

Robert D. Borsley
Aspects of English Anaphora



Ph.D.
University of Edinburgh
1978

ABSTRACT

This thesis is concerned with various aspects of English anaphora and a number of related phenomena. Roughly two thirds is devoted to nominal anaphora. The remainder considers some of the ways in which constituents other than NP's enter into anaphoric relations.

The discussion of nominal anaphora begins with a consideration of two quite widely accepted theories of pronouns and shows that they are fundamentally inadequate. Evidence is then presented for a 'mixed theory', which recognizes more than one kind of pronoun. The two main kinds of pronoun that must be recognized are bound variables and 'referential pronouns'. The former are much like bound variables in logic. The latter are a kind of definite description. In their anaphoric use, they can be termed 'pronouns of laziness', but their anaphoric use is not fundamentally different from their non-anaphoric use. There is evidence that so-called 'sentential pronouns' are ordinary pronouns of laziness. It appears, however, that what are termed 'intensional pronouns' are a third kind of pronoun.

The discussion of non-nominal anaphora emphasizes the importance of definite descriptions in English anaphora. It is argued that so (in its central use), such, than and there derive from expressions involving definite descriptions. In its presentential use, so appears to be an idiomatic realization of a sentential pronoun. Certain uses of so, that and which appear to be idiomatic realizations of and, and hence only pseudo-anaphors.

Three general conclusions are drawn: firstly that definite descriptions are central to English anaphora, secondly that English anaphors generally do not derive from copies of their antecedents,

and thirdly that, while NP's enter into anaphoric relations directly, adjectives and adverbs only do so indirectly through inferences. These conclusions may well apply universally.

ACKNOWLEDGEMENTS

This thesis owes a great deal to a number of people. First and foremost is my supervisor James Thorne, who has been a constant source of perceptive and stimulating comment throughout its somewhat haphazard development. I would also like to thank Sheena Macrae, Dave Roberts, Fritz Newmeyer and John Anderson for valuable conversations, which clarified my thinking on a number of issues. I owe much too to a number of non-linguists. I owe a great debt to my parents for the support and encouragement they have given me throughout a rather bizarre educational career. I also owe a debt to the late Mr. Arthur Ashby, who first encouraged my interest in language. I would also like to thank my friends and comrades in Edinburgh for making my time there a pleasant one, in spite of their irreverent attitude to my research. In particular, I would like to thank Gordon Brewer for providing me with a floor to sleep on during the later stages of the work. Last, but not least, I would like to thank Jo Pearson for typing up the final version. Needless to say, none of these people are to blame for anything that follows. All errors and inadequacies are my responsibility.

CONTENTS

| | | |
|------|---|-----|
| 1. | Introductory Remarks | 1 |
| 1.1. | Character and Scope | 1 |
| 1.2. | Some Theoretical Preliminaries | 3 |
| 1.3. | A Note on Interpretive Semantics | 10 |
| 2. | Two Theories of Pronouns | 17 |
| 2.1. | The Classical Theory | 17 |
| 2.2. | The Bound Variable Theory | 26 |
| 2.3. | A Note on Non-anaphoric pronouns | 37 |
| 3. | Towards a Mixed Theory of Pronouns | 39 |
| 3.1. | Preliminary Remarks | 39 |
| 3.2. | Further Data | 43 |
| 3.3. | Pronouns and Reference | 47 |
| 3.4. | A Note on Feder | 52 |
| 3.5. | First and Second Person Pronouns | 54 |
| 3.6. | Relative Pronouns | 57 |
| 4. | Bound Variables: Structures and Derivations | 65 |
| 4.1. | Existential Structures | 66 |
| 4.2. | Non-existential Structures | 88 |
| 5. | Bound Variables: Further Questions | 112 |
| 5.1. | A Note on Plurality | 112 |
| 5.2. | NP-lowering | 122 |
| 5.3. | The Command Constraint | 133 |
| 5.4. | The Realization of Bound Variables | 145 |
| 5.5. | Bach-Peters Sentences | 152 |
| 6. | Pronouns of Laziness | 159 |
| 6.1. | Definite Descriptions | 159 |

| | | |
|-------|--|-----|
| 6.2. | Referential Pronouns | 167 |
| 6.3. | Pronouns of Laziness with Indefinite Antecedents | 175 |
| 6.4. | A Note on Existence | 181 |
| 6.5. | The Classical Theory Revisited | 190 |
| 7. | The Emerging Picture | 195 |
| 7.1. | Some Conclusions | 195 |
| 7.2. | Some Comparisons | 198 |
| 7.3. | A Note on Chomsky | 200 |
| 7.4. | The Anaporn Relation | 204 |
| 8. | Some More Pronouns | 209 |
| 8.1. | Sentential Pronouns | 209 |
| 8.2. | Intensional Pronouns | 227 |
| 9. | Two Notes | 232 |
| 9.1. | Ambient <u>it</u> | 232 |
| 9.2. | The Structure of NP's | 243 |
| 10. | Taking Stock | 261 |
| 11. | Some Aspects of Adjectives and Adverbs | 267 |
| 11.1. | Preliminary Remarks | 267 |
| 11.2. | Equatives and Comparatives | 273 |
| 11.3. | A Note on <u>the same</u> | 284 |
| 11.4. | Some Comparisons | 287 |
| 12. | Adjectives and Adverbs in Anaphora | 299 |
| 12.1. | <u>so</u> | 299 |
| 12.2. | <u>such</u> | 310 |
| 12.3. | More on <u>as</u> Clauses | 325 |
| 12.4. | <u>like that</u> | 330 |
| 12.5. | <u>then</u> and <u>there</u> | 335 |
| 12.6. | An Idiosyncrasy | 337 |

| | |
|--|-----|
| 13. Prosentential <u>so</u> | 343 |
| 13.1. Preliminary Observations | 343 |
| 13.2. <u>so</u> and <u>it</u> | 349 |
| 13.3. Some Analyses | 356 |
| 13.4. Some Problems | 374 |
| 13.5. Further Constructions | 382 |
| 14. Confirmation and Conjunction | 387 |
| 14.1. Critical Preliminaries | 387 |
| 14.2. Emphatic Conjunction | 392 |
| 14.3. More <u>as</u> Clauses | 407 |
| 15. Miscellaneous Questions | 409 |
| 15.1. Pseudo-pronouns | 409 |
| 15.2. Ambient <u>so</u> | 414 |
| 15.3. In Defence of Single Mothers | 416 |
| 16. Concluding Remarks | 421 |

CHAPTER 1
INTRODUCTORY REMARKS

1.1. Character and Scope

Anaphora has been studied quite extensively over the last ten years. It is far from well understood, however. In fact, there are a host of unresolved questions. This thesis is an attempt to contribute to the resolution of some of them. I will investigate a number of aspects of English anaphora and related phenomena and develop a series of theoretical proposals. These proposals will be based solely on English. I suspect, however, that some of them will have a much wider applicability. Obviously, though, this will only be determined by further research.

What, then, is anaphora? As a preliminary characterization, we can say that two elements, A and B, are anaphorically related if the interpretation of B depends in some way on A. B then is an anaphor and A is its antecedent. On the basis of this characterization, we can say that Brian and he are anaphorically related on one reading of (1).

(1) Brian says he is ill.

Similarly, in (2), we can say that Erica and herself are anaphorically related.

(2) Erica cut herself.

A slightly different case is (3).

(3) Chris wants to play backgammon.

Here, we can say that Chris and the null subject of play are anaphorically related.

This characterization enables us to identify a wide range of anaphoric relations. The following sentences, with the related

elements underlined, illustrate.

- (4) George likes curry, and that's true of Mary too.
- (5) Sam climbed the tree yesterday, and Jim did it today.
- (6) Jim caught typhoid, and it happened to Ruth too.
- (7) Mary thinks Callaghan is a martian, but I don't believe it.
- (8) Carl has a large dog, and a small one.
- (9) Steve is anxious, and he's been so for some time.
- (10) Joan is looking for a tall Italian, but she won't find such an Italian here.
- (11) Dick is delirious, and he's been like that for days.
- (12) Eve was in France in April, and Steve was there in May.
- (13) Ruth was here at six, but Jane wasn't here then.
- (14) Does Brian like Joni Mitchell? I think so.
- (15) Liz plays the violin, and Eve does so too.

I will have something to say about all these relations in the following chapters.

There is one important class of anaphoric relations that I will more or less ignore. This is the class of anaphoric relations that result from deletion processes like VP-deletion, gapping and sluicing. These relations are illustrated in the following.

- (16) Sam likes Buffy Sainte Marie, but Jim doesn't þ.
- (17) Jim plays tennis, and Sam þ cricket.
- (18) Someone attacked the Rector, but we don't know who þ.

I will consider VP-deletion only insofar as it provides evidence about the nature of other anaphoric phenomena. I will not consider gapping or sluicing at all.

The original impetus for this research was an interest in the ways in which elements other than NP's enter into anaphoric relations. I assumed that nominal anaphora was reasonably well understood. It soon became clear to me that this was not the case. As a result

over half of this thesis will be concerned with nominal anaphora. This will be the most important part of the thesis. In the later chapters, however, I will develop some proposals about non-nominal anaphora. I think these will also be of some importance.

1.2. Some Theoretical Preliminaries

Perhaps the main problem facing anyone doing grammatical research is that there is no established paradigm providing a framework within which problems can be formulated and solutions evaluated. For a brief period in the mid sixties Aspects provided such a paradigm. By 1968, however, Chomsky could write that 'At present, the field is in considerable ferment, and it will probably be some time before the dust begins to settle' (Chomsky, 1968). Since then, the dust clouds have simply grown bigger. The researcher is now faced with a variety of competing theoretical perspectives. Most prominent, perhaps, are generative semantics and the extended standard theory, but there is also case grammar, both Fillmore's version (Fillmore, 1968) and Anderson's localist version (Anderson, 1971, 1977), and, in recent years, Montague Grammar (Thomason, 1974, Partee, 1976) and relational grammar (Johnson, 1974, Cole and Sadock, 1977) have had a major impact. These perspectives differ in a variety of ways. It is not always clear, however, whether the differences are real or merely notational. It is not at all easy, then, to compare and evaluate them. Perhaps the dust will eventually settle. For the moment, however, one has to find one's way through the dust clouds as best one may.

Almost all the assumptions of the Aspects paradigm have been

challenged over the last ten years. Even Chomsky's view of grammars as theories of linguistic competence has been called into question. It is arguable that the competence-performance distinction was never very clear. Lakoff (1973a) suggests that three different versions of the distinction are to be found in Aspects. It is psycholinguistic findings, however, that have highlighted the problematic status of the distinction. Some early studies suggested that rules of grammar were employed directly in perceptual processes. At least since Fodor and Garrett (1967), however, it has been clear that there is no simple relation between rules of grammar and perceptual mechanisms. Fodor, Bever, and Garrett (1975:368) conclude that 'both the theoretical and experimental arguments for a perceptual model in which the grammar is concretely recognizable appear dubious'. If the rules and structures that are taken to constitute linguistic competence play no role in linguistic performance, what sort of reality do they have? One view, advanced in Bever and Langendoen (1971), is that they constitute a predictive competence, utilized in predicting new structures and distinct from the mechanisms of speech perception and production. A more radical position is developed in Lakoff and Thompson (1975a, b). They suggest that grammars are simply convenient fictions for representing certain aspects of linguistic processing, and have no independent mental reality. They claim that there is a close correspondence between a version of relational correspondence grammars and the mechanisms of perception and production. Clearly, this is a major departure from the Aspects paradigm.

In what follows, I will ignore this problem. I will assume

that linguistic competence in the sense of linguistic knowledge accessible through the speaker's intuitions is a legitimate object of research. I will take a grammar to be a theory of linguistic competence so understood. If this position turns out to be untenable, and something like Lakoff and Thompson's position proves correct, my proposals will require some recasting. I don't think, however, that their basic validity will be affected.

Another basic assumption of the Aspects paradigm that is challenged by Lakoff and Thompson (and others) is the assumption that there is a distinction between acceptability and grammaticality. In contrast to Lakoff and Thompson, writers like Bever and Langendoen have exploited the distinction much more fully than Chomsky ever did. (See Bever, Katz, and Langendoen, 1976.) They argue that there are both sentences that are unacceptable but grammatical and sentences that are acceptable but ungrammatical. It seems to me that this distinction is quite well motivated. In the following chapters, however, I will largely ignore it. In general, I will use the terms acceptable and grammatical interchangeably. I want to stress, however, that I do not reject the distinction.

What form, then, should grammars take? I will assume that a grammar defines an infinite class of derivations, a derivation being a finite sequence of phrase markers, P_1, \dots, P_n , where P_1 is a logical structure, and P_n a surface structure. I will generally prefer the term underlying structure to logical structure. I want to stress that initial phrase markers are not just 'logical'. They underlie surface structures, and facts about surface structure are relevant to determining their character. A logical structure

represents the basic meaning of a sentence. This must be distinguished from the propositions it expresses, if we understand by this term the logical objects that are the bearers of truth values. Consider here (1).

(1) I am hungry.

This is unambiguous. Clearly, however, it can express many different propositions. There are, of course, sentences that express the same proposition in all contexts. (2) is an obvious example.

(2) Beavers build dams.

Many sentences, however, are like (1). Following Stalnaker (1970), I assume that it is part of a theory of pragmatics to characterize the ways in which the propositions a sentence expresses depend on contextual factors. I will touch on one aspect of this question in Chapter 6.

Following Lakoff (1971), I assume that grammars involve both local and global derivational constraints. Local derivational constraints or transformations specify ways in which adjacent phrase markers may differ. Global derivational constraints specify conditions which certain non-adjacent phrase markers must meet. Following, for example, R. Lakoff (1972), I assume that various rules will involve contextual conditions. More generally, I assume that every derivation will be associated with a specification of the contexts in which the sound-meaning correlation it characterizes is possible. I will exploit this assumption in the later chapters.

One important assumption that I will make is that a simple unambiguous sentence can have more than one underlying structure. This assumption is particularly prominent in chapter 4. I want to stress that it is not a new assumption. It is implicit, for

example, in any framework in which NP's can originate outside the sentences in which they appear in surface structure. A well known example is that of McCawley (1970a). For McCawley, Cicero can originate either inside or outside the complement in a sentence like (3).

(3) John believes that Cicero denounced Catilline.

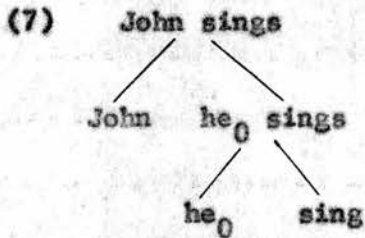
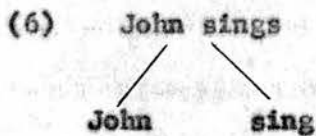
Clearly, this corresponds to a real ambiguity. In the first case, the identification of the individual who denounced Catilline as Cicero is John's. In the second case, it is the speaker's. Cicero can also originate either inside or outside the complement in a sentence like (4).

(4) I believe that Cicero denounced Catilline.

Here, however, there is no ambiguity. The complement represents the speaker's assessment of reality. Thus, Cicero has the same status whether it originates inside or outside the complement. It is clear, then, that the assumption that an unambiguous sentence can have more than one underlying structure is not new.

It is perhaps worth noting that an analogous assumption is made in Montague grammar. In Montague grammar, an unambiguous sentence can have more than one analysis tree. The main reason for this is that terms (i.e. NP's) can be introduced directly or substituted for variables. (5), then, will have (6) and (7) as analysis trees.

(5) John sings.



Clearly, these do not correspond to distinct readings.

There are some further points that I must make about underlying structures. Firstly, I assume, with Langacker (1976), that underlying structures are not universal. My discussion of 'ambient' there and 'ambient' it in chapters 4 and 9 will provide evidence for underlying structures that are less 'deep' than those commonly assumed. It is fairly clear that such structures cannot be universal. Secondly, I assume that sentences can have the same underlying structure if they have the same truth conditions. I assume, however, that sentences with the same underlying structure may differ in pragmatic significance. In chapter 4, I will suggest that sentences like (8) and (9) can have the same underlying structure, although they differ in pragmatic significance.

(8) An Italian Killed his wife.

(9) There was an Italian who killed his wife.

I do not assume that sentences must have the same underlying structures if they have the same truth conditions. A simple active-passive pair like (10) and (11) have the same truth conditions.

