok = fully acceptable

IDIOLECTAL GROUPS

	A	B	C	D	E	F
SENTENCES:(i)	*	*	*	*	*	*
(ii)	*	*	?*	?*	?	?/ok
(iii)	*	?	ok	ok	ok	ok
(iv)	*	?	ok	ok	ok	ok
(v)	*	?*	?*	?	?	ok
# OF SPEAKERS	1	3	5	7	6	5 (total = 27)

With the exception of 1 individual (column A), there is a clear consensus that the subjacency effect with topic-islands is alleviated, to some degree, when non-argument topics are involved.

III) a typical topic-island structure with wh-movement of the subject

(i) Who do you think that the gold watch, gave to Bill?

(ii) Who did you think that on Tuesday, met Bill?

(iii) Who did you think that on Tuesday, met John at noon?

(iv) Who did you think that on Tuesday, met John in the park?

(v) Who did you think that as for fruit, gave an orange to Bill?

(vi) Who did you think that gave an orange to Bill? (standard that-trace violation)

The following range of judgements was reported:

** = extremely ungrammatical

* = ungrammatical

? = marginally acceptable

ok = fully acceptable

IDIOLECTAL GROUPS

	A	B	C	D	E	F
SENTENCES:(i)	**	**	**	**	**	**
(ii)	**	**	**	*	?	?/ok
(iii)	**	*	*	?	ok	ok
(iv)	**	*	*	?	ok	ok
(v)	**	**	*	*	?	ok
(vi)	**	**	**	**	**	**
# OF SPEAKERS	1	5	7	4	6	4 (total = 27)

Without providing statistical verification, I would like to make a few observations. First, there seems to be a tendency for an individual who was permissive

(or conservative) in context II to also be permissive (or conservative, respectively) in context III. The person whose judgements are reported in column A in context II also appears in column A in context III. 9 of the 10 people whose judgements are recorded in columns E and F in context III were also classified in columns E and F in context II. All 14 individuals whose judgements fell in the range of columns D-F in context III also reported judgements in the range of columns D-F in context II.

One additional fact should be pointed out. I also asked all of those surveyed for their judgement on sentences involving the extraction of an adjunct out of an embedded context. The sentence under consideration is presented in (135). For this sentence, I asked people to provide a judgement based on the embedded clause reading of "how" (i.e. as a matrix question about the manner of wrapping, rather than the manner of thinking).

(135) How do you think that Bill wrapped the present?

Only one individual of 27 found this sentence totally unacceptable for the lower reading (on a par with standard ECP violations such as "Who do you think that left?"). This is the same individual who consistently reported the judgements in column A in both context II and context III.

In the following discussion, I will be assuming the most permissive judgements from the above. That is, I will be assuming that sentences of the type represented in (iii) through (v) are fully grammatical. Since this is my own idiolect, I will also be providing some additional data that was not subjected to a survey. I did, however, check my judgements with the other individuals who seem to share my idiolect on these constructions. I will also discuss the idiolectal variation, and will show that it can be quite readily accounted for within the proposal under consideration.

§3.3.7.2 Embedded TopP

We have already seen some motivation for proposing two types of topic construction -- topics that appear in the specifier of TopP (base-generated topics) and those that have moved to a derived position adjoined to IP (see §3.3.4).

Clearly, topicalized arguments must have originated in the relevant argument position at d-structure. This is guaranteed by any theory of argument structure, taken together with the Projection Principle. Base-generated topics, on the other hand, are in the specifier of TopP at d-structure.

TopP is a functional projection. Top is the head of this projection, and it can be considered to be a sort of 2-place predicate:

(136) Top (topic, comment)

That is, Top is a functional head that establishes a relationship between the topic of the clause and the comment.

Following an earlier suggestion, the topic position is associated with a variable Θ-role that must be bound by a role in the comment in order for the topic to be licensed. We might assume that this variable role is assigned by Top. We have seen that there are two ways that this "role-binding" can take place:

(i) Through coreference with a pronoun in a role-bearing position in the comment (left dislocations and coreferential "as-for" topics).

(ii) Through discontinuity, when the topic is a coarser-grained disconstituent and there is a finer-grained disconstituent in the comment (generic "as-for" topics).

I will use the notation in (137) to indicate that the role i is borne by the constituent j.

(137) Θ^{i}_{j}

So, for example, when a locative role is borne by the PP "in the park", this will be represented as in (138)a). (138)b) shows the notation for a theme role that is borne by the NP "the book".

(138) a) $\Theta^{locative}_{(in\ the\ park)}$

b) $\Theta^{theme}_{(the\ book)}$

With this notation, we can represent a variable role as in (139).

(139) Θ^{x}_{j}

This is to be interpreted as a variable role x, borne by a constituent j, where x ranges over all possible roles. So, for example, the role of the topic "John" in the left dislocation "John, I like him." would be represented as in (140).

(140) a) $\Theta^{x}_{(John)}$ where x=theme

In order for a topic to be licensed, x in the above must be bound by a role in the comment, the theme in this example. So, we have the general licensing condition on topics in (141).

(141) Top (Θ_j^*, C) is licensed only if the variable role x_i is bound by i for some role i, in C (the comment).

Now, let us consider some of the examples from §3.3.7.1, assuming the most permissive judgements:

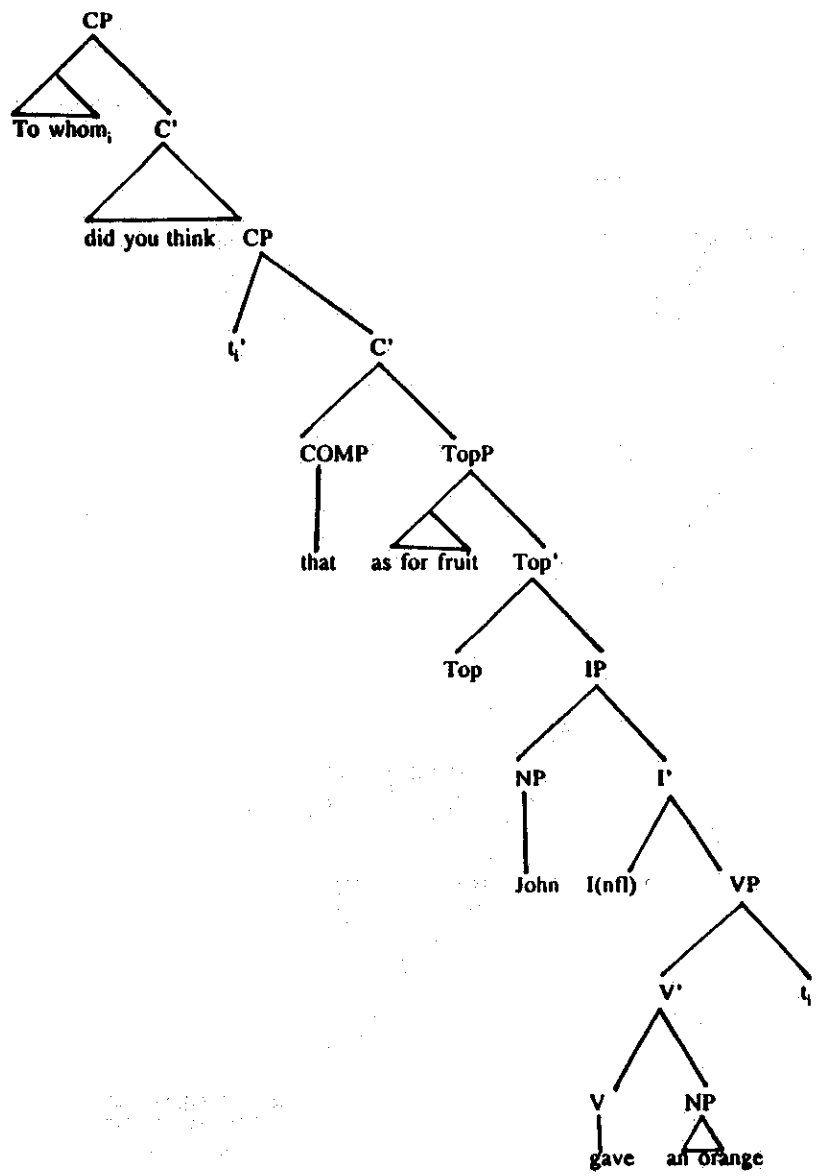
(142) a) To whom did you think that as for fruit, John gave an orange?

b) Who did you think that as for fruit, gave an orange to Bill?

Given that Top is a functional head, we can readily explain the acceptability of the sentences in (142) (for the idiolect under consideration) by appealing to properties that have been independently proposed for other functional heads. We have seen that functional heads can L-mark their complement -- this obtains between Infl and the VP to prevent VP from being a barrier to extraction. We have also seen that functional heads can exceptionally lexically govern the specifier of their complement -- this occurs when an empty COMP exceptionally lexically governs a trace in subject position.