(10) Morgoth killed Fingolfin.

(11) Fingolfin was killed by Morgoth.

I assume, however, that there are structures underlying (10) that do not underlie (11) and vice-versa. It is possible, in fact, that

such sentences will have no structures in common. I will discuss this question in chapter 4. I also assume that underlying structures contain abstract semantic elements, not lexical items. I assume that lexical items are introduced fairly late, perhaps at shallow structure, the output of the cycle. I will have little to say about lexical insertion until the later chapters. For this reason, I will generally ignore the normal practice of representing semantic elements with capital letters. Finally, I assume that underlying structures are ordered, and that the underlying order of English is SVO.¹

There are quite plausible alternatives to some of the assumptions I am making. It is quite possible, for example, that underlying structures should be unordered and ordering introduced fairly late, perhaps at shallow structure. If unordered underlying structures were assumed, it might be possible to replace some of the movement rules invoked in chapters 11 and 12 by alternative linearization rules. It is also possible that derivations should not consist of phrase markers. One alternative is that they should consist of dependency structures (Hays, 1964, Robinson, 1970, Anderson, 1971, 1977). Another is that they should consist of categorial structures (Lyons, 1966, Lewis 1970, Cresswell, 1973). A third possibility is that they should consist of relational networks. This, of course, is the position of relational grammar. Finally, it is possible that we should dispense with derivations

- - - - -

1. It is by no means certain that underlying structures are ordered. If they are, however, it seems clear that English must be SVO and not VSO, as proposed by McCawley (1970b). See Berman (1974).

altogether. It is possible that sentence structure should be represented by a single complex structure rather than by a sequence of relatively simple structures. This is the central assumption of Hudson's (1976) 'daughter dependency grammar'. If any of these possibilities prove correct, my proposals will require some recasting. I think, though, that their basic validity will generally remain.

1.3. A Note on Interpretive Semantics

The theoretical framework that I am assuming here is essentially a version of generative semantics. This does not mean, however, that I undervalue work in the interpretive semantics tradition. In fact, I am influenced by such work in a number of ways. I think, however, that the significance of interpretivist claims is often unclear. I want, then, to say something about some of these claims.

The central claim of interpretive semantics in its various versions is that there is a level of deep structure distinct from logical structure or semantic interpretation. In all but the most recent version of interpretive semantics, deep structure is a level between semantic representation and surface structure with the following characteristics.

- (1)a. It is the level at which lexical insertion applies.
- b. It is input to the cycle.
- c. It is related to semantic representation by semantic interpretation rules and lexical entries.

In the most recent version of interpretive semantics, deep structure has a somewhat different character, as I will shortly indicate.

As Newmeyer (1976) points out, it is natural to interpret semantic interpretation rules and lexical entries as precyclic transformations. It seems, in fact, that interpretivists have assumed quite complex precyclic transformations. Jackendoff (1972) proposes the following lexical entry for the transitive verb open.

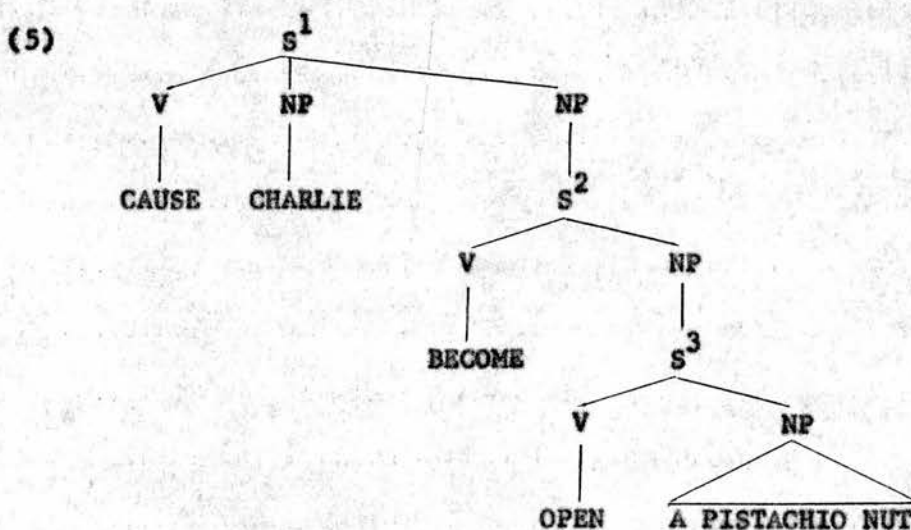
- (2)
$$\left[\begin{array}{l} \text{open} \\ +V \\ +NP^1 \quad NP^2 \\ \text{CAUSE}(NP^1, \left[\begin{array}{l} \text{CHANGE} \\ \text{physical} \end{array} \right] (NP^2, \text{NOT OPEN, OPEN})) \end{array} \right]$$

This assigns (3) the functional structure in (4) (functional structure being the central component of a semantic representation).

- (3) Charlie opened a pistachio nut.

- (4) CAUSE(CHARLIE, $\left[\begin{array}{l} \text{CHANGE} \\ \text{physical} \end{array} \right]$ (A PISTACHIO NUT, NOT OPEN, OPEN))

Clearly, (4) is quite different from the deep structure of (3) (which will be much like its surface structure). Thus, (2) embodies a quite complex mapping. It is worth comparing this with the kind of analysis a generativist might propose. Within generative semantics, the obvious source for (3) is something like (5) (assuming for the moment predicate-first word order).



The derivation of (3) from (5) will involve predicate raising on

S^2 and S^1 and subject-formation. Clearly, equally complex processes are embodied in (2).

Various transformations that have been assumed by generativists have been rejected by interpretivists. Frequently, however, analogues of these transformations appear in the semantic component. It is natural, then, to see interpretivists not as rejecting these rules but as claiming that they are precyclic. Two such rules are predicate raising and nominalization. It has generally been assumed by generativists that these are cyclic. Newmeyer (1976) argues, however, that they do not interact with any cyclic rules, and therefore that they are precyclic. Clearly, as he points out, his argument provides significant support for interpretivist conceptions.

If rules like predicate raising and nominalization were cyclic, the case for postcyclic lexical insertion would be very strong. If they are in fact precyclic, the case is much weaker. In fact, the interpretivist view that lexical insertion is precyclic becomes quite plausible. I think, however, that there are still reasons for rejecting it. I will suggest in chapter 12 that as and such in sentences like the following are realizations of to the extent.

(6) Randall isn't as sound a batsman as Boycott.

(7) Randall isn't such a sound batsman as Boycott.

Whether to the extent is realized as as or such depends on its position, specifically on whether it is followed by an adjective or an NP. Its position is the result of various (presumably) cyclic rules. I think, then, that the view that lexical insertion is precyclic is probably untenable.

So far my remarks apply equally to the standard theory and the

extended standard theory. I must now say something specifically about the extended standard theory. The central claim of the theory is that some rules of semantic interpretation apply to surface structure or to certain intermediate structures. Following in essence Lakoff (1971) and McCawley (1974b), I would suggest that such rules are in effect precyclic transformations with associated global constraints. For example, a rule which says that the scope of quantifiers corresponds to their surface order is equivalent to a precyclic lowering rule plus a constraint on surface structure. Closely associated with the claim that some rules of semantic interpretation apply to surface structure is the claim that some transformations 'change meaning'. Following McCawley (1974b), I would suggest that a transformation changes meaning if some aspect of the meaning of the sentence in whose derivation it applies is predictable from its output but not from its input. For this to be the case, the input must appear in the derivation of some other sentence with a different meaning or a different range of meanings. I think that transformations can change meaning in this sense. I doubt, however, whether the phenomenon is as widespread as advocates of the extended standard theory have assumed. I will touch on this question in chapters 5 and 13.

I must now consider the most recent version of interpretive semantics, the revised extended standard theory (REST) of Chomsky (1975, 1976). The REST claims that all semantic interpretation is based on the 'enriched' surface structure that is a consequence of the trace theory of movement rules. Thus, there is no direct relation between deep structure and semantic interpretation. It is

not at all easy to compare the theory with generative semantics. I think, however, that there are good reasons for rejecting it.

The REST claims, in effect, that surface structure is in all respects closer to semantic representation than any other level of structure. Only if this is the case, can semantic interpretation be based solely on surface structure without unnecessary complexity. It is easy to show that this is not the case, and that semantic interpretation based solely on surface structure has to 'undo' the work of various transformations. In his sketch of the theory, Chomsky pays particular attention to Wh-questions like (8).

(8) Who did Sauron ensnare?

For Chomsky, the surface structure of (8) will be something like (9) (where t is a trace left by who), and its semantic representation, or 'logical form', as Chomsky terms it, will be something like (10).

(9) Who did Sauron ensnare t

(10) For which person x, Sauron ensnared x

Clearly, these structures are quite similar. In particular, the position of who in surface structure is the same as the position of the corresponding quantifier phrase in logical form. Here, then, the theory looks quite plausible. Notice, however, that semantic interpretation has to undo the work of subject-verb inversion. Even here, then, the theory faces a problem. Other Wh-questions pose more serious problems. Consider, for example, (11).

(11) In whom did Aragorn confide?

Here, the surface structure will be something like (12), and the logical form something like (13).

(12) In whom did Aragorn confide t

(13) For which person x , Aragorn confided in x

Here again, semantic interpretation undoes the work of subject-verb inversion. It also partially undoes the work of Wh-movement by moving the preposition in back to its original position. Much the same situation arises with (14).

(14) Whose fate did Galadriel predict?

This will have something like (15) as its logical form.

(15) For which person x , Galadriel predicted x 's fate

Here, then, semantic interpretation moves the genitive marking and fate back to their original position. Again, then, it partially undoes the work of Wh-movement. It seems, then, that Wh-movement provides important evidence against the theory.²

At least two other rules provide evidence against the REST. The first is NP-preposing. This derives (16) from (17).

(16) A unicorn appears to be approaching.

(17) Δ appears [_Sa unicorn to be approaching]_S

For many speakers, (16) is ambiguous. On one reading, it implies the existence of a unicorn. On the other, there is no such implication. On the first reading, a unicorn will presumably have much the same position in logical form as in surface structure. On the second reading, however, it will have to be inside the complement of appear. On this reading, then, semantic interpretation will undo the work of NP-preposing. The second rule is adverb preposing. In the simple case, this moves an adverb to the front of its clause,

- - - - -

2. Chomsky (1977a) actually considers an example like (14).

Surprisingly, he does not seem to see any problem in it.

giving pairs of sentences like the following.

(18) Mary was here yesterday.

(19) Yesterday, Mary was here.

There are also cases, however, where the adverb is moved to the front of a higher clause. The following illustrate.

(20) I think Mary was here yesterday.

(21) Yesterday, I think Mary was here.

How exactly adverbs should be represented in logical form is not a simple matter. It seems fairly clear, however, that the interpretation of sentences like (21) will undo the work of adverb preposing. It seems, then, that these rules provide quite strong evidence against the REST. I think, then, that the REST is untenable.

I have now considered the three main versions of interpretive semantics. There is one general point that I must make in conclusion. Interpretivists have frequently claimed that the kinds of underlying structure assumed within generative semantics are not 'syntactically motivated'. There is a problem here. Presumably, by syntactically motivated is meant 'motivated by facts of syntactic well-formedness'. Thus, for it to be meaningful to say that a particular structure is or is not syntactically motivated, there must be facts of syntactic well-formedness independent of any grammar. Both Chomsky and Jackendoff, however, have suggested that whether a particular deviant sentence is syntactically ill-formed or semantically uninterpretable should be decided by the grammar. Thus, for Chomsky and Jackendoff, there are no facts of syntactic well-formedness independent of any grammar, and it makes no sense to say that a particular structure is or is not syntactically motivated. I don't think, then, that 'syntactic motivation' identifies any real issues between interpretive and generative semantics.

CHAPTER 2

TWO THEORIES OF PRONOUNS

We can begin our investigation of pronouns by considering two quite widely canvassed theories, which I will call the classical theory and the bound variable theory. The former has been quite extensively criticized. The latter has so far received little criticism. I will argue that both are inadequate. I will be concerned, however, not just to show this, but also to establish the exact nature of their inadequacy. This should give some insight into the form a more viable theory might take.

2.1. The Classical Theory

By the classical theory I mean the kind of theory assumed in Ross (1969a). This theory has its roots in Lees and Klima (1963), and owes much to Chomsky (1965). The theory has been subjected to a wide range of criticisms, and, although there has been some attempt at reply, it is doubtful whether anyone would not accept the theory. The inadequacy of the theory is, I think, well established. It is important, however, to establish the nature of its inadequacy.

I take the classical theory to involve the following claims.

(A) Pronouns are coreferential with their antecedents.

(B) Pronouns have the same underlying form as their antecedents.

These are separate claims. It is quite possible to make one without making the other. Lakoff (1976) makes only the first claim. Lees and Klima made only the second. They were only concerned with the

distribution of various types of pronoun, not with their interpretation. They proposed that pronouns derive from the second of two formally identical NP's, reflexives resulting where the two NP's are in the same simplex sentence, ordinary pronouns resulting elsewhere. Unlike Lees and Klima, Chomsky (1965) was concerned with both the distribution and the interpretation of pronouns. He noted the possibility of sentences like (1) and (2), in which the NP's are normally interpreted as distinct in reference.

(1) John hurt John.

(2) The boy hurt the boy.

In the light of such sentences, he suggested that pronominalization should require identity of reference as well as formal identity. He proposed, therefore, that every referential expression should be assigned an integer, and that expressions with identical integers should be understood as having the same reference. Given such integers, one can require that pronominalization and reflexivization only apply where the two NP's have identical integers.

Ross (1969a) was primarily concerned with the ordering of pronominalization. In particular, he sought to show that it is a cyclic rule. His argument has relevance to various analyses of pronouns not only to the classical theory. He assumes, however, that pronouns are introduced by the following rule.

$$\begin{array}{l}
 (3) \text{ SD.} \quad X \left\{ \begin{array}{c} \text{NP} \\ -\text{PRO} \end{array} \right\} - Y \left\{ \begin{array}{c} \text{NP} \\ -\text{PRO} \end{array} \right\} - Z \\
 \quad \quad \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \xrightarrow{\text{OBLIG}} \\
 \text{SC. a. } 1 \quad 2 \quad 3 \quad \left\{ \begin{array}{c} 4 \\ +\text{PRO} \end{array} \right\} \quad 5 \\
 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \text{or} \\
 \text{b. } 1 \quad \left\{ \begin{array}{c} 2 \\ +\text{PRO} \end{array} \right\} \quad 3 \quad 4 \quad 5
 \end{array}$$

Conditions

- (1) $2 = 4$
- (ii) The structural change shown on line a. above,
FORWARDS PRONOMINALIZATION, is subject to no conditions.
- (iii) The structural change shown on line b. above,
BACKWARDS PRONOMINALIZATION, is only permissible if
the NP in term 2 of the structural description (SD) is
dominated by (i.e. contained in) a subordinate clause
which does not dominate (contain) an NP in term 4 of the
SD.

As the conditions make clear, Ross's rule allows not only forwards pronominalization, but also backwards pronominalization, which neither Lees and Klima nor Chomsky considered. Ross was not concerned with reflexives, but a parallel rule to introduce reflexives would be the following based on Burt (1971).

- (4) SD. X - NP - Y - NP - Z OBLIG
 1 2 3 4 5 \implies
- SC. 1 2 3 { $\begin{matrix} 4 \\ +REF \end{matrix}$ } 5

Conditions

- (1) $2 = 4$
- (ii) 2 and 4 are in the same simplex sentence.

It is rules like (3) and (4) that I take to constitute the classical theory.

Perhaps the best known argument against the classical theory is the Bach-Peters paradox (Bach, 1970). This seeks to show that claim B. is incompatible with the basic assumption of transformational theory that phrase markers are finite. Consider (5).

(5) The pilot who shot at it hit the mig that chased him.
 If every pronoun derives from a structure identical to its antecedent, it and him in (5) must be derived from (6) and (7), respectively.

(6) the mig that chased him

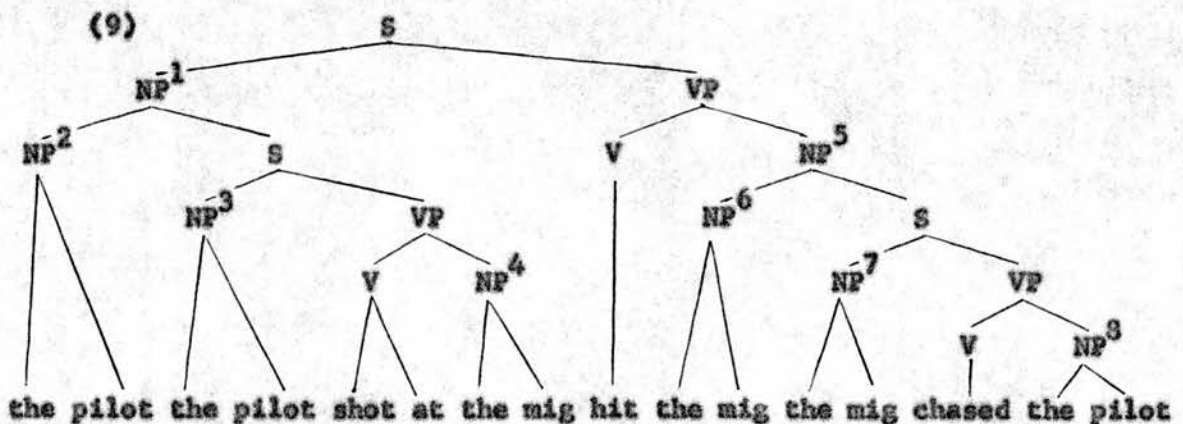
(7) the pilot who shot at it

But (6) and (7) themselves contain the pronouns him and it, so they must in turn be derived from (7) and (6). Clearly, this can go on indefinitely. It seems, then, that sentences like (5) present an insuperable problem for the classical theory.

Dougherty (1969, fn. 8.) cites a suggestion of Chomsky's which appears to offer a solution to the Bach-Peters paradox within the classical theory. This involves the assumption that relative clauses appear in the structure in (8) and that the lower of the two NP's may serve as an antecedent.



Given this assumption, (5) could be derived from (9).



In the derivation of (5), NP^2 would pronominalize NP^8 , and NP^6 would pronominalize NP^4 . A similar approach is discussed at length by Karttunen (1971). He assumes that the antecedents for

(10) could itself be expanded in the same way with (5) being derived through additional applications of pronominalization. This is not, I think, a complete refutation of such approaches to the Bach-Peters paradox. If one permits unambiguous sentences to have more than one source, as I will want to, it is not obvious that one should rule out the possibility of unambiguous sentences with an infinite number of sources. It certainly casts doubt on such approaches, however.

The crucial problem with Chomsky's suggestion is that it involves an untenable analysis of definite descriptions containing relative clauses. A definite description of the form the + N is used when there is just one member of the set denoted by N which the hearer will understand the speaker as referring to. It refers to the contextually unique member of some set.¹ A definite description containing a restrictive relative clause refers to the contextually unique member of a subset of a certain set. (12), for example, refers to the contextually unique member of those men who know the answer.

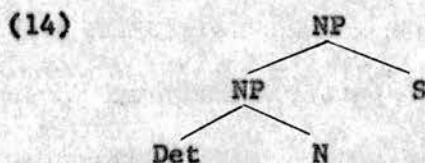
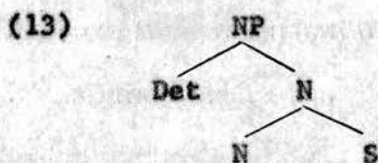
(12) the man who knew the answer

We can say, then, that a restrictive relative clause restricts the extension of a noun. This suggests that the definite article attaches to the combination of noun and relative clause, as in (13)

- - - - -

1. Obviously, this characterization only applies to definite descriptions containing count nouns. A definite description containing a mass noun is used when there is just one portion of the material denoted by the noun that the hearer will understand the speaker as referring to. It refers to the contextually unique portion of some material.

perhaps, and not the noun alone, as in (14). (See Quine, 1960, S. 23; and Partee, 1973b.)



(14), however, might be appropriate for non-restrictive relatives.² Chomsky's suggestion depends crucially on structures like (14). Specifically, it requires the lower NP to act as an antecedent. If there is no such NP, his suggestion collapses.

Karttunen's response to the Bach-Peters paradox does not depend on structures like (14). It assumes, however, that the antecedents of it and him in (5) are the deleted subject of chased and who, respectively. This assumption is completely counterintuitive. I think, then, that there is no viable alternative to Bach's assumption that the antecedents of it and him are the mig that chased him and the pilot who shot at it, respectively. Thus, Bach-Peters sentences provide crucial evidence against claim (b).

Bresnan (1970) suggests that sentences with indefinite antecedents provide evidence against claim (B). As she notes, the classical theory assumes that (15) derives from (16).

(15) Some students think that they are running the show.

(16) Some students think that some students are running the show.

- - - - -

2. I will return to this matter in 3.6.

Given such an analysis, it will be possible for cyclic there-insertion to apply in the embedded sentence, yielding (17).

- (17) Some students think that there are some students
running the show.

Pronominalization can then apply to yield the ungrammatical (18).

- (18) * Some students think that there are they running the
show.

It looks, then, as if sentences like (15) provide evidence against claim (B). There is more to be said about such sentences, however. Notice that (16) cannot have the same meaning as (15). One might suggest that the two indefinite NP's in (16) differ in reference, whereas the indefinite NP and the pronoun in (15) have the same reference. There is a problem here, however. As Geach (1962) points out, if a term in a proposition has reference, it must be possible to specify its reference independently of the truth value of the proposition. This is not possible with indefinite NP's. One might suggest that some students in (15) refers to the students who think they are running the show. However, if (15) is false, there will be no such students. It seems, then, that indefinite NP's do not have reference. Therefore, we cannot say that the two NP's in (16) differ in reference. More importantly, we cannot say that the indefinite NP and the pronoun in (15) have the same reference. Thus, sentences like (15) provide evidence against claim (A) as well.

Dougherty (1969) and others have suggested that sentences like the following provide evidence against claim (B).

- (19) Every doctor thinks he is overworked.
(20) Noone voted for himself.
(21) Each of the boys gave his name.

In the classical theory, these will derive from the following.

(22) Every doctor thinks every doctor is overworked.

(23) Noone voted for noone.

(24) Each of the boys gave each of the boy's name.

Clearly, such sources are semantically quite inappropriate. It seems, then, that sentences like (19) - (21) provide evidence against claim (B). What, then, of claim (A)? It might be argued that NP's like every doctor, noone, and each of the boys are not referring expressions. I think, however, that they are a kind of referring expression. I would suggest that every doctor in (19) refers to some set of doctors. Support for this view is provided by (25), in which the pronoun refers to the same set.

(25) Every doctor thinks they are overworked.

Similarly, I would suggest that noone in (20) refers to some set. In (26), one has a pronoun referring to the same set.

(26) Noone was asleep. They were all singing songs.

Finally, I would suggest, perhaps less controversially, that each of the boys in (21) refers to some set of boys. Support for this view is provided by (27).

(27) Each of the boys said they were ready.

I think, then, that it is reasonable to regard these NP's as referring expressions. It seems clear, however, that the pronouns do not have the same reference. He in (19) does not refer to a set of doctors, himself in (20) does not refer to any set, and his in (21) does not refer to a set of boys. I think, then, that sentences like (19) - (21) provide evidence against both the classical theory's claims.

It is clear that the classical theory is not an adequate theory of pronouns. Neither of its claims is generally valid. However, claim (A), at least, seems to be true of many pronouns. This fact must be accommodated in any alternative theory.

2.2. The Bound Variable Theory

I can now consider what I am calling after Wasow (1975) the bound variable theory. Variants of this theory have been advanced by various linguists. I take it to involve the following features.

- (A) In underlying structure, NP positions are filled by variables, with identical variables for NP's which are anaphorically related.
- (B) Each variable is bound to a specification of certain lexical or semantic material.
- (C) A transformation inserts the binding material into the position of one of the variables which it binds.
- (D) The remaining variables are realized as appropriate pronouns.
- (E) An NP can only bind a variable which is in its scope, i.e. which it asymmetrically commands.³

I will call the transformation mentioned in (C) 'NP-lowering'. Wasow includes only the first four features in his characterization of the theory. It seems appropriate, however, to include the fifth feature as well.

- - - - -

3. A asymmetrically commands B if the first S node above A also dominates B but the first S node above B does not dominate A.

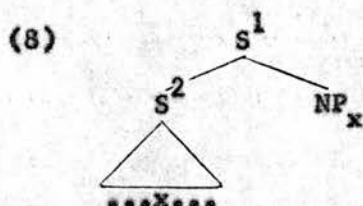
The earliest example of something like the bound variable theory is the theory sketched in McCawley (1970a). Wasow takes this to be an example of the bound variable theory. Strictly speaking, however, it is not. McCawley assumes that NP positions are filled not by variables but by referential indices, which are constants. The rationale for this assumption is far from clear. If it is dropped, the theory becomes a straightforward example of the bound variable theory. Clear examples of the theory are provided by Harman (1970), Keenan (1972), and Bonney (1976). We can interpret the theory developed in Montague (1973) as a further example. Montague has a rule combining a term and an open sentence by substituting the term for a variable in the sentence and converting any other variable into a pronoun of the appropriate form. That this is a notational variant of the bound variable theory is made clear in Cooper and Parsons (1976). Wasow takes the theory of Fauconnier (1971) to be a further example of the bound variable theory. In fact, however, Fauconnier's theory differs from the bound variable theory in a number of ways. Like McCawley, Fauconnier has NP positions filled by referential indices. He also, however, has many full NP's originating in their surface positions. In addition, his theory does not involve assumption (E). I conclude, then, that it is not an example of the bound variable theory.

The bound variable theory can be illustrated briefly. Within the theory, (1) and (2) will derive from something like (3).

- (1) Before John went to bed, he cleaned his teeth.
- (2) Before he went to bed, John cleaned his teeth.

The theory appears, then, to be an advance on the standard theory.

The major published critique of the standard theory is that of Wasow (1975). Wasow's critique centres on the fact that the theory, as normally formulated, allows cyclic rules to apply before NP-lowering, and hence before pronouns and antecedents are distinguished. NP-lowering applies in structures like (8).



If it is a cyclic rule, as McCawley and Harman at least assume, cyclic rules will apply on S^2 before NP_x is lowered on S^1 . They will thus apply before pronouns and antecedents are distinguished. Wasow seeks to show that pronouns and antecedents must be distinguished during the cycle. His arguments are, I think, not that strong. I will discuss them in chapter 5. For the time being, we can note that, even if Wasow's position is accepted, it does not necessitate the abandonment of the bound variable theory, only its revision. We can simply propose that NP-lowering is a precyclic rule. Wasow, in effect, proposes a precyclic rule himself. He writes that:

If we wish to have the semantic representation of pronouns look like variables in logic, we can introduce a semantic rule R which will represent a set of anaphorically related NP's as variables bound by a common operator. (1975:381)

I think the obvious interpretation of such a rule is as a precyclic transformation. We can, then, accept Wasow's position without abandoning the bound variable theory.

Although Wasow's arguments do not refute the bound variable theory, other arguments do. An obvious problem is posed by

pronouns with antecedents in earlier sentences, as Jackendoff (1972:283) points out. Consider, for example, the following dialogue.

(9) A: Sam interviewed Miss World.

B: Did she say much?

The antecedent of she is Miss World, but she cannot be represented as a variable bound by Miss World, since it is outside the scope of that NP. One might suggest that the scope of the NP should be extended to include B's question as well as A's statement. Bonney (1976) argues for such an approach. Clearly, however, this would involve a major departure from traditional notions of scope. Furthermore, it is not at all clear how it could be done. A different response is to assume that pronouns with antecedents in the same sentence derive from bound variables, but that other pronouns have a different source. This is essentially the position of Cresswell (1973, Ch. 11.) (though he also talks about the possibility of a 'paragraph semantics' that would allow pronouns like she in (9) to be derived from bound variables). I will argue, against this position, that there are pronouns with antecedents in the same sentence that cannot be derived from bound variables.

Notice firstly that the bound variable theory makes the following prediction.

(10) If, for any reason, a particular NP cannot asymmetrically command the variable underlying some pronoun in underlying structure, it cannot be the antecedent of that pronoun.

If this prediction were borne out, the theory would receive

significant support. Unfortunately, it is not borne out.

Consider firstly (11).

(11) Leon wants to catch a fish, and I want to cook it.

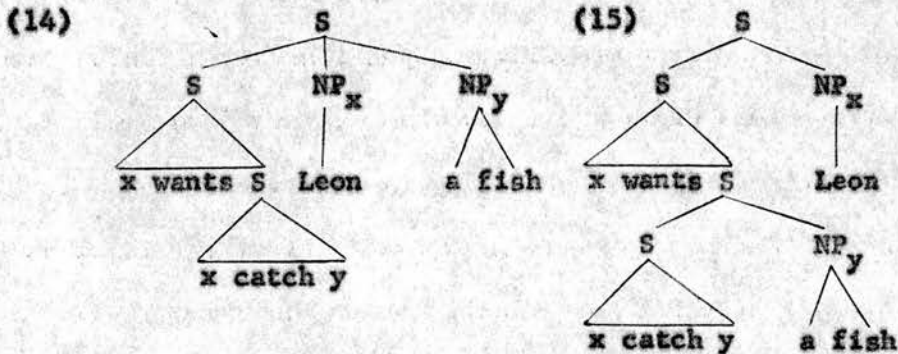
The first clause on its own is ambiguous, having the specific reading (12), and the non-specific reading (13).

(12) There is a fish that Leon wants to catch.

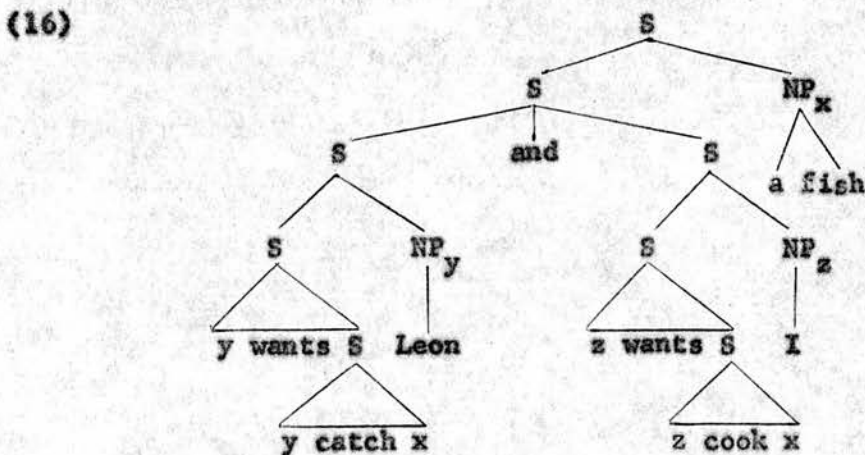
(13) Leon wants there to be a fish that he catches.

On the first reading, it can be derived from a structure in which a fish is located outside the complement of want. On the second, it can be derived from one in which a fish is inside the complement.

(14) and (15) illustrate.



Notice now that, as Jackendoff (1972) notes, the complete sentence is unambiguous, if a fish is understood as antecedent of it. In this case, a fish must be specific. This is what the bound variable theory predicts. The obvious analysis for (11) within the bound variable theory is something like (16).



As the theory requires, a fish here asymmetrically commands the second

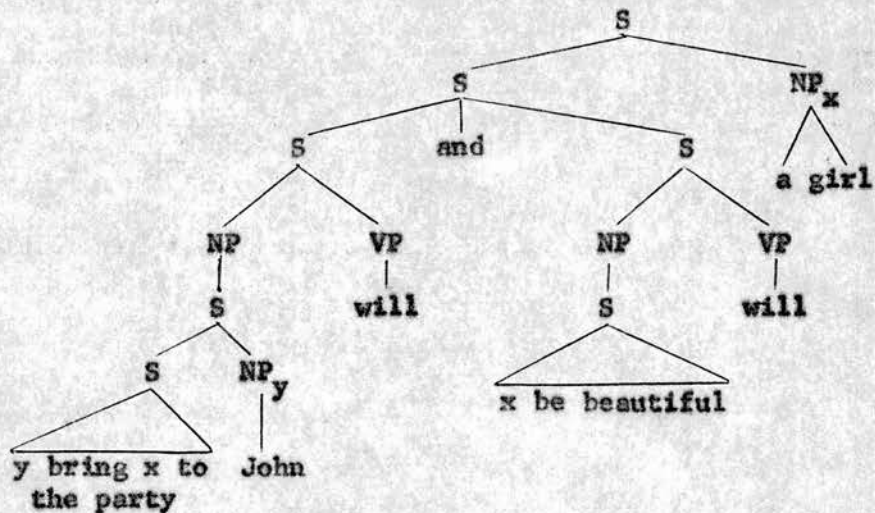
occurrence of the variable x , which is realized as it. It is outside the complement of the first want, where it appears on the surface. Therefore, it is understood as specific. If a fish originated inside the complement of the first want, it could not asymmetrically command the variable which is realized as it, and, therefore, it could not be antecedent of it. Sentences like (11) seem, then, to provide some support for the bound variable theory.