If we assume that Top, the functional head of TopP, is like INFL in L-marking its complement and like the empty COMP in exceptionally lexically governing the specifier of its complement, then we have an immediate explanation of the facts in (142). Consider the following configuration:

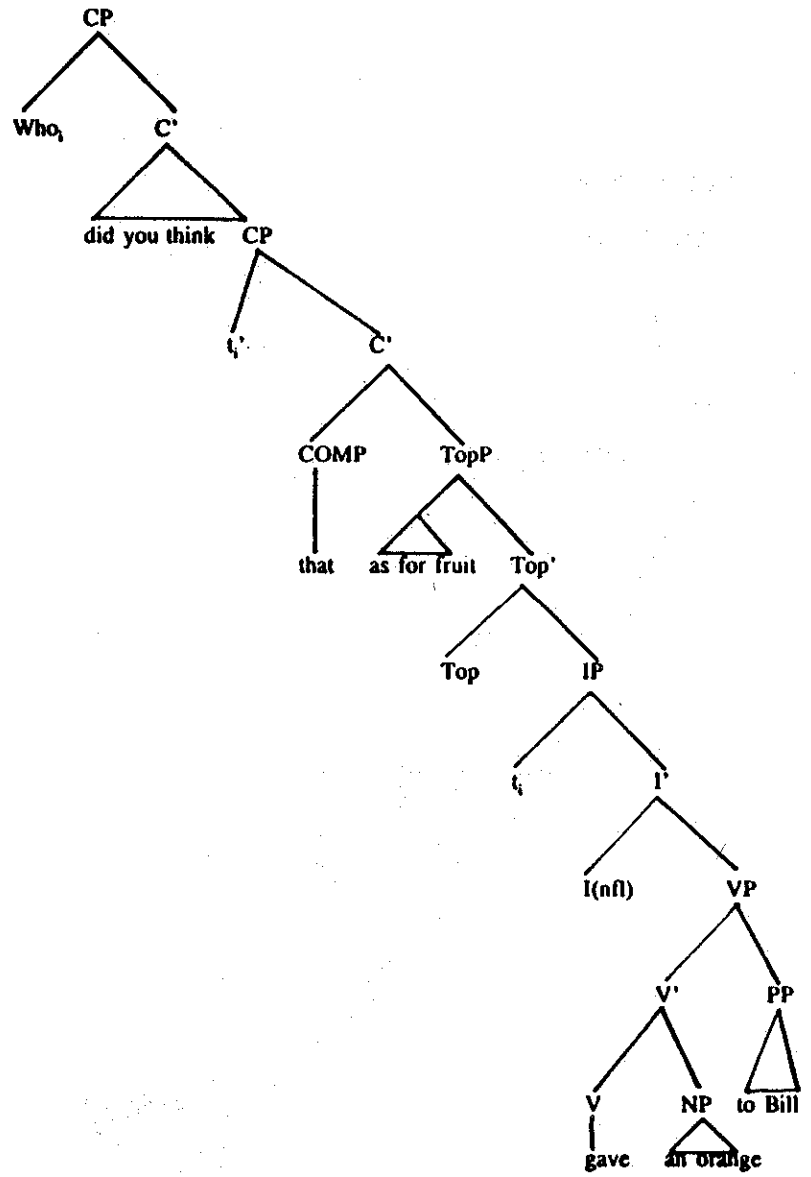
(143)



Working up from the lowest trace, we see that VP, being L-marked by INFL, is not a barrier. IP, L-marked by Top, is not a barrier either. Since COMP cannot L-mark IP, I will assume that it cannot L-mark TopP, so TopP is a barrier. But even if TopP is a barrier, t_i is subjacent to t_i' since t_i' is dominated by the projection (CP) that immediately dominates the barrier (TopP). So, any VP-internal position is subjacent to the specifier of CP even if there is an intervening TopP barrier. Extraction from VP is predicted to be acceptable, as required to account for the acceptability of (142)a) in the idiolect under consideration.

Now consider the configuration in (144).

(144)



Again the lowest trace t_i is subjacent to the trace in the specifier of CP, assuming that Top L-marks IP. If Top also exceptionally lexically governs the specifier of IP, then we should be able to extract the subject. This too is confirmed by the absence of the that-trace effect for the subject in sentence (142)b).

So, in this straightforward fashion, we can immediately account for the absence of subjacency and ECP effects in the sentences in (142). The behaviour of Top in these configurations is independently motivated by parallel behaviour of other functional categories -- it is acting like Infl with respect to L-marking, and COMP with respect to exceptional lexical government.

It is also relatively simple to account for the observed idiolectal variation. If Top were able to exceptionally lexically govern the specifier of IP, but not L-mark IP, then we would expect the ECP effect to be alleviated, but that all of the "as-for" topics would still be subjacency violations, as follows. Neither TopP nor IP would be L-marked and hence there would be two barriers between any IP-internal position and the specifier of CP, a subjacency violation. This would mean that in such an idiolect, Top has the same properties as COMP. This accounts for the judgements of those people that find all of the extractions from an embedded topic construction somewhat unacceptable, but find the ECP effect alleviated.

There is also the possibility that Top can L-mark its complement, but not exceptionally lexically govern the specifier of its complement. In such an idiolect, we would expect the subjacency violations to be improved but the ECP violations should still be bad. This also seems to obtain as there were a number of individuals who were more conservative in their context III judgements than their context II judgements. (All of the most permissive context III individuals (i.e. columns D-F) were also permissive context II individuals, but not conversely.)

With the exception of the most conservative idiolect, we have now accommodated the range of observed variation. Note that the idiolectal variation found in these constructions is explained here by variation in the features of the functional head involved, that is, Top. Such an approach is preferable to one that seeks to account for idiolectal variation with respect to parametrization of the principles of grammar (cf. Baltin 1982). The peripheral nature of these TopP constructions in English suggests that we might expect idiolectal variation to figure prominently with such constructions. I suspect that in topic prominent languages, if analyses such as this extend to such cases, we would find fewer idiolectal differences.

With the most conservative idiolect, it seems that the embedded Top head neither exceptionally lexically governs the specifier of its complement, nor L-marks its complement. An embedded Top does not alleviate the ECP or subjacency violations at all for this speaker. In this case, it is hard to justify an independent functional

category at all. Perhaps for this speaker, embedded base-generated topics are simply IP-adjuncts. This would readily account for the fact that this speaker found no difference between embedded derived topics and embedded base-generated topics in the subjacency and ECP contexts.

Now, the challenge is to account for the absence of subjacency and ECP effects in the case of the PP topics (again in the most permissive idiolect). That is, we need to account for the judgements given in (145).

(145) a) i) (?)Who did you think that on Tuesday John met?
ii) (?)Who did you think that on Tuesday met Bill?
b) i) Who did you think that on Tuesday John met at noon?
ii) Who did you think that on Tuesday met Bill at noon?
c) i) Who did you think that on Tuesday John met in the park?
ii) Who did you think that on Tuesday met Bill in the park?

We have independent evidence that the specifier of TopP can be filled at d-structure, but the Projection Principle would prevent it from being filled by an argument unless there is a coreferential pronoun (i.e. an overt argument) in the argument position. Adjuncts are not subject to the Projection Principle or argument structure requirements, since they are not lexically subcategorized. There is no reason,

then, to prevent adjunct PP's from being base-generated as specifiers of TopP. Clearly they can still be base-generated in a position adjoined to VP or a position adjoined to IP (recall the discussion in §3.3.6.1). So, in the case of topicalized adjuncts we have two possible analyses: either the adjunct is a base-generated IP-adjunct, or it is base-generated as the specifier of TopP.

We need to reconcile this with the assumption that the specifier of TopP contains a variable role that needs to be bound in the comment. Consider again the sentences in (145). If we only needed to account for the sentences in (145)b), then we clearly have a variable role bound by a disconstituent, and nothing more would need to be said. Certainly this PP could occur in the specifier of TopP and be licensed by the disconstituent in the comment. The contrast between the sentences in (145)a) and those in (145)b) reinforces the hypothesis that a lower disconstituent facilitates the appearence in the specifier of TopP of an adjunct PP. However, the acceptability of the sentences in (145)c) suggests that this is not the correct approach[14]. In these examples it seems that the weight of the VP (in terms of modification) can license an adjunct in the specifier of TopP, regardless of the presence of a disconstituent.

The comparative acceptability of (145)b) and (145)c) over (145)a) suggests that modification of the VP somehow licenses an adjunct in the specifier of TopP. I will refer to this as the "Topic Effect".

14. I wish to thank Jila Ghomeshi for suggesting that I check this possibility.

(146) The Topic Effect: An IP requires modification of some sort to be naturally interpreted as a comment.

This is, of necessity, a rather vague formulation. I believe that full articulation of these sorts of effects properly belong in the domain of pragmatics, not in the domain of the syntax. I will assume that the Topic Effect can account for the differences between sentences in (145)a) and those in (145)b) and (145)c).

What we need then, is to allow the variable role of the topic to be satisfied without being bound when the topic is inherently thematic.[15] This means that the topicalized PP itself, being inherently thematic, can bind the variable role that it bears as the first argument of Top, and in this way a PP is inherently licensed as a specifier of TopP. This requires that the licensing condition on the topic be revised, as follows:

(147) Top (Θ^{*}_{j}, C) is licensed iff either (a) or (b).

(a) the variable role x, is bound by i for some role i in C.

(b) the variable role x, is bound by an inherently thematic j.

15. Recall from chapter 1 that *inherently thematic* simply means that the role of a constituent X is compositionally determined by constituents within X. So, for example, the role of a PP is compositionally determined by the preposition and its complement NP.

In order to account for the contrast in (145) we can take one of two tacks. We could say that the Topic Effect prevents the PP in (145)a) from occurring in the specifier of TopP. This would force these sentences to be analyzed as involving IP adjunction, and as a result the construction would violate both the ECP and subjacency in the same way that topicalized arguments do. Alternatively we could approach this another way, claiming that the specifier of TopP is always a possible position for these PP's -- but then these sentences are odd, not by the ECP and subjacency, but by being in violation of the Topic Effect. Given the variation evident in the judgements on these sentences, it is likely that both of these approaches are available, again subject to idiolectal variation. Those individuals that found the topicalized PP with the unmodified VP quite ungrammatical are probably analyzing these as adjoined to IP. Those who found these sentences somewhat better than the topicalized arguments, but not wholly acceptable, are probably noting the weaker pragmatic violation of the Topic Effect.

§3.3.8 Extraction of Adjuncts

Having established that it is, in principle, possible for inherently thematic adjuncts to be base-generated in the specifier of TopP, we have an immediate solution to the problem, first noted by Huang (1982), that adjunct traces are immune to the that-trace effect. Note that if adjunct traces are adjoined to VP, they cannot be properly governed. They would have no lexical governor and hence could not possibly

satisfy the conjunctive version of the ECP. Just as when the overt "that" complementizer fails to lexically govern a subject trace, the subject trace violates the ECP, we would expect to find that adjunct traces produce a similar ECP violation. This prediction does not obtain. Consider the examples in (148).

(148) a) *Who do you think that left?

b) Why$_i$ do you think that John left t_i?

While it is impossible to extract the subject from the embedded "that" clause due to the ECP, it is possible to extract an adjunct out of the embedded clause, although the adjunct trace would seem to be in violation of the ECP in the same way that the subject trace is. As we have seen, Lasnik and Saito's answer to this apparent paradox is to say that proper government involves the assignment of a feature [+γ] to a trace that is properly governed. They then distinguish argument from non-argument traces, limiting γ-assignment only to arguments at s-structure. γ-assignment to non-arguments applies at LF. The derivation of (148)b) involves the deletion of "that" at LF, movement of "why" down from the matrix COMP to the former position of "that" and then movement of "why" back up to the matrix COMP. This movement produces the trace that is needed to properly govern (through the antecedent government option) and hence γ-mark the adjunct trace at LF. In this way the adjunct trace satisfies the ECP at LF, as required.