Unfortunately, problems arise with sentences like (17).

(17) John will bring a girl to the party and she will be beautiful.

The first clause of (17) is ambiguous in much the same way as the first clause of (11). There may or may not be a specific girl that the speaker has in mind. As Jackendoff notes, this ambiguity remains when a girl is understood as antecedent of she. This is contrary to the predictions of the bound variable theory. Within the theory, if one assumes that will is a verb taking a subject complement and triggering raising, the obvious analysis for (17) within the bound variable theory is something like (18).

(18)



a girl here asymmetrically commands the second occurrence of the variable x , as the theory requires. Since it is not inside any

complement, it must be understood as specific. The problem is that the theory provides no analysis for the interpretation of (17) in which a girl is nonspecific. If a girl is nonspecific, it must originate inside the complement of the first will. But, if it originates in this position, it cannot asymmetrically command the variable that is realized as she. The theory, then, falsely predicts that a girl cannot be antecedent of she, if it is nonspecific.

Much the same problem arises with (19), discussed by Geach (1972).

(19) Hob thinks a witch has blighted Bob's mare, and Nob wonders whether she killed Cob's sow.

a witch here can be specific or nonspecific. In the former case, it will originate outside the complement. In the latter, it will originate inside. In both cases, it can be antecedent of she, but only in the former can it asymmetrically command the variable underlying she.

A further problem arises with sentences like (20), to which Cresswell (1973) draws attention.

(20) If someone works, he sleeps.

On the most obvious reading of (20), someone is nonspecific. On this reading, someone will have to originate inside the conditional clause. But, if it originates inside the conditional clause, it cannot asymmetrically command the variable that is realized as he. Again, then, we have a reading that the theory predicts should be impossible. It seems, then, that we have significant exceptions to (10). Given such exceptions, the theory appears rather dubious.

A second prediction, which is essentially a special case of (10), is (21).

(21) No NP inside an island may be the antecedent of a pronoun outside that island.

I assume that lowering rules are subject to island constraints in the sense of Ross (1967) and much subsequent work. Ross did not discuss the relation of island constraints to lowering rules, but various linguists, e.g. Lakoff (1970b) and Postal (1974b), have argued that lowering rules are as much subject to island constraints as extraction rules. Lakoff and Postal both seek to show that various scope phenomena are naturally explained as the result of the interaction of lowering rules and island constraints. The facts are not always as clear as they might be (Liddell, 1975), but their proposals are broadly attractive. In the bound variable theory, every NP asymmetrically commands all the variables it binds in underlying structure. But no NP inside an island asymmetrically commands any element outside that island. Therefore, any NP inside an island that is antecedent of a pronoun outside that island must have been lowered into the island. But, if lowering rules are subject to island constraints, this is impossible. Hence (21).

There are various sentences which appear to provide support for (21). Consider, for example, the following from Postal (1970, fn. 14.).

(22) * The fact that every gorilla has a tail amuses him.

(23) * The girl who visited each state hated it.

In the bound variable theory, these would derive from something like (24) and (25), respectively.

(24) [_S the fact [_S that x has a tail]_S amuses x]_S [every gorilla x]

(25) [_S the girl [_S who visited x]_S hated x]_S [each state x]

In the derivation of (22) and (23), NP-lowering will violate the

complex NP constraint. Consider also the following.

(26) * That every candidate was interviewed surprised him.

(27) * That John saw a girl annoyed her.

(28) * That some demonstrators were arrested worried them.

In the bound variable theory, these would derive from (29) - (31), respectively.

(29) [_S[_S that one interviewed x]_S surprised x]_S [every candidate x]

(30) [_S[_S that John saw x]_S worried x]_S [a girl x]

(31) [_S[_S that one arrested x]_S worried x]_S [some demonstrators x]

In each case here, NP-lowering will violate the sentential subject constraint. There appears, then, to be some support for (21).

Unfortunately, exceptions to (21) are numerous. Firstly, there are exceptions involving definite NP's. A definite NP inside an island can quite generally serve as antecedent of a pronoun outside that island. Contrasting with the examples above, we have the following.

(32) The fact that the gorilla has a tail amuses him.

(33) The girl who visited the 49th state hated it.

(34) That the first candidate was interviewed surprised him.

(35) That John saw the girl annoyed her.

(36) That the demonstrators were arrested worried them.

There are also examples with indefinite NP's. Consider (37) (an example of Wasow's) and (38).

(37) A man who discovered that some burglars were in his house was shot by them.

(38) The man who caught a unicorn sold it to the zoo.

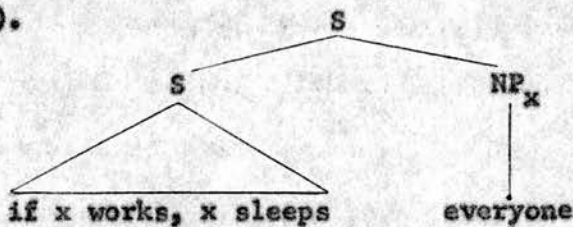
Notice also (39).

(39) That some demonstrators were arrested doesn't mean they will be charged.

The only difference between (39) and (28) is that the pronoun does not command its antecedent in the former whereas it does in the latter. Yet the former, unlike the latter, seems perfectly acceptable. It seems, then, that the second prediction that follows from the bound variable theory is not generally valid.

I want now to return briefly to sentences like (20). Cresswell suggests that the dilemma they pose can be resolved by taking someone in such sentences to represent a universal quantifier. Following this suggestion, we might propose to derive (20) from something like (40).

(40).



This means something like (41).

(41) Everyone is such that if he works he sleeps.

This is equivalent to (20). Semantically, then, the suggestion seems to work. It does, of course, involve taking someone as representing both an existential and a universal quantifier. Other things being equal, this is an undesirable position. But other things might not be equal. I will suggest below, in chapter 5, that any represents both an existential and a universal quantifier. It appears, then, that sentences like (20) might not provide evidence against the bound variable theory after all. There is, however, a serious problem with Cresswell's suggestion. Conditional clauses are islands, as

the ungrammaticality of (42) shows.

(42) * Who if Sam sees will he let me know.

Thus, the suggestion involves lowering into an island. It must, therefore, be rejected. Thus, sentences like (20) do indeed provide evidence against the bound variable theory.

It is clear that the bound variable theory, like the classical theory, is not an adequate theory of pronouns. It cannot handle pronouns with antecedents in earlier sentences. Nor can it handle various pronouns with antecedents in the same sentence. Nonetheless, the theory does have certain virtues. In particular, it can handle sentences which provide evidence against the classical theory. This must be borne in mind in the search for a more viable theory.

2.3. A Note on Non-anaphoric Pronouns

I have said nothing so far about non-anaphoric pronouns. This is quite natural, since, insofar as such pronouns are considered at all by proponents of the two theories, they are considered as an afterthought. Clearly, however, non-anaphoric pronouns are important. It is necessary, then, to say something about them.

It seems likely that many proponents of the two theories have seen them as theories of anaphoric pronouns. In any event, it is fairly clear that non-anaphoric pronouns pose problems for them. By definition, non-anaphoric pronouns lack antecedents. Clearly, then, they cannot be the result of pronominalization. It seems equally clear that they cannot be bound variables. Bonney (1976) suggests, however, that they can be. We have seen that he proposes to allow a variable to be bound by an NP in an earlier sentence. He also proposes to allow a variable to be bound by an

NP that is somehow implicit in the context. I suggested that the former proposal involves a major departure from traditional notions of scope. This is even more true of the latter proposal. It effectively deprives the notion of a bound variable of any content. I think, then, that, if the notion means anything, non-anaphoric pronouns cannot be bound variables.

I think we can conclude that, in addition to their other inadequacies, neither the classical theory nor the bound variable theory can provide an adequate account of non-anaphoric pronouns.

CHAPTER 3

TOWARDS A MIXED THEORY OF PRONOUNS

It is clear that neither the classical theory nor the bound variable theory is an adequate theory of pronouns. Both, however, contain valid insights. Clearly, we need a theory that incorporates their insights, but avoids their failings. I want to suggest that the central fact that such a theory must recognize is that there is more than one kind of pronoun. In other words, an adequate theory of pronouns will be a 'mixed theory'.¹ In this chapter, I will present various kinds of data that indicate the need for such a theory. I will also develop some preliminary ideas about the form it should take.

3.1. Preliminary Remarks

The view that a mixed theory of pronouns is necessary has been advanced by a number of writers. Best known perhaps is Geach. He has in a number of places drawn a distinction between pronouns analyzeable as bound variables and what he terms 'pronouns of laziness'. In Geach (1962), he defines pronouns of laziness as pronouns which 'may be eliminated from a proposition, by simply repeating the antecedent' (p.124). In Geach (1972), he defines pronouns of laziness more broadly as 'any pronoun used in lieu of a repetitious expression, even when that expression would not be just the same

- - - - -

1. The term mixed theory is taken from Hankamer and Sag (1976). They argue for a mixed theory of anaphora.

as the pronoun's antecedent' (p.98). The difference between the two definitions can be illustrated by (1) and (2).

(1) Max explored the Amazon, and he caught typhoid.

(2) A man explored the Amazon, and he caught typhoid.

In (1), he can be eliminated by substituting for it its antecedent Max. he cannot be eliminated in the same way in (2). Thus, only in (1) is he a pronoun of laziness on the first definition. Notice, however, that he in (2) can be regarded as used in lieu of the repetitious expression the man who explored the Amazon. Thus, it seems to be a pronoun of laziness on the second definition. In both definitions, pronouns of laziness are seen as alternatives to certain definite NP's. It would seem, then, that pronouns of laziness, like definite NP's, are referring expressions. Geach's approach has been developed by Partee (1970, 1975a). A similar approach is developed by Witten (1972). I will refer to their work quite often in what follows.

The necessity for a mixed theory of pronouns would be established, if one could find ambiguous sentences whose ambiguity can be attributed to the fact that some pronoun has more than one source. Such sentences have been discussed at length by Partee (1975a) and Witten (1972).

We can consider firstly sentences like the following.

(3) Max loves his wife, and so does Alaric.

(4) Marsha said she was angry, and so did Jan.

As many linguists have noted, such sentences are ambiguous. In (3), Alaric may love Max's wife, or he may love his own wife. In (4), Jan may have said that Marsha was angry, or she may have said that she herself was angry. Ross (1967) proposes to account for such

ambiguities by allowing VP-deletion to apply either when the VP's involved are identical in all respects, or when they differ only in the reference of pronouns commanded by their antecedents. The former situation he terms 'strict identity', the latter 'sloppy identity'. Ross's approach is subject to a number of problems. Firstly, it seems counterintuitive to claim that one reading of (3) and (4) involves strict identity, while the other involves a departure from strict identity. Intuitively, the identity seems equally strict in both cases. Secondly, a problem arises with sentences like (5).

(5) John washed his car, and Sam did, and Steve did.

On Ross's proposal, (5) should be six ways ambiguous. The second clause should mean either that Sam washed John's car, or that he washed his own, and the third clause should mean that Steve washed John's car, or Sam's, or his own. In fact, however, (5) is only two ways ambiguous. It can mean that all three men washed John's car, or that each of them washed his own. Clearly, this is a problem for Ross's proposal.

A more promising approach to sentences like (3) and (4) is that sketched in McCawley (1967). Roughly, McCawley's suggestion is that sloppy identity is identity of constituents containing variables. In McCawley's approach, the first reading of (3) would involve two VP's of the form loves x_1 's wife, where x_1 is a constant or a pronoun of laziness referring to Max. The second reading would involve two VP's of the form loves x 's wife, where x is a variable, and each variable is bound by the subject of the sentence in which it appears. What I will call the 'command constraint' ensures that each variable can only be bound by the subject of its sentence. This constraint,

which I will discuss in greater detail in chapter 5, requires bound variables to be commanded by their antecedents. Obviously, in the present case, each variable is commanded only by the subject of its sentence. If bound variables are not referring expressions, VP-deletion will not ignore any differences of reference in the second reading of (3). On both readings of (3), then, the VP's will be strictly identical. This, I think, is an intuitively more satisfactory position than Ross's. This approach also permits a fairly simple account of sentences like (5). If his in (5) is a pronoun of laziness, the missing VP's must have contained pronouns of laziness with the same reference. Otherwise, VP-deletion would not have applied. This accounts for the reading of (5) in which all three men washed John's car. If his represents a bound variable, the missing VP's must also have contained bound variables. If we assume that each variable must have been bound by the subject of its own sentence, this explains why the only other reading is that in which each man washed his own car. Here, then, we have significant support for this approach. Clearly, if this approach is motivated, sentences like (3) - (5) will indicate the necessity of a mixed theory of pronouns.

Further evidence for the necessity of a mixed theory of pronouns is provided by sentences like (6) and (7).

(6) Only Max washed his car.

(7) Only Marsha said she was angry.

Again, such sentences are ambiguous. (6) may mean either (8) or (9).²

- - - - -

2. For some speakers, only the second reading of (6) is fully natural unless the pronoun is stressed. The same applies to (7). Stressed pronouns seem to be quite generally understood as pronouns of laziness.

(8) The only one who washed Max's car was Max.

(9) The only one who washed his car was Max.

Similarly, (7) may mean either (10) or (11).

(10) The only one who said Marsha was angry was Marsha.

(11) The only one who said she was angry was Marsha.

Intuitively, this is a similar ambiguity to that found in sentences like (3) and (4). Obviously, it has nothing to do with different kinds of identity. As the paraphrases indicate, it is a matter of what property is ascribed to Max. As with sentences like (3) and (4), sentences like (6) and (7) may be understood as involving two different VP's. It is easy to show that these VP's should be distinguished by the nature of their pronouns in the same way as the VP's in (3) and (4). Consider the following sentence.

(12) Only Max washed his car. Sam didn't.

If this is understood as meaning that Sam didn't wash Max's car, the first clause must be understood as (8). If the sentence is understood as meaning that Sam washed his own car, the first clause must be understood as (9). Thus, when the pronoun in (6) is a pronoun of laziness, (6) is understood as (8), when it is a bound variable, it is understood as (9). Again, then, a mixed theory seems necessary.

Sentences like (3) and (4) and (6) and (7) seem, then, to indicate the need for a mixed theory of pronouns of the kind envisaged by Geach. To get a clearer idea of the form this theory should take, it will be useful to look at some further data.

3.2. Further Data

In the last section, I considered ordinary pronouns in sentences

involving VP-deletion and only. Such sentences involve ambiguities which can be attributed to the possibility of two different sources for pronouns. In this section, I want to investigate the distribution of these ambiguities.

Firstly, we can consider the behaviour of reflexives in VP-deletion and only sentences. Taking VP-deletion sentences first, we notice, as Keenan (1970) observes, that sentences like (1) are unambiguous.³

(1) Marsha scratched herself, and so did Jan.

(1) can only mean that Jan scratched herself, not that Jan scratched Marsha. In Ross's terms, it has only a sloppy identity interpretation. In a framework like McCawley's, we can assume that reflexives can only represent bound variables. As before, the command constraint ensures that each variable is bound by the subject of its sentence. This, then, explains the absence of a strict identity reading. Turning now to only sentences, we notice that sentences like (2), discussed in Geach (1962), are unambiguous.

(2) Only Satan pities himself.

This implies that no one else pities himself, not that no one else pities Satan. This is exactly what we expect if reflexives can only represent bound variables.

We can now consider the behaviour in VP-deletion and only sentences of the null anaphor that arises through equi-NP-deletion.

- - - - -

3. Dahl (1973) claims that sentences like (1) and (2) are ambiguous. His seems to be very much a minority dialect.

Consider firstly (3).

(3) Erica wants to see Max, and so does Eve.