Under the proposal here, there is a far simpler account of the fact that wh-adjuncts are immune to the that-trace effect. If we assume that wh-adjuncts, being inherently thematic, can be base-generated in the specifier of TopP, we have an immediate explanation of the fact that they can be extracted from embedded clauses. If the wh-adjunct is base-generated in the specifier of TopP, then it is an argument of Top. Top assigns a variable role to its specifier. This property of Top sets it apart from other functional projections -- neither INFL nor COMP assign roles. The verb may assign a role to its specifier. If the subject is generated in the specifier of VP, then this position must be properly governed to allow the subject to raise to the specifier of IP. If the subject is generated in IP, then there still are subcategorized PP's that attach outside of the V-object complex as specifiers of VP. These subcategorized PP's satisfy a Θ-role of the verb, and are hence lexically governed by the verb. If we are correct in assuming that Top assigns a variable role to its specifier, then it is reasonable that Top Θ-govern and hence lexically govern its specifier. In this way, the specifier of TopP provides us with a structural position in which an adjunct can be properly governed, and from which it can be extracted without violating the ECP.[16] In this straightforward way we can dispense with the argument/non-argument distinction that Lasnik and Saito claim determines whether the ECP apply at s-structure or LF, as well as the derivational γ-feature. This also allows us to avoid the

16. This argument parallels a proposal in Rizzi (1982). Rizzi claims that the absence of the that-trace effect in certain Romance languages follows if the subject does not move from subject position, but instead moves from a post-verbal inverted position.

sort of derivation that led Lasnik and Saito to claim that subjacency is a constraint on movement and not on s-structure representations. The introduction of a TopP projection in embedded contexts allows us to provide a theoretically and derivationally simple account of the immunity of adjuncts to the that-trace effect, and is to be preferred by appeal to Occam's Razor.

This approach makes the prediction that we should find ECP violations with extraction of adjuncts from exactly those constructions that do not permit embedded TopPs. This seems to be the case. Consider, for example, the following sentences.

(149) a) *How$_i$ did John have a stomach ache [before t_i he ate the banana]?

b) ?*John had a stomach ache [before as for fruit, he ate the banana].

(150) a) *How$_i$ did John have a stomach ache [after t_i he ate the banana]?

b) *John had a stomach ache [after as for fruit, he ate the banana].

(151) a) *How$_i$ [for t_i John to wash the car] would be a pity?

b) *[For as for fruit, John to eat a banana] would be a pity.

(152) a) *How$_i$ [that t_i John washed the car] is obvious?

b) *[That as for fruit, John ate a banana] is obvious.

TopP projections are not allowed in adjunct clauses or subject clauses, the two subcases of Huang's (1982) Condition on Extraction Domain.

Embedded TopP projections are odd with most infinitival clauses, as can be seen in the following examples:

(153) a) ?*How$_i$ did you persuade John t_i PRO to wash the car?

b) ??I persuaded John as for fruit, PRO to eat a banana.

(154) a) ?*How$_i$ did you promise John t_i PRO to wash the car?

b) ??I promised John as for fruit PRO to eat a banana.

(155) a) *How$_i$ did you wonder whether t_i PRO to wash the car?

b) ??I wondered whether as for fruit, PRO to eat a banana?

A possible account for the unacceptability of these examples is to be found in the relationship between Top and the specifier of IP position that contains PRO. If Top governs the specifier of IP, the unacceptability of these sentences is explained since PRO would be governed in this configuration.

Now consider the following Exceptional Case Marking (ECM) examples:

(156) a) How$_i$ did you expect John t_i to wash the car?

b) I expected John as for fruit to eat a banana.

Since these examples involve ECM, there is no PRO. However, these examples are problematic for a theory of ECM. Notice that the position of the topic intervenes between the Exceptionally Case Marked NP and the rest of the IP. These sentences would be readily explained if ECM actually involved raising to object; however, this approach is not possible in the framework of Chomsky (1981), since raising to object would violate the Projection Principle. Diane Massam (personal communication) has pointed out to me that this may not be a problem in a theory with extended functional projections in an attenuated IP structure. In a structure with an AGRoP, raising to object might involve raising to the specifier of AGRoP, a non-argument position, satisfying the Projection Principle.

The exact analysis of these structures remains open, in particular if we are to take into consideration the two structures that will be discussed in §3.3.10. A thorough account of these infinitival structures would take me far beyond the scope of this thesis. The point to be made here is that there does seem to be a fairly strong correlation between the acceptability of a base-generated embedded topic and the extractability of the wh-adjunct.

Following Newmeyer (1987), the best examples of embedded topics are with assertive (bridge) verbs, and these are also the best cases of wh-adjunct extraction.

(157) a) How$_i$ did you say that t_i John washed the car?

b) I said that as for fruit, John ate a banana.

(158) a) How$_i$ did you believe that t_i John washed the car?

b) I believed that as for fruit, John ate a banana.

(159) a) *How$_i$ did you quip that t_i John washed the car?

b) *I quipped that as for fruit, John ate a banana.

Embedded topics seem to be restricted to clauses that are governed by the higher predicate.

Note that we can now explain the following asymmetry, discussed in Lasnik and Saito (forthcoming). Lasnik and Saito observe that there is a distinction between the

extraction of PP complements and adjuncts out of certain islands.[17] Consider the sentences in (160).

(160) a) ??On what shelf$_i$ do you wonder whether to put the book t_i?

b) *Why$_i$ do you wonder whether t_i to put the book on the shelf?

Within the current framework, the contrast between (160)a) and (160)b) is explained. Since infinitival "whether"-clauses do not allow embedded TopPs, the adjunct trace can not be base-generated in the specifier of TopP, and hence it will not be properly governed, resulting in an ECP violation. On the other hand, the trace of the subcategorized PP is lexically governed by the verb. Extraction out of the wh-island will result in a subjacency violation, but not an ECP violation. It should be noted that in order to make this subjacency account work, we need to assume that "whether" is a specifier of CP and not a head.

A further interesting correlation can be seen in the following sentences.

17. Lasnik and Saito assume that PP traces are not lexically governed, but satisfy the ECP only by antecedent government from an X° COMP, presumably adopting some sort of reanalysis of the phrasal constituent under COMP. In effect, Lasnik and Saito assume that PP complements behave like adjuncts with respect to the ECP. The NP of a PP complement would be lexically governed since it is Case marked (and possibly Θ-marked as well). In this way they can account for the contrast between (i) and (ii), below, but they have no explanation for the contrast in (160).

(i) ?What shelf$_i$ do you wonder whether to put the book on t_i.
(ii) ??On what shelf$_i$ do you wonder whether to put the book t_i.

(161) a) I said that as for fruit, John ate a banana.

b) ?I said as for fruit, John ate a banana.

c) When$_i$ did you say that t_i John ate a banana?

d) ?When$_i$ did you say t_i John ate a banana?

In the same way that the complementizer "that" facilitates a base-generated topic, it also seems to facilitate the lower reading of the adjunct wh-question. (161)d) is more naturally interpreted as asking the time of saying, rather than the time of John's action. So, not only are extracted wh-adjuncts immune to the that-trace effect, the embedded reading is actually facilitated by the presence of the complementizer.[18]

Another distinction that can now be explained is the following: Although it is possible to extract an argument from a clause with an embedded "as-for" topic, most people that I checked with found that the "as-for" topic interfered with the extraction of an adjunct from the embedded clause. We have contrasts such as the following:

(162) a) How$_i$ did you say that t_i Mary eats bananas?

b) ?*How$_i$ did you say that t_i as for fruit, Mary eats bananas?

18. Compare Aoun, Hornstein, Lightfoot and Weinberg (1987) for a different claim, and discussion of differences between referential wh-adjuncts (where, when) and non-referential wh-adjuncts (how, why). It is possible that the differences that they note might be explained by a preference for referential topics. I will not pursue this issue here.

If the "as-for" topic fills the specifier of TopP, then the contrast might be expected.

However, there is no reason, in principle, to prevent multiple TopP projections in a single clause. In chapter 2 §2.4.3, I showed that multiple base-generated topics are permitted when they are disconstituents of a single role.

(163) As for dogs, with dobermans, I like puppies.

It does not seem to be possible to have multiple base-generated topics that are disconstituents of separate roles.

(164) a) *As for dogs, with cats, the doberman chased the tabby.

b) *As for cats, with dogs, the doberman chased the tabby.

This fact can be readily explained in terms of the discourse function of topics. If a topic is the frame within which the comment is to be organized in a representation of the discourse, then we would expect that examples with two mutually exclusive frames should be unacceptable.

This leads to the prediction that if there is an embedded topic in the specifier of TopP, and a wh-adjunct that is requesting information about the same role, the

sentence should be better than (162)b). This prediction does seem to be correct, as can be seen in the contrast in (165).

(165) a) ?Where$_i$ did you say that in the kitchen, John ate the banana on Tuesday?

b) ?*When$_i$ did you say that in the kitchen, John ate the banana on Tuesday?

It is somewhat easier to get the lower reading for "where" if there is a locative topic in the embedded clause.

Further support for the analysis given here comes from the most conservative idiolect in the informal survey reported in §3.3.7.1. Recall that this speaker found no improvement for subjacency or the ECP with any embedded topic. As suggested earlier, this speaker may be treating these constructions as if they were all adjoined to IP, with no separate functional projection. That this speaker found an ECP effect with all adjuncts extracted from embedded constructions is exactly the result that we would expect. If there is no TopP, then there is no position in an embedded clause that would allow an adjunct to be properly governed -- any extraction of adjuncts would violate the ECP. I was unable to find any other speakers of this idiolect so, although the correlation is supported, I am not in a position to draw any strong conclusions from this single instance of a correlation.

The analysis proposed here, if correct, must also extend to matrix clauses. Even in a matrix clause, the wh-adjunct trace would need to be properly governed. Assuming the conjunctive version of the ECP, it would be impossible to move a wh-adjunct if it is base-generated in a position adjoined to VP. Wh-movement would require a trace by the Principle of Full Interpretation, and this trace would violate the ECP. Since all speakers of English allow matrix wh-adjunct questions, I am forced to assume that all speakers of English allow the option of a matrix TopP. Again it is difficult to make strong conclusions based on such a small sample, but I have not been able to find anyone who rejects all matrix "as-for" topics or left-dislocations. I did find two individuals who rejected all topicalized arguments, but even these individuals allowed left dislocations, "as-for" topics, and (most importantly) topicalized PP's. This latter fact also gives some support to the base-generation of topicalized PP's as specifiers of a TopP projection.

There is further evidence that supports the treatment of topicalized PP's as base-generated in the specifier of TopP (modulo the Topic Effect). Consider the following (colloquial) sentences:

(166) a) John, man, I like him.

b) As for John, man, I like him.

c) As for fruit, man, I like bananas.

It was suggested earlier that "man" (and possibly other emphatic particles) might be topic particles (Speas 1986), perhaps even an overt head of TopP (see §3.3.4.1). This particle is impossible when the topic is adjoined to IP, as shown in the following:

(167) a) *John, man, likes Mary.

b) *John, man, I like.

c) ?*To Mary, man, I gave the book.

If topicalized PP's were unambiguously adjoined to IP, that is, in the same position as these argument topics, we would expect topicalized PP's not to permit "man" after them. The sentences in (168) suggest that this is not the case.

(168) a) ?On Tuesday, man, I left.

b) On Tuesday, man, I left at noon.

c) On Tuesday, man, I went to the park.

Sentence (168)a) is odd by the Topic Effect, but the other two sentences are acceptable, suggesting that the TopP analysis is possible for PP adjuncts.[19]

19. Note that if "man" is the head of TopP, I have no explanation for why the "whole for part" reading is possible with the subjects in the following sentences:

(i) On the patio, man, my backyard is crawling with ants.
(ii) In Chinatown, man, Toronto is beautiful.

(continued...)

§3.3.9 Long Distance Topics

Recall from §3.3.6.1 that adjunct PP's are base-generated within the clause that they are interpreted as modifying. This assumption is necessary to predict the subjacency facts for PP topicalization (see §3.3.2.2.1). This restriction is not necessary for generic "as for" topics, given that they are not constrained by subjacency. I will assume, then, that PP's can be base-generated in the specifier of TopP, adjoined to IP and adjoined to VP within the clause that they modify. This assumption forces a movement account of long-distance topicalization of PP's. I will also assume that a trace is required in the embedded clause (where the adjunct is interpreted). This forces long distance topicalization of adjuncts to originate in the specifier of TopP, the only position where such a trace would satisfy the ECP.

Let's consider the derivation of the sentence in (169), in the interpretation where the topicalized temporal is a disconstituent of the same temporal role as "at 3 o'clock".

(169) On Tuesday, I believe that Mary should arrive at 3 o'clock.

19.(...continued)
(iii) At dawn, man, the summer is beautiful.
(iv) With a hammer, man, John broke the vase.

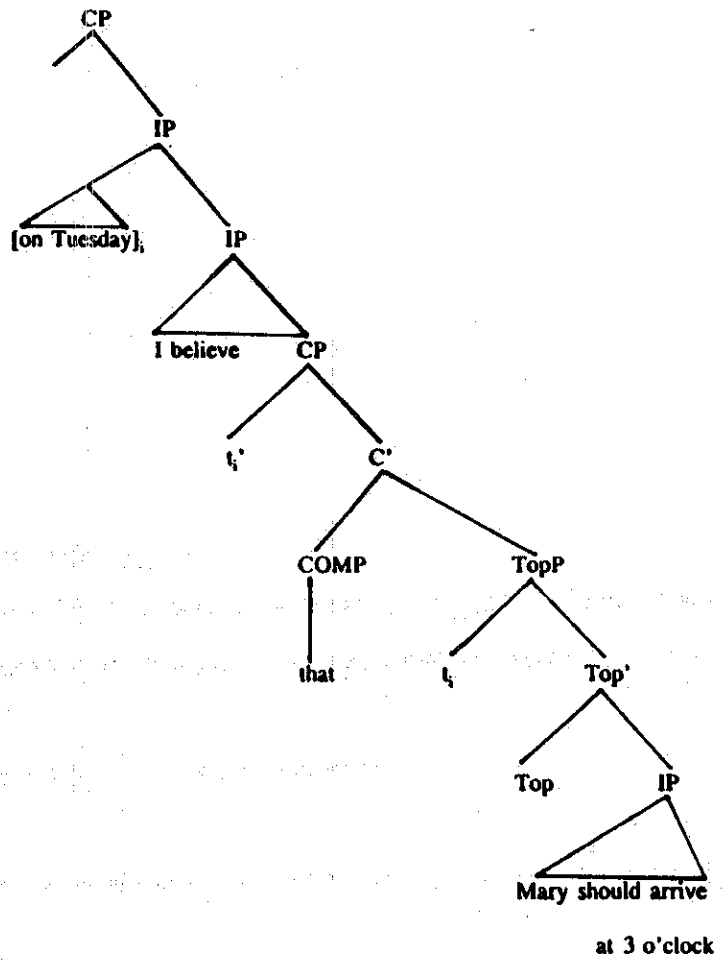
These sentences should violate the Syntactic Constraint on Thematic Discontinuity if the finer-grained disconstituent is in a higher functional projection.

Notice that long-distance topicalization is also constrained by the Syntactic Constraint on Thematic Discontinuity, explaining the unacceptability of (170) with the lowest reading of the temporal.

(170) *At 3 o'clock, I believe that Mary should arrive on Tuesday.

Assuming Lasnik and Saito's definition of 'subjacency', the derivation of this sentence is as in (171).

(171)



Movement must be in two steps. The first step is required since TopP is a barrier and subjacency requires that any step of movement not go beyond the projection immediately dominating a barrier. As a result, we need to move through the specifier of the embedded CP. The second step satisfies subjacency. Since IP is the only barrier

between the embedded CP and the IP adjunct, and the adjoined IP node immediately dominates IP, subjacency is satisfied. Adopting Lasnik and Saito's analysis of subjacency, long distance topicalization must move through the specifier of CP (as Lasnik and Saito also claim). So, the assumptions that we are making accommodate sentences such as (169).

Now, let us consider some unacceptable examples. Consider the sentence in (172).

(172) *On Tuesday, I wonder who arrived at 3 o'clock.

We can readily account for the unacceptability of this sentence. Since the embedded specifier of CP is filled by the wh-word at s-structure, the topic cannot move in the two steps necessary to satisfy subjacency. As a result, this sentence is a subjacency violation. Note that embedded topics are permitted in finite complements of "wonder", so we can't account for this sentence by claiming that an embedded TopP is impossible.

(173) I wonder whether as for fruit, John will eat a banana.

Given this, the unacceptability of (174) is in question.

(174) *On Tuesday, I wonder whether Mary arrived at 3 o'clock.

This can readly be accommodated if "whether" is a specifier of an embedded CP, and not a head. Similarly, "if" could be a specifier of CP, accounting for the sentence in (175).

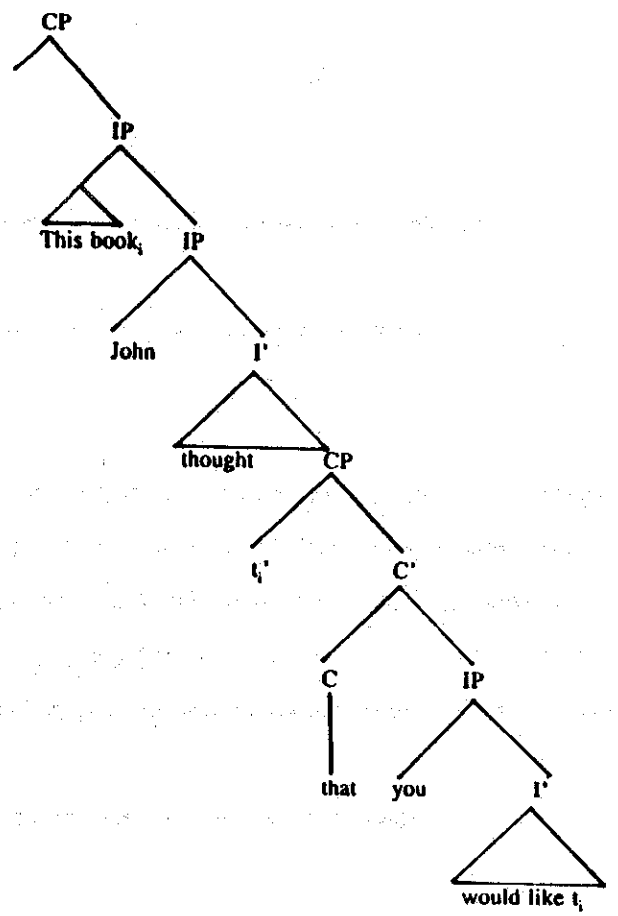
(175) *On Tuesday, I wonder if Mary arrived at 3 o'clock.

Now, let's consider long-distance topicalization of arguments, as in (176).

(176) This book, John thought that you would like.

The main question here is whether "this book" undergoes topicalization in the embedded clause before adjoining to the matrix IP. Clearly a derivation without embedded IP adjunction is possible.