Like (1), this is unambiguous. Again, in Ross's terms, it has only a sloppy identity reading. We can suggest, then, that null anaphors, like reflexives, can only represent bound variables. Consider now (4).

(4) Only Erica wants to see Max.

Like (2), this is unambiguous. It implies that no one else wants to see Max, not that no one else wants Erica to see Max. Again, this is exactly what we expect, if null anaphors can only represent bound variables.

The foregoing suggests that, while ordinary pronouns can represent pronouns of laziness and bound variables, reflexives and null anaphors can only represent bound variables. In fact, however, the situation is rather more complex. There are various contexts in which ordinary pronouns can only represent bound variables.

We can consider firstly the following sentences.

(5) A Rumanian washed his car, and so did a Bulgarian.

(6) A Rumanian said he was angry, and so did a Bulgarian.

Here, we have pronouns commanded by indefinite antecedents. If we ignore the readings in which the pronouns are non-anaphoric, these sentences, unlike similar sentences in the last section, are unambiguous. (5) can only mean that a Bulgarian washed his own car, not that a Bulgarian washed the Rumanian's car. (6) is interpreted similarly. In Ross's terms, both sentences have sloppy identity readings only. We can assume, then, that the pronouns can only represent bound variables. Consider now the following sentences.

(7) Only one man washed his car.

(8) Only one man said he was angry.

Again, unlike similar sentences in the last section, these sentences are unambiguous. This, of course, is exactly what we expect, if pronouns commanded by indefinite antecedents can only represent bound variables.

We can consider next the following sentences.

(9) Every Rumanian washed his car, and so did every Bulgarian.

(10) Every Rumanian said he was angry, and so did every Bulgarian.

(11) No Rumanian washed his car, and no Bulgarian did either.

(12) No Rumanian said he was angry, and no Bulgarian did either.

(13) Each Rumanian washed his car, and so did each Bulgarian.

(14) Each Rumanian said he was angry, and so did each Bulgarian.

Here, we have singular pronouns with antecedents containing every, no, and each. Again, like (5) and (6), these sentences are unambiguous. Again, in Ross's terms, they have sloppy identity readings only. Again, then, we can assume that the pronouns can only represent bound variables. This, of course, is exactly what we suggested earlier.

A further environment which only permits bound variables is illustrated in sentences like the following.

(15) The Rumanian who beat his wife was criticized, but the Bulgarian who did was admired.

(16) The Rumanian who said he was Napoleon was arrested, but the Bulgarian who did was ignored.

In both sentences, we have a pronoun inside a relative clause with the complex NP as its antecedent.⁴ Both sentences are unambiguous, having sloppy identity readings only. Again, then, the pronouns must represent bound variables.

A final environment that permits bound variables only is illustrated in the following discourse.

(17) A: Who beat his wife?

B: John beat his wife, and so did Bill.

In A's question, we have a pronoun with the question word as its antecedent. In isolation, B's answer is ambiguous, having both a strict identity and a sloppy identity reading. In this context, however, it is unambiguous, having only a sloppy identity reading. This means that his in B's answer must represent a bound variable. The obvious explanation for this is his in A's question must represent a bound variable.

I have argued, then, on the basis of the distribution of certain ambiguities, that various anaphors can only represent bound variables. In the next section, I will present some independent evidence for these conclusions.

3.3. Pronouns and Reference

However else pronouns of laziness are characterized, it is reasonably clear that they are referring expressions. I assume that

- - - - -

4. In fact, it is not the complex NP but the head noun that is antecedent, as we will see in 3.6.

bound variables are not referring expressions. I want now to look further at this difference.

If bound variables are not referring expressions, any evidence that some pronoun is not a referring expression is evidence that it is a bound variable. There is a fair amount of evidence of this kind. If one has a sentence containing a referring expression in a non-opaque environment, it is possible to replace that expression by any other expression with the same reference without changing the truth conditions of the sentence. Clearly, this principle has implications for pronouns. If a pronoun and its antecedent are both referring expressions with the same reference, it should be possible, other things being equal, to substitute the latter for the former. What then of cases where this is not possible? We can, I think, exclude the possibility that a pronoun and its antecedent can be referring expressions with different referents. There are, therefore, two possible conclusions in this situation: either the antecedent is not a referring expression, or the pronoun is not. Here, then, we have a possible way of identifying anaphoric pronouns which are not referring expressions, and which must, therefore, be analyzed as bound variables.

We can look first at reflexives. If reflexives were referring expressions, it would be possible to substitute Satan for himself in (1) without changing the truth conditions of the sentence.

(1) Only Satan pities himself.

This is not possible, however. As Geach (1962) points out, (1) and (2) have quite different truth conditions.

(2) Only Satan pities Satan.

(1) implies that no one else pities himself. (2) implies that no one else pities Satan. Clearly, Satan is a referring expression. We must assume, then, that himself is not. Here, then, we have independent evidence that reflexives represent bound variables.

Next, we can consider the null anaphor that results from equi-NP-deletion. If the null anaphor were a referring expression, (3) and (4) would have the same truth conditions.

(3) Only Steve wants to visit Bordeaux.

(4) Only Steve wants Steve to visit Bordeaux.

Clearly, they do not. (3) implies that no one else wants to visit Bordeaux. (4) implies that no one else wants Steve to visit Bordeaux. We can assume, then, that null anaphors are not referring expressions, and, therefore, that they represent bound variables.

We can also consider ordinary pronouns. We have already, in effect, employed the argument developed here in connection with sentences like (5).

(5) Every doctor thinks he is overworked.

It seems reasonable to regard every doctor as a referring expression referring to a set of doctors. Therefore, the fact that (5) has different truth conditions from (6) suggests that the pronoun is not a referring expression.

(6) Every doctor thinks every doctor is overworked.

We can assume, then, that the pronoun represents a bound variable.

We can also employ the argument in connection with sentences like (7).

(7) The man who thought he was Trotsky was arrested.

One might think that he is a referring expression with the same reference as the complex NP of which it is a constituent. Substituting this NP for he gives an unacceptable sentence. Suppose,

however, that the referent of the NP is called Sam. We should then be able to substitute Sam for he, giving (8).

(8) The man who thought Sam was Trotsky was arrested.

It is quite easy, however, to show that (7) and (8) have different truth conditions. Among the truth conditions of (7) is the requirement that there is in the context only one man who thought he was Trotsky. Among those of (8) is the requirement that there is in the context only one man who thought Sam was Trotsky. In a context where there is only one man, namely Sam, who thought he was Trotsky, but where there is another man who thought Sam was Trotsky, the first requirement will be met, but the second will not. This suggests, then, that he is not a referring expression. We can assume, therefore, that it represents a bound variable.

Unfortunately, the argument cannot be invoked in connection with sentences like (9) and (10).

(9) An Italian thought he was Trotsky.

(10) Who thought he was Trotsky?

Clearly, (9) has different truth conditions from (11).

(11) An Italian thought an Italian was Trotsky.

Here, however, the antecedent is not a referring expression. Therefore, the different truth conditions of (9) and (11) do not show that the pronoun is not a referring expression. We can think of (10) as specifying a set of sentences, each with its own truth conditions, which are possible answers to (10). Clearly, (12) specifies a different set of sentences with different truth conditions.

(12) Who thought who was Trotsky?

Again, however, the antecedent is not a referring expression. Therefore, the contrast between (10) and (12) does not establish that the pronoun is not a referring expression.

While the argument is not relevant to sentences like (9) and (10), it is relevant to sentences where the pronoun can represent either a bound variable or a pronoun of laziness. Consider firstly (13).

(13) Max loves his wife, and so does Alaric.

As we have seen, (13) is ambiguous. Alaric may love either Max's wife or his own wife. Notice, however, that (14) is unambiguous.

(14) Max loves Max's wife, and so does Alaric.

This can only mean that Alaric loves Max's wife. It is clear, then, that, when (13) has a sloppy identity reading, the pronoun is not a referring expression. On this reading, then, it must represent a bound variable. Consider also (15).

(15) Only Max washed his car.

This, again, is ambiguous, meaning either (16) or (17).

(16) The only one who washed Max's car was Max.

(17) The only one who washed his car was Max.

(18), however, is unambiguous.

(18) Only Max washed Max's car.

It can only mean (16). Clearly, then, the pronoun is not a referring expression, when (15) means (17). Therefore, when (15) has this reading, the pronoun must represent a bound variable.

I originally argued for a conception of sloppy identity like McCawley's on the grounds that it is intuitively satisfactory, and that it permits a straightforward account of sentences like (19).

(19) John washed his car, and Sam did, and Steve did.

Then, on the basis of this conception, I argued that reflexives,



null anaphors, and various ordinary pronouns can only represent bound variables. I can now argue in the opposite direction. I have given independent evidence that various anaphors can only represent bound variables. On the basis of this evidence, I can argue for a conception of sloppy identity like McGawley's. Consider, for example, (20).

(20) Alaric scratched himself, and so did Steve.

Given evidence that reflexives represent bound variables, the fact that (20) has only a sloppy identity reading suggests that sloppy identity is identity of constituents containing variables.

3.4. A Note on Fodor

One writer who has noticed some of the facts considered in this chapter is Fodor (1975). He notes, in particular, that (1) and (2) are synonymous, and that they differ in truth conditions from (3).

(1) Only Churchill remembers giving the speech about blood, sweat, toil, and tears.

(2) Only Churchill remembers himself giving the speech about blood, sweat, toil, and tears.

(3) Only Churchill remembers Churchill(*s) giving the speech about blood, sweat, toil, and tears.

Fodor takes this difference as evidence that null anaphors, and reflexives do not derive from copies of their antecedents. He considers the possibility that they derive from bound variables, but rejects it, and suggests instead that they are represented in underlying structure by the element self. Helke (1971, 1973) adopts a similar view. Fodor seems not to notice that ordinary pronouns commanded by their antecedents can be interpreted in the same way as

null anaphors and reflexives. Given this fact, he would have to assume that they also can be represented in underlying structure by self.

How does Fodor's approach compare with the approach adopted here? In effect, Fodor's approach treats reflexives as 'basic', and null anaphors and certain ordinary pronouns as 'derived'. The approach adopted here involves no such contrast. Is there any evidence for such a contrast? It seems to me that there is not. I think, then, that the approach adopted here is preferable. Formal considerations point to the same conclusion. If one assumes that null anaphors, reflexives, and certain ordinary pronouns derive from the element self, one has to specify when it is deleted. If, on the other hand, one assumes that they derive from bound variables, one has to specify when variables are realized as reflexives. In the first case, one must say that self is deleted, unless it is a clause mate of its antecedent. In the second case, one can say that a bound variable assumes a reflexive form, whenever it is a clause mate of its antecedent. It seems to me that ceteris paribus a positive condition is preferable to a negative condition. Again, then, I think that the approach adopted here is preferable.

I suspect that two factors contributed to Fodor's adoption of his approach. Firstly, I think he may well think that the distribution of null anaphors is included in the distribution of reflexives. If it were, it would be plausible to regard null anaphors as a kind of reflexive. If one assumes, like Chomsky (1973), that there is no rule of subject to object raising, one will regard himself in (2) as a complement subject. If such reflexives were complement

subjects, the distribution of null anaphors would be included in that of reflexives. I think, however, that Postal (1974a) demonstrates quite conclusively that there is a rule of subject to object raising. I assume, then, that himself in (2) is not a complement subject, and, therefore, that the distribution of null anaphors is not included in that of reflexives.

Secondly, I suspect that the examples Fodor uses may have misled him about the extent to which ordinary pronouns can be understood in the same way as null anaphors and reflexives. (1) and (2) imply that noone else remembers giving the speech about blood, sweat, toil, and tears. They are odd sentences, since, given that fact that only Churchill gave the speech, noone else could remember giving it. It is this, I think, that leads Fodor to think that (4) can only mean (3).

(4) Only Churchill remembers his giving the speech about blood, sweat, toil, and tears.

Certainly, given the facts, this is the only fully natural meaning. It appears, then, that his cannot be understood in the same way as a null anaphor or a reflexive. I think, however, that a little reflection suggests that (4) can also have the odd meaning of (1) and (2). Thus, the pronoun can be understood in the same way as a null anaphor or a reflexive.

Whatever the exact factors leading Fodor to adopt his approach, I think the approach adopted here is preferable. I will return to Fodor briefly in chapter 8.

3.5. First and Second Person Pronouns

So far I have only considered third person pronouns. I want now

to take a brief look at first and second person pronouns. I will show that they too can represent both pronouns of laziness and bound variables.

We can begin with sentences involving VP-deletion. Consider, for example, the following.

(1) I washed my car, and so did Sam.

(2) You washed your car, and so did Sam.

Both are ambiguous. (1) can mean that Sam washed my car or that he washed his own. (2) can mean that Sam washed your car or that he washed his own. This suggests quite strongly, then, that my and your can represent both pronouns of laziness and bound variables. Notice now that (3) and (4) are ambiguous in just the same way as (1) and (2).

(3) I said I was intelligent, and so did Sam.

(4) You said you were intelligent, and so did Sam.

It seems, then, that I and you can also represent both pronouns of laziness and bound variables.

These conclusions are reinforced by sentences involving only. As Dahl (1973) points out, (5) is ambiguous between (6) and (7).

(5) Only I love my wife.

(6) No one but me loves my wife.

(7) No one but me loves his wife.

On the first reading, we can analyze my as a pronoun of laziness. On the second, we can analyze it as a bound variable. (8) is ambiguous in just the same way between (9) and (10).

(8) Only you love your wife.

(9) No one but you loves your wife.

(10) No one but you loves his wife.

On the first reading, your will represent a pronoun of laziness. On the second, it will represent a bound variable. We have further evidence, then, that my and your can represent both pronouns of laziness and bound variables. Notice now that (11) and (12) are ambiguous in just the same way as (5) and (8).

(11) Only I said I was intelligent.

(12) Only you said you were intelligent.

Thus, we have further evidence that I and you can represent both pronouns of laziness and bound variables.

I will conclude this section with a few words about (6) and (9). Both are unambiguous. The pronouns can only be pronouns of laziness. Why is this? One possibility is that it is due to an extension of a constraint noted by Witten (1972). He notes that what he calls 'deep structure pronouns', which are effectively bound variables, cannot have an antecedent inside a coordinate structure. The constraint accounts for the unacceptability of (13).

(13) * Jim and Mary scratched herself.

It also explains why (14) cannot mean that Jim and Mary wanted him to leave or that they wanted Mary to leave.

(14) Jim and Mary wanted to leave.

Finally, it explains why the pronouns in (15) and (16) must be non-anaphoric.

(15) A man and a woman said he was angry.

(16) Every man and every woman said he was angry.

There is evidence that this constraint is a reflection of something more general. Helke (1973) points out that a possessive determiner cannot be antecedent of a reflexive. (17) illustrates.

(17) * The girl's father hurt herself.

It is clear also that a possessive determiner cannot be antecedent of a null anaphor. (18) cannot mean that the girl's father wanted the girl to leave.

(18) The girl's father wanted to leave.

Notice also that non-anaphoric interpretations are most natural for the pronouns in (19) and (20).

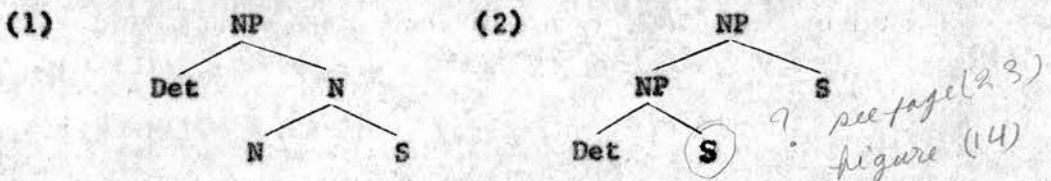
(19) A girl's father said she was angry.

(20) Every girl's father said she was angry.

We might suggest that no anaphor that represents a bound variable can have an antecedent inside an NP. This would account for all the facts we have considered, including the fact that the pronouns in (6) and (9) can only represent pronouns of laziness. It looks, then, as if the unambiguous character of (6) and (9) may stem from a quite general constraint. I will return to this constraint in chapter 5.

3.6. Relative Pronouns

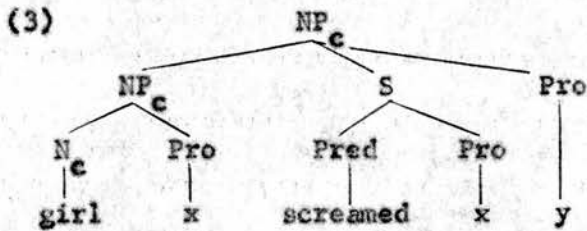
I want to conclude this chapter by taking a look at relative pronouns. I suggested earlier that NP's containing restrictive relative pronouns have the structure in (1), not the structure in (2).



I have said nothing, however, about the structure of restrictive relative clauses themselves. I will argue here that they originate as open sentences, and that the pronouns derive from bound variables.

A number of writers have analyzed restrictive relatives as open

sentences. Keenan (1972), for example, generates complex noun phrases like (3).



This is realized as girl who screamed. Such an NP combines with a determiner and an open sentence to form a sentence. Montague (1973), similarly, has a rule (S3.) combining a common noun and an open sentence to form a complex common noun. His rule only generates somewhat artificial such that clauses. His approach can easily be extended to generate ordinary restrictive relatives, however. (See Rodman, 1976.)

The main motivation for an analysis of restrictive relatives as open sentences is that it permits a simple account of their semantics. Consider the following definite description.

(4) the man who loves Marsha

This refers to the contextually unique member of the set of men who love Marsha. Thus, the complex noun denotes the set of men who love Marsha. If restrictive relatives originate as open sentences, it will involve the following open sentence.

(5) x love Marsha

It will denote those men who satisfy the propositional function expressed by this open sentence. We can say, then, that the role of restrictive relatives is to restrict the extension of the associated noun to those members of its extension that satisfy a certain propositional function.

A further motivation for this approach to restrictive relatives

is that it allows a straightforward account of the presuppositions associated with NP's containing restrictive relatives. Consider firstly (6).

(6) the man who left early

(6) refers to the contextually unique member of the set of men who left early. It thus involves the presupposition that there is a man who left early. Thus, it presupposes (15).

(15) A man left early.

Consider next (16) and (17).

(16) all the men who left early

(17) every man who left early

Both presuppose that there is a set of men who left early. Thus, both presuppose (18).

(18) Some men left early.

Somewhat more complex are NP's like (19).

(19) no man who left early

In subject position, (19) presupposes that there is a set of men who left early. Thus, in this position, it presupposes (18). In non-subject position, however, (19) seems to lack such presuppositions. More complex also are NP's like (20).

(20) a man who left early

In many positions, (20) implies that there is a man who left early. In certain environments, however, NP's like (20) can have non-specific interpretations. In this situation, no existential implications are involved. Consider, for example, (21).

(21) Jim is looking for a man who left early.

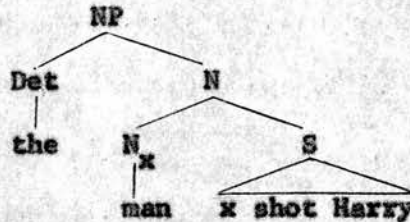
On one reading, this implies that there is a man who left early. On

the other, there are no such implications. Thus, on one reading, (21) implies (15). On the other, it does not.

I assume, then, that an NP like (22) derives from something like (23).

(22) the man who shot Harry

(23)



The subscript on the lowest N indicates that it binds the variable in the open sentence. In (22), the variable is realized as who. An alternative will be to introduce the complementizer that and delete the variable, giving, instead of (22), (24).

(24) the man that shot Harry

(For arguments that that is a complementizer and not a relative pronoun, see Emonds, 1970, and Bresnan, 1972.)

It is worth noting that this approach provides in a straightforward way for so-called 'stacking', the situation where a relative clause modifies a combination of noun and relative clause. Implicit in this approach is a rule of the following form:

(25) $N \rightarrow N \hat{\ } S$

There is nothing to stop this rule applying to its own output, generating structures like the following:



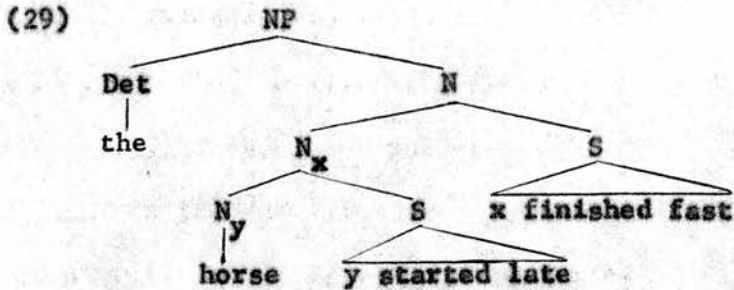
As Stockwell, Schachter, and Partee (1973) note, stacking is exemplified for many speakers in a sentence like (27).

(27) The horse that started late that finished fast won the race.

For those speakers, (27) has the rough paraphrase (28).

(28) Of the horses that started late, the one that finished fast won the race.

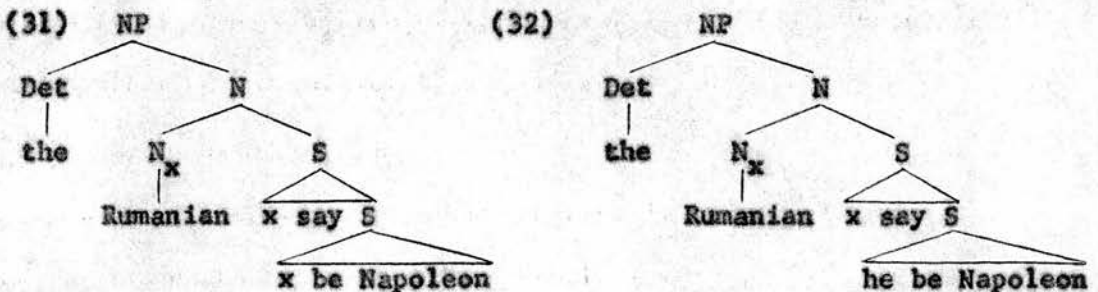
In the present framework, the NP in (27) can be represented as (29).



Stacking, then, is handled quite naturally.

Evidence that restrictive relatives originate as open sentences is evidence that the relative pronouns originate as bound variables. Such evidence does not show, however, that all pronouns in restrictive relatives with the complex NP as their antecedent can only represent bound variables. On the face of it, the NP in (30) ought to derive both from (31) and (32), in which he is a pronoun of laziness with the complex NP as its antecedent.

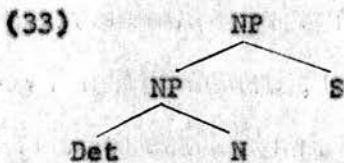
(30) the Rumanian who said he was Napoleon.



Both relative clauses are open sentences, as our account requires. It is not immediately obvious, then, why only (31) is a possible source for the NP in (30). A little reflection suggests, however, that the problem with (32) is that it involves a vicious circle. In (32), an individual is identified as the contextually unique member of the

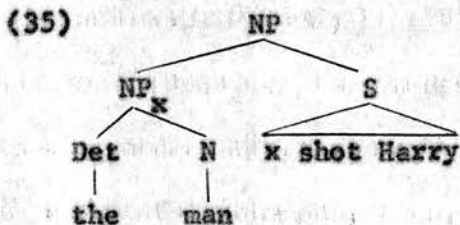
intersection of two sets, but one of the sets is identified by reference to the individual. Thus, the identification is essentially circular. Clearly, (31) does not involve this problem. The second set in (31) is identified quite independently of the individual that (31) is used to refer to. Thus, (31) is a perfectly acceptable referring expression. These observations show, incidentally, that it is incorrect to speak, as I have done, of pronouns in restrictive relatives with the complex NP as their antecedent. Such pronouns, in fact, have the head noun as their antecedent.

So far, I have only considered restrictive relatives. I want now to consider non-restrictives. I suggested earlier that structures like (33), while inappropriate for NP's containing restrictive relatives, might be appropriate for NP's containing non-restrictive relatives.



This is essentially the view of Rodman (1976). If we adopt this view, we might suggest that, whereas (22) derives from (23), (34) derives from (35).

(34) the man, who shot Harry



It has been widely assumed, however, that non-restrictive relatives originate as conjoined clauses, so that (36) has the same source as (37).

(36) The man, who shot Harry, will be here tonight.

(37) The man will be here tonight, and he shot Harry.

Ross (1967) gives two arguments for such an analysis. Firstly, he notes that non-restrictive relatives can often be replaced by clauses beginning with and. (38) illustrates.

(38) Enrico, and he is the smartest of us all, got the answer in seven seconds.

Secondly, he points out that, when sentences containing non-restrictive relatives are ungrammatical, the corresponding sentences with conjoined clauses are ungrammatical also. The following illustrate.

(39) * $\left. \begin{array}{l} \text{Any} \\ \text{No} \\ \text{Every} \end{array} \right\}$ student, who wears socks, is a swinger.

(40) * $\left. \begin{array}{l} \text{Any} \\ \text{No} \\ \text{Every} \end{array} \right\}$ student is a swinger, and he wears socks.

One objection to this analysis is that pairs of sentences like (36) and (37) differ in their pragmatic significance. I assume, however, that sentences that differ in their pragmatic significance can have the same underlying structure, if they have the same truth conditions. Thus, whatever difference there is between (36) and (37) does not mean that they cannot have the same underlying structure. I think, then, that this analysis is preferable to my first proposal.

This analysis has important implications for relative pronouns. I alluded earlier to the command constraint which requires bound variables to be commanded by their antecedents. Given this constraint, the pronoun in (37) cannot be a bound variable. It is natural, then, to assume that it is a pronoun of laziness. But, if the pronoun in (37) is a pronoun of laziness, the relative pronoun in (36) must be also. It seems, then, that whether a relative

pronoun is a bound variable or a pronoun of laziness depends on the character of the relative clause in which it appears. If the relative clause is restrictive, the pronoun is a bound variable. If the relative clause is non-restrictive, the pronoun is a pronoun of laziness.

CHAPTER 4

BOUND VARIABLES: STRUCTURES AND DERIVATIONS

In this chapter, I want to investigate the character of bound variables and the structures and derivations in which they appear. I will suggest that bound variables have very largely the character that the bound variable theory takes them to have. I assume that variables appear in NP positions, and that every variable must be bound by a binding element that asymmetrically commands it. I also assume that any variable that is not replaced by a binding element or deleted is realized as an appropriate pronoun. I reject, however, the view that one of a set of identical variables is always replaced by the element that binds them. I will suggest that this replacement is often optional, and sometimes impossible. I also reject the kinds of underlying structure assumed by advocates of the bound variable theory. I will suggest that there is evidence for underlying structures that are more natural in the sense of being more like surface structures. Here, I take as a working principle the first of Keenan's (1972) naturalness conditions, which states that 'Logical structures should look as much like the NL [natural language] structures they represent as possible'. My proposals will imply that simple unambiguous sentences have a number of different sources. This might be thought to be undesirable. However, quite standard arguments lead to this position. Furthermore, it is not unprecedented, as I noted in chapter 1. It is not at all clear, then, that this is undesirable. I will touch on a number of questions in this chapter. My proposals are quite tentative. I think, however, that the lines of thought

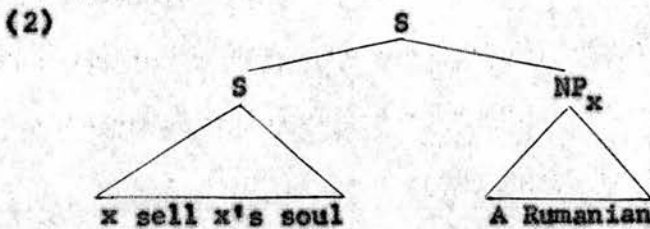
I develop are of some importance.

4.1. Existential Structures

I argued in the last chapter that a pronoun commanded by an indefinite antecedent can only represent a bound variable. This means, for example, that the pronoun in (1) can only represent a bound variable.

(1) A Rumanian sold his soul.

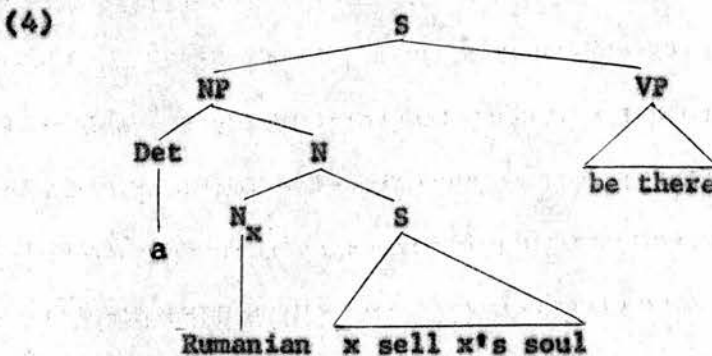
We might propose that this derives from something like (2).



This, however, is an unnatural structure in the sense that it does not resemble any English surface structure. It is natural, then, to look for an alternative source. It has often been noted that sentences containing indefinite NP's have paraphrases involving there is or there are. (3), for example, is a paraphrase of (1).

(3) There was a Rumanian who sold his soul.

I would derive (3) from something like (4).



Given the equivalence of (3) and (1), (4) is at least semantically appropriate as a source for (1). It is also preferable to (2) on grounds of naturalness. I want, then, to suggest that (1) can

derive from (4). More generally, I want to suggest that indefinite NP's can originate in existential structures. Somewhat similar proposals are advanced by Hogg (1975) and Anderson (1974a). I will discuss their proposals in some detail below.

Before I go any further, I must explain (4). I assume here the conception of relative clauses argued for in the last chapter. Given this conception, the subject of (4) is fairly straightforward. The predicate requires rather more explanation. there here is not the ordinary locative there. It might be called existential there. I will, however, term it ambient there. I regard it as the locative equivalent of Bolinger's (1973) ambient it. Bolinger argues against the widespread assumption that it in sentences like the following is a semantically empty element introduced transformationally.

- (5) It's scary in the dark.
- (6) It's pleasant in California.
- (7) It's hard to do a job like that.

He argues that it is a perfectly meaningful element referring to the general situation. In (5), it is the general situation that is scary in the absence of light. In (6), it is the general situation that is pleasant in California. I will provide some arguments for this position in chapter 9. If one accepts the position, it is natural to regard there in existential sentences as a locative equivalent of this it, and to interpret a sentence like (3) as saying that the general situation includes a Rumanian who sold his soul.

One further point about my proposal should be clarified. I said earlier that indefinite NP's can originate in existential structures. I did not say that they always do. Unlike Hogg and Anderson, I will not make this assumption. In (8), unlike in (1), there is no

need for the subject to originate in a higher sentence.

(8) A Rumanian knew the answer.

There is no reason why it should not originate in an existential structure, but, unless special restrictions are imposed, it will also be possible for it to originate in its surface position. In the absence of good evidence for such restrictions, I think it is reasonable to derive a sentence like (8) both from a structure like (4) and from one in which the subject originates in its surface position.¹

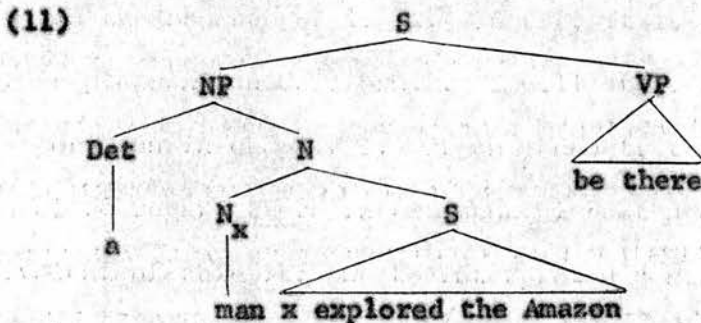
Having clarified this point, I can note some independent evidence for this proposal. I noted earlier in a discussion of Geach's definitions of pronouns of laziness, that it is natural to substitute the man who explored the Amazon for he in (9).

(9) A man explored the Amazon, and he caught typhoid.

In contrast, this substitution is not at all natural in (10), where the antecedent is definite.

(10) The man explored the Amazon, and he caught typhoid.

On the present proposal, the first clause of (9) can derive from something like (11).



1. My approach here can be compared with Montague's. For Montague, a Rumanian will be either substituted for a variable or introduced directly in (8), whereas in (1) it can only be substituted for a variable.

The expression the man who explored the Amazon is simply the subject of (11) with the in place of a. It is not surprising, then, that it is a natural substitute for he in (9). The first clause of (10) cannot derive from a structure like (11). It is not surprising, then, that the man who explored the Amazon is not a natural substitute for he in (10).

Proposals like the present one are criticized in Thorne (1973). He argues that a pair of sentences like the following should not have the same underlying structure because they are not strictly synonymous.