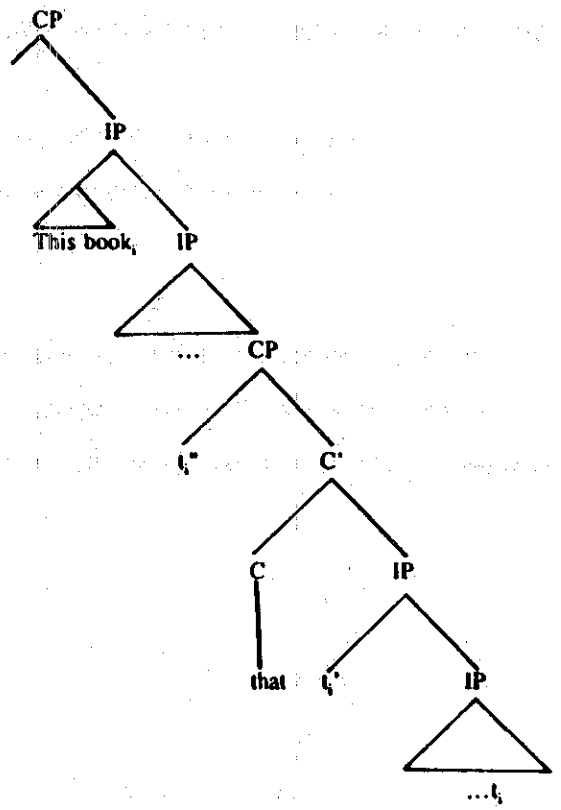
(177)



The lower IP is a barrier, but movement to the specifier of the embedded CP will satisfy subjacency. So will the second instance of movement, since "this book" is dominated by the (adjunction) IP that immediately dominates the IP barrier. Clearly,

then, it is not necessary for "the book" to adjoin to IP in the lower clause. If it does, we would have the following configuration:

(178)



At least when there is an overt complementizer, t_i' will not be lexically governed and hence will violate the ECP. This derivation is excluded as a derivation would not

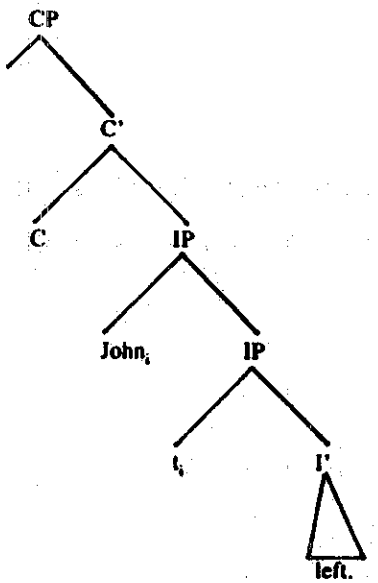
introduce an offending spurious trace. If there is an empty complementizer, then t_i' would be lexically governed, and IP-adjunction, although unnecessary, is not ruled out.

Analogously, the long-distance topicalized subject in (179) cannot move through an embedded IP-adjoined position.

(179) Mary, John thought would leave at noon.

If we assume that the empty complementizer can lexically govern only an adjacent trace, then if there was an intervening trace in a position adjoined to IP, the subject trace would fail to be lexically governed and hence would violate the ECP. IP-adjunction is unnecessary in any case, since "Mary" could move directly from subject position to the specifier of CP. Notice that this approach is in keeping with Lasnik and Saito, in that it rules out short (string-vacuous) topicalization. Consider the configuration in (180).

(180)



By the conjunctive ECP, the subject trace must be lexically governed, in this case by the empty COMP. The intervening topic blocks lexical government, causing an ECP violation. This explains the contrast that Lasnik and Saito notice between the sentences in (181).

(181) a) John thinks (that) himself, Mary likes.

b) *John thinks (that) himself, likes Mary.

Although the analysis is somewhat different, I agree with Lasnik and Saito that short topicalization of a subject is to be ruled out by the ECP.

§3.3.10 Matrix Clause Topics

Rochemont (1989) compares matrix and embedded topicalization, giving the following paradigm:

(182) a) *I wonder what on the table Mary put.

b) *I wonder on the table what Mary put.

(Rochemont 1989, p. 147, exx. 5b,c)

(183) a) *What did to Tom Mary give.

(Rochemont 1989, p. 152, ex. from footnote 12)

b) To Tom what did Mary give.

Following Koopman (1983) and Chomsky (1986a), Rochemont assumes that inversion is movement to the head of CP. Rochemont proposes that topicalization is adjunction to IP, but in matrix clauses, where CP is not an argument, Rochemont proposes that topicalization can involve adjunction to CP as well. So, in embedded clauses where CP is an argument, it is not possible to adjoin to CP (accounting for (182)b)). Since IP adjunction is possible, (182)a) is a legitimate adjunctions structure, but violates subjacency, since "what" must cross two IP barriers in moving to the specifier of CP.

The contrast between (182)b) and (183)b) is accounted for by allowing a topic to adjoin to the matrix CP. (183)a) is still a subjacency violation, but according to Rochemont (183)b) violates neither subjacency nor the restriction against adjunction to arguments.

In this section, I will argue against Rochemont's (1989) claim that adjunction to CP is what is involved in these constructions. I will demonstrate that movement of an argument to adjoin to the matrix CP results in at least a subjacency violation. The examples that Rochemont provides all involve inherently thematic topics, and these can be base-generated in the specifier of TopP position (with varying degrees of acceptability accounted for by selectional properties of the verb and the Topic Effect, as we will see). First, let's see how the movement that Rochemont proposes would violate the ECP.

Consider the sentences in (184) to (186).

(184) a) *What$_i$ does [$_{IP}$ Mary$_j$ [$_{IP}$ t$_j$ [$_{VP}$ like t$_i$]]].

b) *[$_{CP}$ Mary$_j$ [$_{CP}$ what$_i$ does [$_{IP}$ t$_j$ [$_{VP}$ like t$_i$]]]].[20]

20. Even taking the Topic Effect into consideration does not help with these examples:

(i) *Mary what does like for lunch on Tuesday.
(ii) *Cheese sandwiches who likes for lunch on Tuesday.

(185) a) *Who$_i$ [$_{IP}$ cheese sandwiches$_j$ [$_{IP}$ t$_i$ [$_{VP}$ likes t$_j$]]]

b) *[$_{CP}$ cheese sandwiches$_j$ [$_{CP}$ who$_i$ [$_{IP}$ t$_i$ [$_{VP}$ likes t$_j$]]]

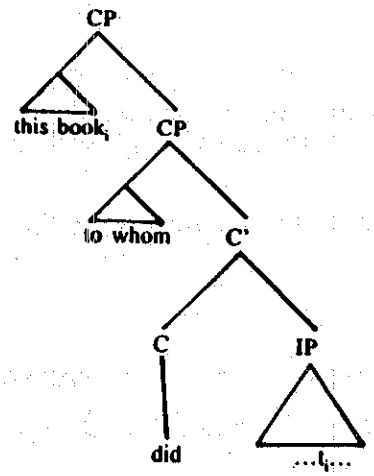
(186) a) *To whom$_i$ did [$_{IP}$ the book$_j$ [$_{IP}$ Bill give t$_j$ t$_i$]]

b) *[$_{CP}$ the book$_j$ [$_{CP}$ to whom$_i$ did [$_{IP}$ Bill give t$_j$ t$_i$]]

According to Rochemont, the (a) sentences here would violate subjacency, but the (b) sentences should be able to be derived by moving the argument to adjoin to the matrix CP. We have already accounted for (184)b) by the ECP account of "short" topicalization. Now the problem is how to account for the unacceptability of (185)b) and (186)b). If it were possible to move an argument to adjoin to CP, then these sentences should be well-formed.

The explanation of this is the following: Under Lasnik and Saito's definition of 'subjacency', an element within IP cannot move directly to a CP-adjoined position. Consider the following configuration:

(187)

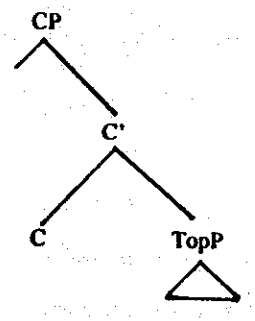


In this configuration, since IP is a barrier, there would need to be an intermediate trace dominated by the projection that immediately dominates IP, namely the lowest CP. Since adjoined projections count as separate projections in this definition (in order to account for the topic island effect), the highest segment of CP does not immediately dominate IP, and hence "this book" cannot move directly into the CP adjoined position (contra Rochemont). If it does, then there is a subjacency violation, and also an ECP violation if we continue to assume that antecedent government is required in a conjunctive version of the ECP. Notice that when there is a wh-word in the specifier of CP, then clearly there is no trace in the specifier of CP at s-structure. If there were no wh-word present, then the element being topicalized might move through the specifier of CP on the way to a CP-adjoined position. If this option were taken, then the trace in the specifier of CP position would not be lexically governed

and would violate the ECP. So there is no way that an argument can topicalize to an CP-adjoined position, even if we allow adjunction to matrix CPs.

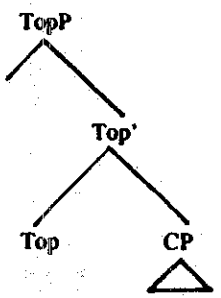
What we need to account for now is why these topics are so much better when they are PP's. The answer is at hand. PP's are inherently thematic and hence can be generated in the specifier of TopP. In order to account for the full range of matrix clause possibilities, we need only assume that TopP can occur in two possible configurations[21]:

(188) a)



21. The structure in (188)b) raises the possibility that the topic particle "man", discussed earlier, is actually a complementizer of the matrix clause.

b)



That is, we need to assume that TopP can either immediately dominate CP, or be immediately dominated by CP. Note that this proposal raises some general questions that are common to much recent work on functional projections: What are the selectional properties of functional categories, and where are these selectional properties determined?

Both possibilities also exist in embedded clauses, although the CP dominating TopP configuration is somewhat better. Consider the following sentences:

(189) a) I believe that as for fruit, John will eat a banana.

b) (?)I believe as for fruit that John will eat a banana.

(190) a) I believe that on Tuesday, John will leave at noon.

b) (?)I believe on Tuesday that John will leave at noon.

The PP in (190)b) is ambiguous between a matrix reading and a lower clause reading in a way that (190)a) is not, but the lower reading is possible for a PP in this position.

In my idiolect, embedded TopPs that dominate CP are not islands to wh-extraction, but this is probably subject to the same sort of idiolectal variation as the sentences in §3.3.7.1.

(191) a) (?)To whom did you believe as for fruit that John gave a banana?

b) (?)What did you believe on Tuesday that John ate at noon?

If TopP dominates CP, then "believe" would L-mark TopP. Depending on whether Top L-marks or not in a particular idiolect will determine whether there are two barriers (CP and IP) or only one (IP). If Top does not L-mark CP, then there is a subjacency violation here, since CP is a barrier.

Notice also, that if TopP dominates CP, it will not be able to alleviate ECP violations, since Top will not be in a position to properly govern the subject trace. This is confirmed by the unacceptability of (192).

(192) *Who did you believe on Tuesday that left at noon?

If we assume that PP's, in general, can be base-generated in the specifier of TopP, then we can account for a wide range of data by appealing to selectional properties of verbs and the Topic Effect.

Consider the following data:

(193) a) **What did to Mary Bill give.

b) *To Mary what did Bill give.

(193)a) is ruled out as a subjacency violation if "to Mary" is adjoined to IP. It is ruled out as a selectional violation if "to Mary" is base-generated in the specifier of a TopP projection dominating CP.

In (193)b), "to Mary" is ruled out in only the latter way, by selectional properties of "give". If "to Mary" were base-generated outside VP, there would be no trace inside the VP to satisfy the Projection Principle. Intuitively, it does seem that (193)b) is unacceptable in the same way as the selectional violation in (194), although the intended sense of (193)b) is more readily recoverable.

(194) *John gave the book.

Similarly, both of the sentences in (195) are unacceptable since "put" obligatorily subcategorizes a locative.

(195) a) **What on the table did Bill put.

b) *On the table what did Bill put.

We find marginal examples in just those cases where we have "optionally" subcategorized roles (i.e. roles with inner readings).

(196) a) *What on the table did Bill find.

b) On the table what did Bill find.

If we assume that the sentence in (196)a) involves IP adjunction, then it violates the subjacency condition. Rochemont (1989) points out that the acceptability of sentence (196)b) is rather fragile. It requires intonational support (there can be no pause between the PP and the wh-word), and its acceptability can be eroded by making the wh-word heavier:

(197) a) ?In the living room which book did Mary find?

b) ??Under the table how many books on linguistics did Mary see?

(Rochemont 1989, p. 147, ex. from footnote 5)

I think that this last piece of data suggests the right approach. Notice that we can make the examples in (197) better by adding modifiers to the VP -- in keeping with the Topic Effect. These are particularly facilitated by disconstituents in the comment which simultaneously satisfy the Topic Effect and the verb's need for a locative, as in (199).

(198) a) (?)In the living room which book did Mary find last week?

b) (?)In the living room how many books on linguistics did Mary find last week?

(199) a) In the living room which book did Mary find under the table?

b) In the living room how many books on linguistics did Mary find under the table?

When we consider adjuncts with "outer" readings, the examples are even more striking, again in keeping with the Topic Effect.

(200) a) On Tuesday what did Bill eat.

b) ?What on Tuesday did Bill eat.

c) On Tuesday what did Bill eat at noon.

d) What on Tuesday did Bill eat at noon.

Again, we would expect idiolectal variation on the sentences in (b) and (d). In my idiolect, (b) is a bit odd (the Topic Effect), while (d) is fine. For individuals of the idiolect where Top does not L-mark IP, (b) and (d) should both be subjacency violations. The prediction is that (c) should be fine for all speakers. The VP is modified and hence satisfies the Topic Effect. Wh-movement to the specifier of CP does not cross any additional barriers (other than IP) since TopP dominates CP. This example should be acceptable regardless of whether Top L-marks, since "on Tuesday" does not move out of CP.

The approach taken here makes the prediction that the sentence in (201) should be acceptable to people with the most permissive idiolect (in §3.3.7.1).

(201) Who on Tuesday left at noon?

This sentence should be either an ECP violation or a subjacency violation (or both) for speakers of more conservative idiolects.

In this section, I have argued that TopP can either immediately dominate CP or be immediately dominated by CP. This allows us to explain the fact that the only topics that occur to the left of wh-words are those that can be base-generated in the specifier of TopP -- correctly predicting that PP topics are more acceptable in this position than bare-NP argument topics. Variation in acceptability has been

accommodated by appealing to the Topic Effect, selectional properties of verbs, and idiolectal variation of the sort that we have already seen in §3.3.7.1.

§3.3.11 Some Residual Effects

§3.3.11.1 Superiority

Chomsky (1973) proposed the Superiority Constraint to account for the following sort of contrast:

(202) a) Who will eat what?

b) *What will who eat?

The Superiority Constraint essentially requies that, if wh-movement can apply to either of 2 wh-phrases, it must pick the one that is superior (i.e. that is structurally higher) (see Chomsky 1973, p. 245).

Jaeggli (1980), Aoun, Hornstein and Sportiche (1981), Chomsky (1981), Huang (1982), Lasnik and Saito (1984), among others, argue that the superiority effects can be accounted for by the ECP, applying at LF. In (202)b), "what" moves to COMP at s-structure, and is the head of COMP (it indexes COMP). If "who"

moved to COMP at LF, the subject trace would violate the ECP since COMP is indexed with "what" and hence would fail to antecedent govern the subject trace.

Similarly, the following contrast can be accounted for:

(203) a) When did John eat what?

b) *What did John eat when?

At LF the trace of the adjunct would fail to be properly governed since "what" in the COMP would prevent COMP from antecedent governing the adjunct trace.

I assume that wh-adjuncts must be generated in the specifier of TopP if they are to undergo movement, either at s-structure or at LF. In order to move to the specifier of CP, the wh-adjunct must be in a TopP projection that is dominated by CP. In such a case, the TopP projection cannot dominate CP. This is in contrast with non-wh main clause TopP's which can dominate the matrix CP. Also, I assume that multiple wh-elements can occur in the specifier of the matrix CP at LF.

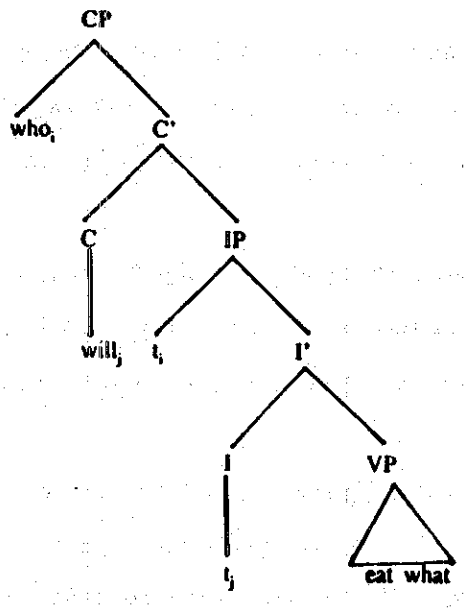
Let us consider the following sentences:

(204) a) Who will eat what?

b) *What will who eat?

Sentence (204)a) would have the following s-structure representation:

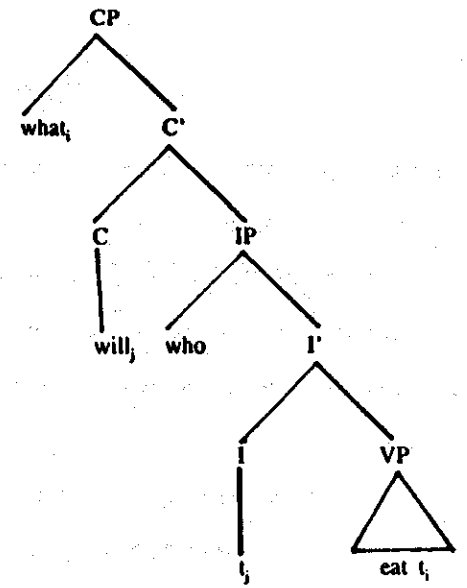
(205)



I am assuming that inversion is head-movement. In this configuration, t_i must satisfy the conjunctive ECP, hence it must be lexically governed by the complementizer, which contains the raised auxiliary. "What" can raise to join "who" in the specifier of CP at LF. Its trace would be lexically governed by the verb.

Now consider the s-structure of (204)b), in (206).

(206)



If we assume a conjunctive ECP, the s-structure representation seems to be fine since t_i is lexically governed by the verb. What we need to do in order to account for the unacceptability of this sentence under the ECP is to rule out the possibility of the subject moving to the the specifier of CP at LF. This means that the presence of "what" in the specifier of CP somehow prevents the complementizer from governing the trace of the subject at LF.

A problem with this account is pointed out in Aoun, Hornstein, Lightfoot and Weinberg (1987). They give the following examples to illustrate that the superiority effect can be eliminated by making the wh-elements heavier:

(207) a) *Fay remembers what who bought?

b) Fay remembers which books which students bought?

(Aoun, Hornstein, Lightfoot and Weinberg 1987, p. 565, ex. 58)

These authors also point out that the weight of the wh-element does not help for the that-trace violations (see (208)).

(208) *Fay remembers which students Kay said that left?

Aoun, Hornstein, Lightfoot and Weinberg propose that the that-trace effect is separate from superiority: the former being accounted for by PF requirements of head government, the latter by LF requirements of generalized binding. Hendrick and Rochemont (1988) and Lasnik and Saito (forthcoming) also argue that the theory needs to maintain a Superiority Constraint in addition to the ECP.

Although I agree that superiority should not be totally subsumed under the ECP, I'd like to speculate for a moment on an alternative analysis for some of the sentences presented in Aoun, Hornstein, Lightfoot and Weinberg (1987).

Suppose that Chomsky's original formulation of superiority was essentially correct (although admittedly, some apparent superiority effects can be independently excluded by the ECP). That is, let us assume that wh-movemment at s-structure must

apply to the structurally higher of 2 wh-elements (with "structurally higher" defined in terms of c-command).

This will immediately account for the unacceptability of (204)b) by means of an s-structure constraint. Now the sentence in (209) appears to be a violation of superiority at s-structure, but it is well-formed in terms of the ECP.

(209) Which books did which students buy?

If this is correct, we need to figure out how we can eliminate the superiority violation found in the s-structure of this sentence. The solution can be found in s-structure topicalization. Consider the following topicalized arguments.

(210) a) *It$_i$ he bought t_i.

b) ??The book$_i$ he bought t_i.

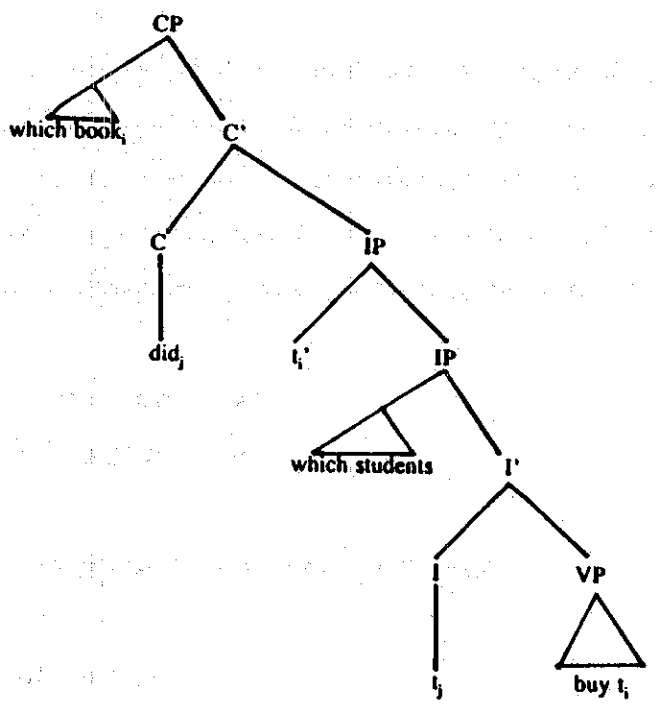
c) This book$_i$ the students bought t_i.