(12) There was a spider that frightened Miss Muffet.

(13) A spider frightened Miss Muffet.

He claims that, while (12) asserts the existence of a spider, (13) only presupposes it. He cites in this connection Strawson's discussion of presupposition (Strawson, 1950; 1952, pp. 173-194; 1954). Strawson is primarily concerned in these references with definite descriptions, which, he argues against Russell, involve a presupposition not an assertion of existence. His discussion of indefinite NP's is brief and none too clear. In Strawson (1950), he does seem to assume that indefinite NP's involve a presupposition of existence. In Strawson (1952:187), however, he appears to deny this. It is surely right to deny it. The existence of a spider is not a precondition for the truth or falsity of (13), as it is for the truth or falsity of (14).

(14) The spider frightened Miss Muffet.

If there are no spiders in the area, a natural response to (13) would be (15), which says that (13) is false, not that it lacks a truth value.

(15) No it wasn't a spider. There aren't any spiders around here.

The point is made more forcefully by (16).

(16) Miss Muffet saw a unicorn.

One need not accept the existence of unicorns to discuss the truth or falsity of (16). The fact that unicorns are assumed not to exist is, in fact, the obvious reason for saying that (16) is false. I conclude, then, that Thorne does not succeed in demonstrating any basic semantic difference between (12) and (13), and, therefore, that he does not succeed in showing that they should not have the same underlying structure.

Thorne also seeks support for his position from the following sentences.

(17) There was a book that Alex was looking for.

(18) Alex was looking for a book.

He assumes that, if (12) and (13) have the same source, (17) and (18) should also. But someone uttering (18) need not be asserting the existence of a book, as must someone uttering (17). This suggests, then, that they should not have the same source. There is more to be said about (17) and (18), however. I would suggest that (18) is, in fact, ambiguous, being disambiguated in contexts like the following,

(19) Alex was looking for a book, but he couldn't find it.

(20) Alex was looking for a book, but he couldn't find one.

On the first reading, (18) is synonymous with (17). On the second reading, it is not. We can give a straightforward account of this ambiguity, if we assume, following Bach (1968), that look for derives from something like try to find. It will be possible, then, to have an existential assertion either above try or above find.

(17) will involve the former configuration. (18) will involve either the former or the latter. try is a verb that requires the operation of equi-NP-deletion. For this reason, it is impossible for an existential assertion immediately above find to show up either with try to find or with look for. It is this fact which makes it look as if (17) and (18) provide an argument against the kind of analysis that Thorne is criticizing. A more regular pattern than that in (17) and (18) is that in the following.

(21) I believe a man saw a unicorn.

(22) There is a man that I believe saw a unicorn.

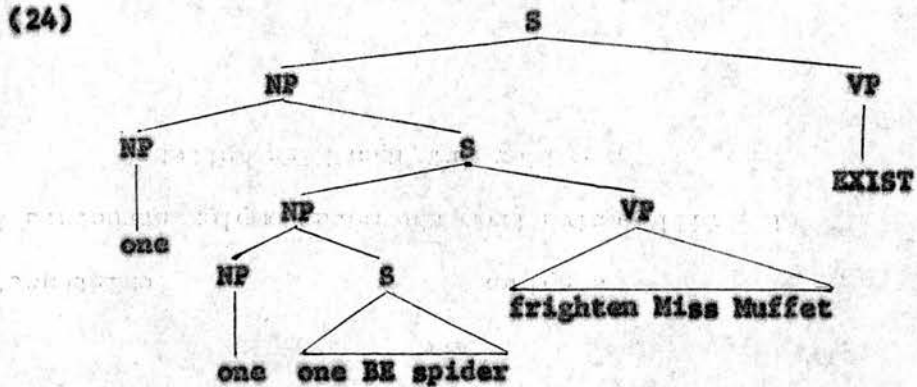
(23) I believe there is a man that saw a unicorn.

(21) is ambiguous, being synonymous with either (22) or (23). Clearly these sentences provide no argument against the kind of analysis that Thorne is criticizing. But then nor do (17) and (18), when seen in the proper light. Again, then, Thorne does not succeed in showing that sentences like (12) and (13) should not have the same underlying structure.

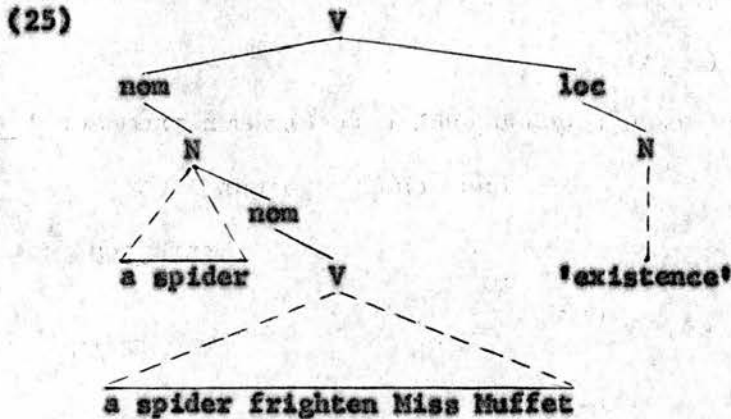
Thorne (personal communication) has contrasted (12) and (13) in somewhat different terms. He suggests that, whereas (12) asserts the existence of a spider, (13) simply establishes it in non-assertive fashion. Such a characterization seems quite reasonable. It makes it fairly clear that the contrast between (12) and (13) is pragmatic rather than semantic. I assume that sentences which differ pragmatically can have the same underlying structure, if they have the same truth conditions. Thus, if (12) and (13) do differ in this way, it does not mean that they cannot have the same underlying structure. Some kind of constraint will be necessary to ensure that there is or there are appears on the surface when the speaker is asserting the

existence of something rather than simply establishing it. Such a constraint seems to me quite reasonable. I think, then, that whatever contrast there is between (12) and (13) does not necessitate different underlying structures, as Thorne assumes.

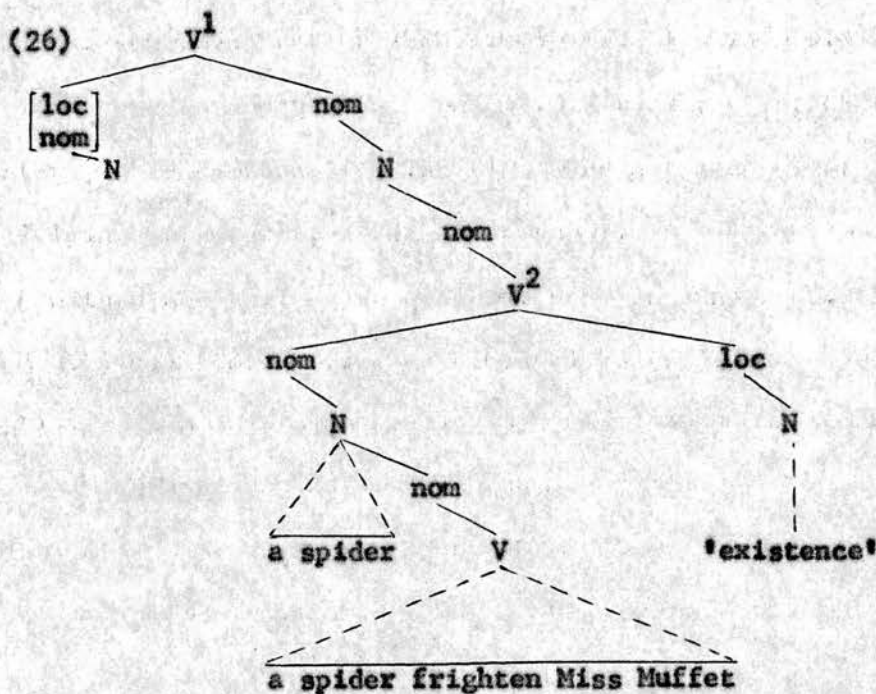
I can turn now to the proposals of Hogg and Anderson. For Hogg, (12) and (13) will derive from something like (24).



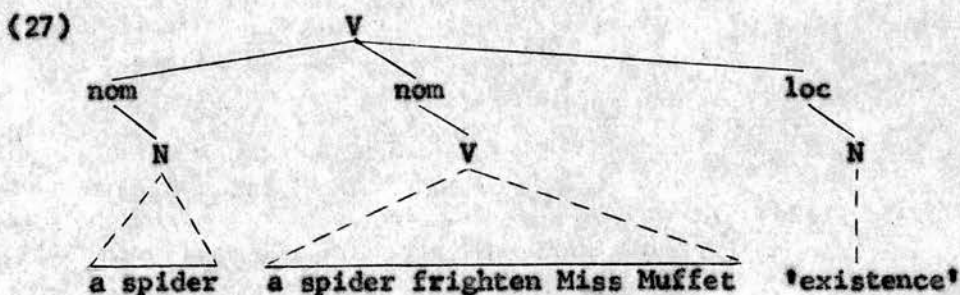
In Anderson's dependency case grammar framework, (13) will derive from (25).



(12) will derive from the more complex structure (26).



Hogg's derivations are fairly simple. In the derivation of (12) from (24), the embedded subject is copied into the main clause, and EXIST is realized as there was. In the derivation of (13), the main operation is the deletion of the main clause. Anderson's derivations are somewhat more complex. The derivation of (13) from (25) involves three main operations. Firstly, V-abjunction moves the lower V from under the subject N and attaches it to the upper V, as in (27).



Then the higher subject N is superimposed onto the lower. Finally, the existential locative is deleted by E-deletion. In the derivation of (12) from (26), relative clause formation takes place on the V^2 cycle. Then, on the V^1 cycle, V-abjunction applies to give (28).

and become or any other combination of morphemes. Notice also that Hogg's lexicalization rule is of an unprecedented kind. There are many precedents for rules lexicalizing complex semantic structures as a single verb. As far as I know, however, there are no precedents for rules realizing a single semantic predicate as a complex lexical structure.

Secondly, notice the existence of sentences like the following.

(31) Into the room, there came a tall dark man.

(32) At that moment, there arose a terrible cry.

(33) There emerged a story of deceit and double dealing.

Here, one has there associated not with be, but with various other verbs. Roughly speaking, whereas be has to do with existence, these verbs have to do with coming into existence. (See Kimball, 1973a.) Clearly, we are dealing with a unified phenomenon here. There is no way Hogg can treat it as such, however. He can only introduce additional lexical rules. Such rules will not explain why there appears in sentences like (31) - (33) any more than his rule for EXIST explains why there appears in simple existential sentences. Hogg, then, can only treat the distribution of there as an arbitrary matter.

Finally, notice that Hogg assumes that relative pronouns derive from full NP's. I argued in the last chapter that relative pronouns derive from bound variables. I think, then, that this assumption, which is also made by Anderson, is untenable.

I turn now to Anderson's analysis. Apart from the last criticism, his analysis escapes the criticisms made of Hogg's. Firstly, notice that it does offer an explanation for the appearance of there in existential sentences. It simply treats it as a pronominalized locative. Secondly, although Anderson does not discuss sentences like (31) - (33), his analysis can be extended to such sentences in a quite natural

way. One can simply assume that the allative locatives associated with come, arise, and emerge can be copied and pronominalized just like ordinary locatives.

Although Anderson's analysis is preferable to Hogg's, it is still subject to certain criticisms. Firstly, I think that the kind of substitution rule that Anderson invokes is quite dubious. In the following chapters, I will argue in a number of places against such rules. Secondly, notice that Anderson's analysis involves a violation of a generally valid constraint on anaphors. In general, an anaphor may not both precede and command its antecedent. Thus, Brian can be antecedent of he in (34), but not in (35).

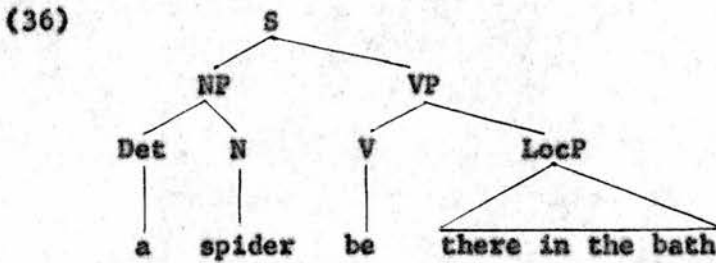
(34) Brian thinks he is clever.

(35) He thinks Brian is clever.

In Anderson's analysis, there both precedes and commands its putative antecedent. This, then, casts considerable doubt on the analysis.

It should be clear that the analysis I am advancing escapes the criticisms I have made of Hogg's and Anderson's. I think, then, that it is preferable to these analyses. We can note one further point in its favour. Allan (1971) points out that existential there differs from ordinary locative there in not permitting paralinguistic indication of intended reference or stress. It is fairly clear that ambient it is subject to these restrictions. Thus, on the present analysis, it is quite natural that they are found with existential there.

It is not immediately obvious how sentences like (29) and (30) should be handled in this framework. I would suggest, however, that they involve two locatives in apposition, ambient there and a more specific expression. (29), then, will derive from something like (36).



In a similar way, I think it is plausible to assume that the underlying structure of (37) has it and the complement together in subject position.

(37) It's strange that Jim believes in ghosts.

This, of course, is the view of Rosenbaum (1967). In recent years, it has been largely abandoned. Bolinger's discussion suggests, however, that it might be revived. I will discuss this further in chapter 9.

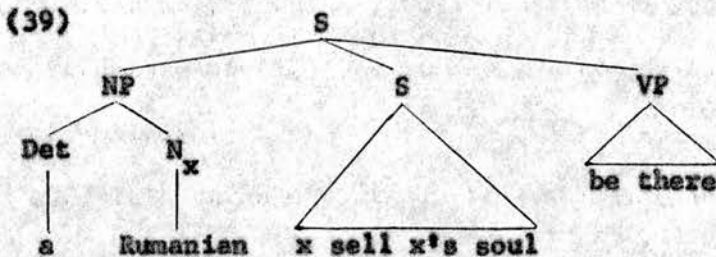
Notice finally, that sentences like (31) - (33) can be handled quite naturally in this framework. We simply need to assume that there is an allative equivalent of ambient it as well as a locative equivalent. In (31), one will have two allative expressions in apposition. In (32) and (33), one will have there only.

I must now say something about the derivational processes I am assuming. The derivation of (3) from (4) is quite straightforward. Relative clause formation will apply quite normally. there will be preposed, and this will trigger subject-verb inversion in just the same way as the preposed locative in (38).

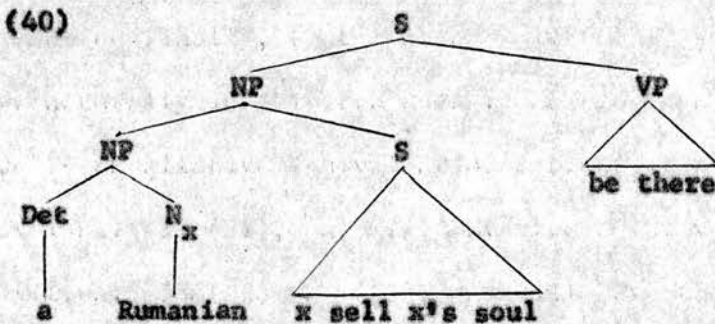
(38) In the attic was a portrait of Napoleon.

The derivation of (1) from (4) is a less straightforward matter. Clearly, the predicate of (4) must be deleted, and a Rumanian substituted for the first variable in the relative clause. The problem is that a Rumanian is not a constituent in (4). It is

generally assumed that only constituents can be moved. (See e.g. Schwartz, 1972.) It seems, then, that we need some way of making a Rumanian a constituent. One possibility is to assume a rule raising the relative clause into the main clause, rather like Anderson's V-abjunction. This will convert (4) into (39).



A second possibility is to assume a rule Chomsky-adjoining the relative to the NP of which it is a constituent. This will convert (4) into (40).



In both these structures, a Rumanian is a constituent. It is not at all clear, then, which approach is to be preferred.

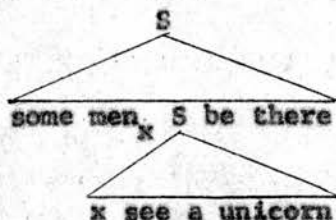
While the exact character of the derivational processes involved in the present analysis remains open, it is fairly clear that certain constraints are required. Lakoff (1971) proposes a constraint requiring that a quantifier that asymmetrically commands another quantifier in underlying structure must precede it in surface structure, if it ceases to asymmetrically command it as a result of lowering. I assume that NP's, not quantifiers, are lowered. I propose, then, to reformulate Lakoff's constraint as follows.