Contrasts such as this show that arguments can topicalize and adjoin to IP only if they are relatively heavy, at least heavier than a pronoun. Topicalization also requires a relatively heavy comment clause (the Topic Effect). If we assume that "what" is a wh-pronoun, then it would be impossible for it to move to a position adjoined to IP. "Which book" on the other hand, is comparatively heavy, and could presumably move

to adjoin to IP. In such a position, the wh-object would be structurally superior to the subject at s-structure, and hence it could wh-move to the specifier of CP. The trace in the topicalized position (i.e. adjoined to IP) would be lexically governed by the complementizer, now containing the raised auxiliary, in the same way that a subject trace can be.

So, at s-structure, we would have the following configuration:

(211)



Now we have a problem at LF. In this configuration, we would expect that "which students" would not be able to raise at LF, since the intervening t_i' that is adjoined to IP would block lexical government by the complementizer. However, consider the status of t_i'. This trace marks the intermediate topicalized position of "which book" that allowed it to satisfy superiority for wh-movement at s-structure. Superiority is an s-structure constraint, and does not apply at LF. This trace is not required by the Projection Principle, since it is not in an argument position, and the Principle of Full Interpretation is satisfied by the argument trace. Although this trace served a crucial purpose at s-structure for an s-structure constraint, at LF it is spurious and causes an ECP violation. Adapting our assumption about spurious offending traces, we would want to delete this trace in the mapping to LF. This seems to be a reasonable assumption, since the function performed by this trace is relevant only at s-structure, and is essentially invisible at LF.[22] If we do this, then the complementizer will lexically govern the subject trace after the LF application of wh-movement, and the derivation succeeds.

Of course, the wh-object need not topicalize at s-structure. The sentence in (212) is equally well-formed, and routinely accommodated.

(212) Fay remembers which students bought which books.

22. This might be made to follow from the Principle of Full Interpretation.

If the approach taken above is correct, then we are forced to say that the sentence in (213) satisfies the ECP, but violates the Superiority Constraint at s-structure.

(213) *What will who eat?

Now, what about wh-adjuncts? Consider the following:

(214) a) When did John eat what?

b) *What did John eat when?

Sentence (214)a) is grammatical -- "when" is generated in the specifier of TopP, a position that is superior to the VP internal "what". At s-structure, "when" raises to the specifier of CP, and "what" raises at LF. Sentence (214)b), on the other hand, violates the ECP when "when" raises to the specifier of CP at LF. Now suppose that "when" were generated in topic position. Wh-movement of "what" would give (215).

(215) *What when will John eat?

Here, "when" is generated in the specifier of TopP, making it superior to "what". The Superiority Constraint will therefore prevent "what" from raising at s-structure.

In general, superiority will force a matrix wh-adjunct in the specifier of TopP to move to the specifier of CP at s-structure.

The remaining case to consider is where we have both a wh-adjunct and a wh-subject. Consider the following:

(216) a) *Who ate an apple in the park when?

b) ?*When did who eat it?

c) ?When did who eat an apple?

d) (?)When did who eat an apple in the park?

If wh-adjuncts like "when" must be base-generated in the specifier of TopP projection in order to move to the specifier of CP (by the ECP), then the ECP accounts for the unacceptability of (216)a), as follows: "When" must move to the specifier of CP at LF. When it does, its trace will fail to be lexically governed, and will violate the ECP.

In an idiolect where Top exceptionally lexically governs the specifier of IP (see §3.3.7.2), we should be able to raise "who" at LF to join the wh-adjunct in the specifier of CP as required in (216)b) - (216)d). The LF trace of "who" will be lexically governed by Top. This is confirmed by the comparative acceptability of these sentences. The contrast in acceptability among examples (b) through (d) shows the

Topic Effect. If the VP is modified, then the sentence improves in the same way that sentences with PP topics in the specifier of TopP get better when there is extra modification in the VP. If "when" is base-generated in TopP, then it is superior to "who", and the asymmetries are accounted for. This further predicts that for speakers of the idiolect where Top does not lexically govern, it should be impossible to derive a multiple question where there is both a wh-subject and a wh-adjunct. Again, although the ECP rules out (216)a), superiority is required to rule out the following:

(217) *Who when ate an apple in the park?

Here "who" has moved to the specifier of CP, and "when" remains in the specifier of TopP, violating superiority.

§3.3.11.2 Topicalized Operators

Lasnik and Uriagereka (1988) give the following paradigm to suggest that an IP-adjoined wh-phrase cannot undergo wh-movement:

(218) a) Who thinks that I like John

b) Who thinks that John I like

c) Who thinks that I like who

d) *Who thinks that who I like.

(Lasnik and Uriagereka 1988, p. 156, ex. 57)

In the present account, we can readily block (218)d) since the proform "who" is not sufficiently referential to undergo topicalization. This solution, however, is unavailable for (219).

(219) *Who thinks that which book I like.

In this example, topicalization is not the problem -- in fact our account of the superiority effect crucially required that topicalization of wh-elements be possible. So, the problem here must be due to the wh-movement of this topicalized constituent at LF. If "which book" raises to the specifier of CP at LF, the trace in the position adjoined to the embedded IP must satisfy the ECP. Since this is a trace of LF movement it is relevant at LF. We cannot appeal to the account that was proposed in §3.3.11.1 where the spurious offending trace was deleted. In §3.3.11.1, a trace of s-structure movement was licensed at s-structure, but spurious for LF purposes. This is a trace of LF movement, and hence must be licensed at LF. Since the

complementizer "that" is not a lexical governor (see §3.3.5.3), this trace will violate the conjunctive ECP at LF, as required.

A similar account addresses two other types of contrasts presented in Lasnik and Uriagereka (1988):

(220) a) Someone thinks that Mary solved every problem.

b) Someone thinks that every problem, Mary solved.

(221) a) I don't think that Mary solved any problems.

b) *I don't think that any problems, Mary solved.

In (220), the first sentence can be interpreted with the embedded quantifier taking matrix scope, but this interpretation is not possible in the second sentence. If we assume that a matrix interpretation of an embedded quantifier requires that the quantified expression raise to the matrix clause at LF, then the first sentence allows the quantifier to raise to the matrix clause, while the second sentence does not. Again, this is accounted for. At LF, the trace in the topicalized IP-adjoined position would violate the conjunctive ECP since it could not be lexically governed by "that".

The sentences in (221) can similarly be accounted for. If we assume that "negative polarity" elements must raise to their licensing Neg at LF, then a negative

polarity element in a position adjoined to IP would leave a trace that violates the ECP when it raises to Neg at LF.

These phenomena suggest that the conjunctive ECP holds of all levels of representation: vacuously at d-structure, but crucially constraining movement at s-structure and LF.

§3.3.11.3 On the Trace of Topicalization

It is commonly assumed that wh-movement leaves a trace that is a variable and subject to Binding Condition C, and NP-movement leaves a trace that is an anaphor and subject to Binding Condition A. Lasnik and Uriagereka (1988) point out that topicalization leaves a trace that acts like an anaphor if the topicalized constituent is an anaphor, like an R-expression if the topicalized constituent is an R-expression, and like a pronoun if the topicalized constituent is a pronoun. (Lasnik and Uriagereka 1988, p. 157).

(222) a) John$_i$, Mary thinks I like t_i.

b) *John$_i$, he$_i$ thinks I like t_i.

(Lasnik and Uriagereka 1988, p. 154, ex. 46)

The trace of a topicalized R-expression acts like a variable in invoking a strong crossover violation. This is similar to a wh-trace, as shown in the following contrast:

(223) a) Who$_i$ does Mary think I like t_i.

b) *Who$_i$ does he$_i$ think I like t_i.

When the topicalized constituent is an anaphor, it does not invoke a strong crossover violation:

(224) Himself$_i$, John$_i$ likes t_i.

(Lasnik and Uriagereka 1988, p. 157, ex. 61)

In this example the trace is acting like an anaphor. Now consider the following example:

(225) *Him$_i$, John$_i$ likes t_i.

(Lasnik and Uriagereka 1988, p. 157, ex. 62)

Here the topicalized constituent is a pronoun and the trace is acting like a pronoun by being subject to Binding Condition B.

To account for these facts, Lasnik and Uriagereka suggest that a restructuring rule puts the topic back where it came from at LF before the Binding Conditions are applied. This option is not available in the current analysis. If restructuring left a trace, this trace would violate the ECP. Also, restructuring would rule out the account of topicalized quantifiers in the previous section. Although unprecedented, the binding facts suggest that the trace of the topicalized constituent retains the binding properties of the moved constituent. This seems to have fewer consequences than the post-LF component which would be needed for a restructuring analysis to work.

§3.3.11.4 L-marking Between Disconstituents

In this section, I will suggest that certain extraction asymmetries can be accounted for if we allow the more general disconstituent to L-mark an adjacent more specific disconstituent. Although the relation between disconstituents of a role is clearly thematic, it does not involve an X° Θ-assigner.

Consider the following sentences:

(226) a) Which shelf did John put his book on?

b) ??Which novels did John put his book near?

c) John put his book on the shelf near the novels.

d) *Which shelf did John put his book on near the novels?

e) ?Which novels did John put his book near on the shelf?

(227) a) ??What time did John leave at?

b) ?What day did John leave on?

c) ?What time did John leave at on Tuesday?

d) *What day did John leave on at noon?

(228) a) ?Which bench did John wait for Mary on?

b) ?Which park did John wait for Mary in?

c) Which bench did John wait for Mary on in the park?

d) *Which park did John wait for M. in on the bench?

The general observation here is that with extraction from PP, the presence of a more general disconstituent facilitates extraction from the finer-grained PP, but the converse is not true. A finer-grained disconstituent does not facilitate extraction from a coarser-grained disconstituent PP.

This generalization can be accounted for if the coarser-grained disconstituent L-marks the finer-grained disconstituent. This would mean that the PP would not count as a barrier for extraction. L-marking between disconstituents must take place under adjacency, since an intervening non-disconstituent again reduces the acceptability:

(229) a) ??Which bench did John wait for Mary on at 3 o'clock in the park?

b) *What time did John leave at for Baltimore on Tuesday?

c) *Which novels did John put his book near on Tuesday on the shelf?

Further evidence that L-marking must take place under adjacency is found in the following example, where a disconstituent topic does not facilitate extraction:

(230) ??On the shelf, which novels did John put his book near on Tuesday?

These asymmetries suggest that L-marking (and perhaps Θ-government) be extended to encompass maximal projections that are disconstituents.

§3.4 Conclusions

In chapter 2 a considerable amount of empirical evidence was provided showing that thematic discontinuity has a role to play in the theory of syntax. In this chapter

I have suggested how thematic discontinuity might be incorporated into the theory of syntax, as currently understood.

There have been a number of important results in this chapter. Because of certain asymmetries between derived and base-generated topics, I proposed that there are two types of topic constructions in English. Arguments are topicalized by moving to an IP-adjoined position. Base-generated topics are generated in a separate functional projection that I have called TopP.

Proposals in the literature have excluded all base-generated embedded topics from consideration, entirely because of the unacceptability of coreferential base-generated topics in embedded contexts. The analysis of thematic discontinuity in chapter 2 suggested an account of base-generated generic "as-for" topics as disconstituents of a role in the comment. These topics are permitted in embedded contexts, although there is some idiolectal variation in how these embedded topics interact with principles of bounding and the ECP.

Investigation of the properties of TopP projections, taking the idiolectal variation into consideration, actually permits the ECP to be considerably simplified. It also suggests that wh-adjuncts might be brought fully under a conjunctive version of the ECP, applying uniformly to arguments and non-arguments at all levels of representation. This allows us to avoid such powerful devices as indelible γ-marking.

In addition, this approach shows once again that arguments and adjuncts are not as different as has been believed. The differences between arguments and adjuncts can be entirely derived from the fact that adjuncts are inherently thematic and are not selected by the verb. PP arguments are also inherently thematic, but they are selected by the verb. As a result of the intrinsic properties of adjuncts, the Projection Principle does not apply to them, and they are not part of the verb's argument structure. When adjuncts occur in an adjoined position, they are not lexically governed and hence cannot undergo wh-movement without violating the ECP. In the specifier of TopP, adjuncts are lexically governed, being arguments of Top. In this configuration, adjuncts act just like arguments with respect to the ECP because they are arguments. The variable role assigned to the specifier of TopP can be licensed by a disconstituent or coreferential element in the comment, or by an inherently thematic adjunct. In this way we do not need to parametrize a principle of grammar to differentiate between arguments and adjuncts. Arguments and adjuncts behave differently due to their intrinsic differences in terms of their thematic relationship to the predicate. The differences are not stipulated through ad hoc parametrization of principles of grammar. The account of English topic constructions proposed here allows us to give a uniform account of the ECP, applying equally to arguments and adjuncts.

CHAPTER 4

Summary and Conclusions

In this thesis, the facts of thematic discontinuity have been brought to bear on a number of aspects of current syntactic theory, in particular those aspects which distinguish, in a stipulative manner, between arguments and adjuncts. The analysis of thematic discontinuity has led to a number of refinements in the theory with the result that adjuncts and arguments no longer need to be distinguished by stipulation. Central to this investigation has been the demonstration that thematic discontinuity is systematic and pervasive, and, in particular, that it transcends the argument/adjunct distinction.

Syntactic uniqueness has long been considered to be a fundamental defining property of arguments. This assumption is made explicit in the Θ-Criterion, a principle that enforces biuniqueness between a syntactic position and a subcategorized role. Adjuncts readily violate this biuniqueness; a fact that has been dealt with by limiting the domain of the Θ-Criterion to arguments. The Θ-Criterion is a fundamental principle of grammar that differentiates between arguments and adjuncts, constraining

the distribution of arguments, but explicitly excluding adjuncts from its domain of application.

In chapter 2, a considerable amount of empirical evidence was presented clearly demonstrating that any constraint requiring biuniqueness between roles and syntactic positions cannot be maintained. Thematic discontinuity readily applies to adjunct roles, as in (1)a), but argument roles also enter into thematic discontinuity, as in (1)b).

(1) a) On Tuesday, John met Mary at noon.

b) As for dogs, John likes dobermans.

Thematic discontinuity is not without limits; it is restricted interpretively and syntactically by the constraints in (2).

(2) INTERPRETIVE CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents of a thematic discontinuity expressing the role Θi iff they cumulatively identify a single referent and

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

where $X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i}$ is true iff X1 is coarser-grained with respect to the role Θi than X2.

SYNTACTIC CONSTRAINT ON THEMATIC DISCONTINUITY

X1 ...Xn are disconstituents expressing the role Θi, with

$$X1_{\Theta i} \supset_{\Theta i} X2_{\Theta i} \supset_{\Theta i} \ldots \supset_{\Theta i} Xn_{\Theta i}$$

iff Xj m-commands Xj+1, for $1 \leq j \leq n-1$

The clause of the Θ-Criterion that requires a unique syntactic position for each argument role was replaced by the interpretive constraint in (3), which applies equally to arguments and adjuncts.

(3) INTERPRETIVE VERSION OF CLAUSE (ii) OF THE Θ-CRITERION

All the roles (argument or adjunct) of a single event/predicate must be uniquely interpreted.

These constraints, together with principles of argument structure, the Principle of Full Interpretation, and the Projection Principle, account for the phenomena that have hitherto been accounted for by the Θ-Criterion. These proposals also account fully for the phenomenon of thematic discontinuity, both with arguments and with adjuncts.

In §2.6, an account of the instrumental role was proposed that suggests that thematic discontinuity might yield insightful solutions to problems in the murky middle ground between arguments and adjuncts.

The approach in this thesis is generative rather than typological. I have not catalogued constructions involving thematic discontinuity in a great many languages, but have restricted my attention to English, briefly sampling a few constructions in other languages to support the view that the proposals made here might stand up to typological investigation.

Chapter 3 provides a detailed syntactic analysis of adjuncts in English, showing that thematic discontinuity can readily be incorporated into the current syntactic model without introducing any new problems. In fact, it was demonstrated that, on the contrary, the proposed analysis of topic constructions that was motivated by considerations of thematic discontinuity has led to changes in the theory that make it more explanatory and less stipulative.

Two types of topic constructions were discussed: base-generated topics in the specifier of a functional projection TopP, and derived arguments topics that move and adjoin to IP.

The analysis of the TopP projection is subject to a certain amount of idiolectal variation, but this variation is constrained and in fact demonstrates a range of properties that functional heads can possess.

There have been a number of recent analyses that have also introduced new functional projections. Typically these have involved projections of auxiliary verbs and inflectional affixes that are claimed to head functional projections. The trend has emerged that more and more inflectional morphology is being done through syntactic head movement.

Although the analysis presented in this thesis also introduces a new functional projection and might be seen to be in the spirit of these recent developments, it is actually quite different. The introduction of the TopP projection is more in the spirit of arguments for IP and CP. A new functional projection is introduced, not to accommodate a functional head, but to accommodate a specifier and to provide a locus for the structural and relational properties of the relation between this specifier and the rest of the clause. TopP is, perhaps, more like CP in having an illocutionary function with respect to the sentence. The head of TopP is like other functional categories in certain respects, however it differs from them in one crucial way. While other functional heads do not in general assign Θ-roles, I assume that Top assigns a variable role to the specifier of TopP. So, for example, in the sentences in (4), the topic is assigned a variable role that is bound by the role-bearing constituent in the comment -- either by a coreferential pronoun, as in (4)a), or a disconstituent, as in (4)b).

(4) a) As for John, Mary likes him.

b) As for cats, Mary likes Burmese.

The variable role of the Topic can also be bound within the topic constituent itself by an inherently thematic topic -- that is, by an adjunct.

Now, since a Top head assigns a role to its specifier, it Θ-governs and hence lexically governs its specifier. This gives us a structural position where the trace of a wh-adjunct can satisfy the ECP. That is, in the specifier of TopP, an adjunct is lexically governed and acts like an argument with respect to wh-movement. This proposal readily accounts for the apparent immunity of wh-adjunct traces to the ECP. Wh-adjuncts are not in fact immune to the ECP, but can be base-generated in a position that is lexically governed, and therefore can satisfy the ECP in the same way that arguments do.

Other proposals that attempt to account for this behaviour of adjuncts, in particular the approach of Lasnik and Saito (1984, forthcoming), have essentially split the ECP into two parts to differentiate between arguments and adjuncts. Argument traces must satisfy the ECP at s-structure and LF, while adjuncts need satisfy the ECP only at LF where complicated derivations involving downward movement and deletion are needed to give a well-formed representation. These analyses employ powerful derivational devices, such as the global derivational γ-feature. I have shown that the TopP projection, together with a few well-motivated assumptions about the inherently thematic nature of adjuncts, leads directly to a simplification of the ECP, and permits

a straightforward treatment of wh-adjunct movement. The ECP, in a conjunctive rather than disjunctive form, applies equally to arguments and adjuncts at all levels of representation.

The ECP, like the Θ-Criterion, stipulated an argument/adjunct distinction in its application. The ECP applied to arguments at s-structure and to non-arguments (including adjuncts and intermediate traces in COMP) only at LF. The Θ-Criterion applied to arguments, and adjuncts were excluded from it by definition.

In the approach taken here, neither of these stipulations is necessary. Adjuncts differ from arguments in being inherently thematic and in not being subject to the Projection Principle or argument structure requirements. These intrinsic differences between arguments and adjuncts, together with the approach to thematic discontinuity and topicalization taken here, suggest that syntactic principles do not need to stipulate a difference between arguments and adjuncts. Adjuncts are well-behaved syntactically. Except for differences arising from their intrinsic properties, arguments and adjuncts are subject to exactly the same principles and conditions of grammar.

In the generation of d-structure, argument structure properties and the Projection Principle apply to arguments, while the relatively free definition of well-formed adjunction structures apply to adjuncts. Well-formedness conditions on

thematic discontinuity apply equally to arguments and adjuncts as do the revised interpretive version of the Θ-Criterion and the conjunctive ECP.

This thesis has provided a non-trivial solution to a non-trivial problem. As such, it opens up a number of empirical and theoretical issues. I have dealt with some of these, I have alluded to others as open questions, while I have left still others entirely for future research. In developing a thorough analysis of thematic discontinuity and of topic constructions, I have attempted to provide a framework within which a number of previously ill-understood questions can be formulated, and investigated in a productive way.

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