- (41) If an NP, NP_i, asymmetrically commands another NP, NP_j, in underlying structure, but does not do so in surface structure, NP_i must precede NP_j.²

This means that, while (42) can derive from (43), (44) cannot.

- (42) Some men saw a unicorn.

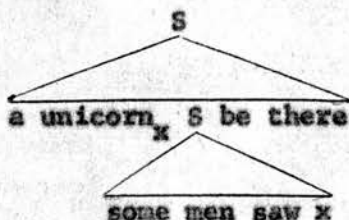
- (43)



- (44) A unicorn was seen by some men.

(44), however, can derive from (45), which (42) cannot.

- (45)



I will suggest in chapter 5 that structures like (43) and (45) have the same truth conditions. For most speakers, (42) and (44) can have

- - - - -

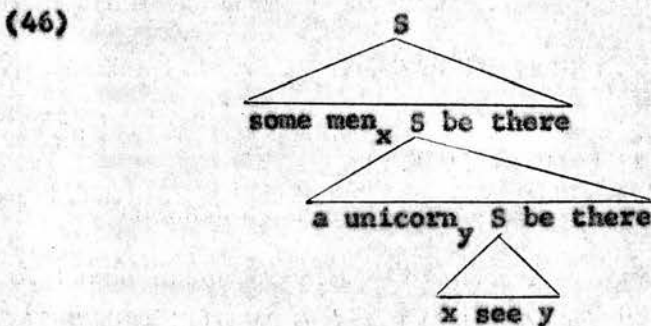
2. Obviously, this constraint is only as adequate as Lakoff's, on which it is based. There is evidence that Lakoff's constraint is not entirely adequate. Ioup (1975) notes, among other things, that a quantifier in an indirect object is normally understood as having a wider scope than a quantifier in a direct object, whatever their order. For example, every is generally understood as having a wider scope than a in both the following.

- (i) I told every child a story.
 (ii) I told a story to every child.

See also Kroch (1974).

the same meaning. They can both mean that there was one unicorn that some men saw. This, then, is not unreasonable. Notice, however, that (42) can also mean that each of a group of men saw a unicorn. In this meaning, some men is understood distributively. I will suggest in chapter 5 that, when a plural NP is understood distributively, it involves additional structure. (44) does not have this additional meaning. Thus, it is when NP_i is distributive that (41) is particularly important.

Lakoff (1971) proposes a second constraint throwing out any derivation in which an asymmetrical command relationship between quantifiers is not simply lost, but reversed. We might reformulate this also as a constraint on NP's. There is some evidence, however, that such a constraint would be redundant. (46) is a structure to which it might, on the face of it, be relevant.



(42) will derive from (46). So, too, will (47).

(47) There were some men who saw a unicorn.

The proposed constraint will prevent the derivation of (48) from (46).

(48) There was a unicorn that some men saw.

Notice, however, that this derivation is blocked quite independently by the complex NP constraint. The constraint prevents the lowering of some men onto the variable x, if the lower existential is not reduced. It appears, then, that there is no need for a reformulation of Lakoff's second constraint. This conclusion may be premature,

however. I will return to it in the next section. The complex NP constraint not only prevents lowering, if the lower existential is not reduced, it also prevents relative clause formation in this situation. It, thus, prevents the derivation of (49) from (46).

(49) * There were some men that there was a unicorn that saw. This means that there is no need for a special statement to ensure that the lower existential in a structure like (46) is reduced. The complex NP constraint ensures that any derivation from such a structure blocks, if the lower existential structure is not reduced.

Postal (1974a:223) cites the following constraint, proposed by Baker.

(50) A quantifier cannot have as its scope a clause which does not contain it in surface structure.

Support for this constraint is provided by the contrast which many people find between (51) and (52).

(51) I believe that someone insulted Arthur.

(52) I believe someone to have insulted Arthur.

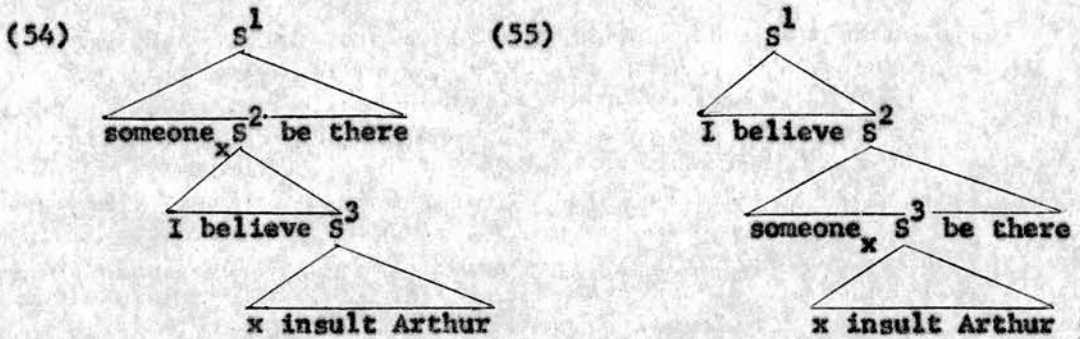
(51) is ambiguous, with someone have both a specific and a non-specific reading. (52) is unambiguous, with someone having only a specific reading.³ In the present framework, it is natural to reformulate this constraint as (53).

(53) An NP cannot have as its scope a clause which does not contain it in surface structure.

- - - - -

3. As James Thorne has pointed out to me, many speakers accept raising with believe only when evaluative considerations are involved. For such people, a sentence like (52) is rather dubious.

This constraint will allow (51) to derive from both (54) and (55), but will only allow (52) to derive from (54).



Notice, however, that (53) will block the derivation of (56) from (54).

(56) There is someone that I believe insulted Arthur.

I assume that S^2 is the scope of someone in (54). In both (51) and (52) someone is contained in S^2 , but, in (56), it is not. Similarly, (53) will block the derivation of (57) from (55).

(57) I believe there is someone that insulted Arthur.

S^3 is the scope of someone in (55). In (57), someone is not contained in S^3 .

A more promising constraint is the following.

(58) An NP cannot command an S in surface structure which it does not command in underlying structure.

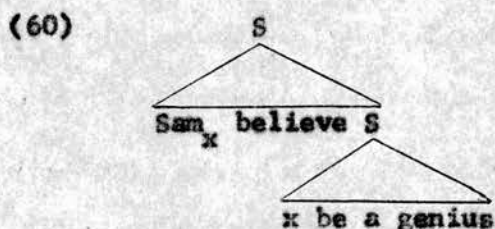
This will permit the derivation of (51), (52), and (56) from (54), and also the derivation of (51) and (57), but not (52), from (55). Clearly, then, it is an advance on (53).

(58) is still inadequate, however. Consider the derivation of (52) from (54). If raising and lowering are both cyclic rules, as I assume, raising will apply on S^2 , and lowering on S^1 . At the end of the S^2 cycle, there will be an NP, namely the variable x , which commands an S which it does not command in underlying

structure. This variable does not appear on the surface, because it is replaced by someone. (58), therefore, will not block this derivation. There are, however, sentences where a raised variable does show up on the surface. Consider (59).

(59) Sam believed himself to be a genius.

The obvious source for (59) is something like (60). (I will allow in the next section for NP's as well as N's to bind variables.)

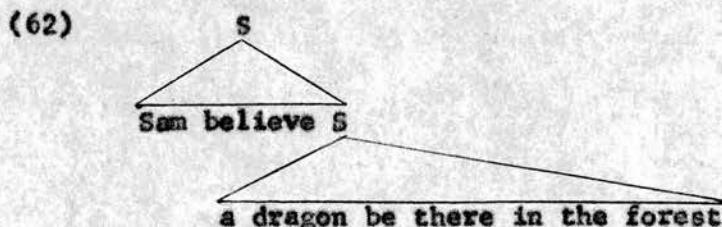


Here, then, we have an NP on the surface which commands an S which it does not command in underlying structure. (58), then, will block this derivation.

A further problem for (58) arises from sentences like (61).

(61) Sam believes there to be a dragon in the forest.

It is hardly likely that there here is a substitute for a raised variable. The most plausible source for (61) is something like (62).



It seems, then, that there in (61) is another NP that violates (58). If ambient there in (61) is raised out of the complement, it may well be that ambient it in (63) is also.

(63) Sam believes it to be hot in the kitchen.

If so, it also violates (58).

The obvious move is to restrict (58) to a subset of NP's. I propose to introduce the term 'full NP'. Tentatively, I will say that full NP's are all NP's except variables, ambient there, and possibly ambient it. (58), then, can be replaced by (64).

(64) A full NP cannot command an S in surface structure which it does not command in underlying structure.

This will give us all the right results.

I will conclude this discussion of constraints by considering a constraint which looks like a simple reformulation of (64), but which turns out not to be. The function of (64) is to block derivations like that of (52) from (55). In this derivation, a full NP commands an S in surface structure which it does not command in underlying structure. It does so as a result of raising. We could, then, block this derivation with the following constraint.

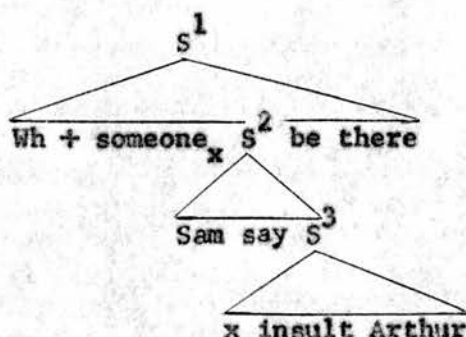
(65) A full NP cannot be raised.

On the basis of data like that considered by Postal, Partee (1973b, 1975b) proposes to restrict raising to variables. (65) could be seen as a revision of her proposal. While both (64) and (65) block derivations like that of (52) and (55), they are not equivalent. There are derivations which (65) blocks, but which (64) does not block. Consider (66).

(66) Who did Sam say insulted Arthur?

I would derive this from something like (67), embedded in a performative structure. (For arguments in favour of a performative analysis of questions and against an analysis based on an abstract question marker, see Langacker, 1974.)

(67)



If lowering is cyclic, it will apply on S^1 , substituting Wh + someone for the variable x . Then, on the performative cycle, Wh-movement will left-Chomsky-adjoin Wh + someone to S^2 , in effect returning it to its original position.⁴ The surface structure realization of Wh + someone, who, does not command any S which it did not command in underlying structure. Thus, the derivation is quite compatible with (64). Notice, however, that Wh-movement raises a full NP. (65), therefore, will block the derivation. Clearly, this derivation should not be blocked. (64), then, is to be preferred to (65). Notice, finally, that (65) only permits the derivation of (52) from (54), as long as raising applies before lowering. If lowering applied first, as it would if it were a precyclic rule, (70) would block this derivation. It is possible that lowering may be precyclic. If it is, we will have a further reason for preferring (64) to (65).

The constraints considered here are of some importance. It should be noted, however, that their strength varies considerably from speaker to speaker. For some speakers, they are very weak, or even non-existent. For this reason, I will sometimes ignore them in the following chapters.

- - - - -

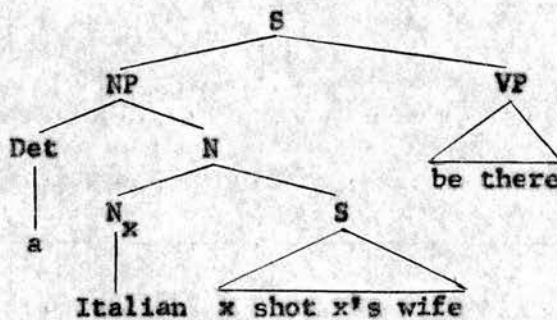
4. (66) will thus involve what Pullum (1976) calls a 'Duke of York derivation'.

I will conclude this section by considering an argument that appears to suggest that existential sources should be obligatory for indefinites, not optional, as I have assumed. The argument turns out to be invalid.

The hypothesis that existential sources are obligatory for indefinite NP's appears to permit a simple explanation for the fact that a pronoun commanded by an indefinite antecedent cannot be a pronoun of laziness. I have suggested that a sentence like (68) can derive from something like (69).

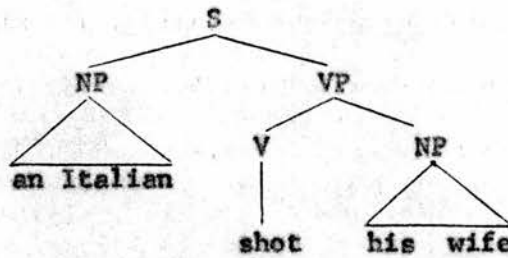
(68) An Italian shot his wife.

(69)



We have seen that a pronoun in a relative clause with the complex NP as its antecedent cannot be a pronoun of laziness. It follows that we cannot replace the second variable in (69) by a pronoun of laziness. It looks, then, as if the fact that the pronoun in (68) cannot be a pronoun of laziness is a result of the fact that a pronoun in a relative clause with the complex NP as its antecedent cannot be. As things stand, however, this is not the case. We need a separate constraint to prevent the derivation of (68) from something like (70), where his is a pronoun of laziness with an Italian as its antecedent.

(70)



Suppose, however, that we require all indefinite NP's to originate in existential structures. (70) then will not be a possible underlying structure, and we will need no additional constraint. It looks, then, as if the hypothesis permits a simple explanation for the fact that the pronoun in (63) cannot be a pronoun of laziness. There are other sentences, however, where such an explanation remains impossible.

The problem is that there are pronouns commanded by indefinite NP's in surface structure that cannot originate in relative clauses. I have argued that a sentence like (71) derives from a structure containing two locatives in apposition.

(71) There was a man in the garden.

Clearly, the second locative can contain a pronoun. It seems, however, that such a pronoun cannot have the indefinite NP as its antecedent. Consider here (72).

(72) There was a man in his garden.

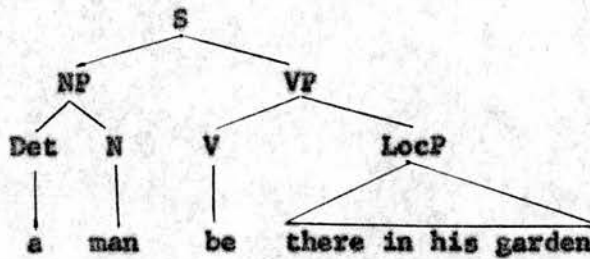
If a man here is understood as antecedent of his, in his garden must be understood as a reduced relative, not as a main clause locative. Notice that, if a man is understood as antecedent of his, one can ask the question where?, just as one can with a sentence like (73), where the abstract locative in tears is clearly a reduced relative.

(73) There was a man in tears.

It seems, however, that if in his garden in (72) is understood as a

main clause locative, his cannot have a man as its antecedent. When in his garden is a main clause locative, (72) will derive from something like (74).

(74)



Clearly, there must be some constraint preventing his here from having a man as its antecedent. But this constraint will also prevent his in (70) from having an Italian as its antecedent. Thus, there is nothing to be gained by making existential sources obligatory for indefinite NP's.

4.2. Non-existential Structures

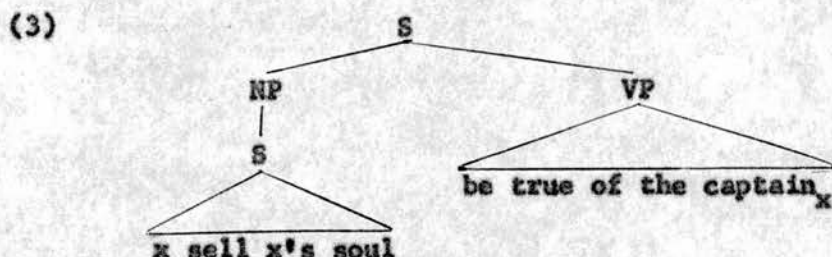
In the last section, I suggested a source for sentences involving variables bound by indefinite NP's. Variables can also, of course, be bound by definite NP's. We know that the pronoun in a sentence like (1) can represent a bound variable.

(1) The captain sold his soul.

In this section, I want to consider the source of such sentences. The kind of structure assumed by advocates of the bound variable theory is no more natural here than with indefinite NP's. Again, then, we need to look for alternatives. (1) does not have a paraphrase with there is. We cannot suggest, then, that the captain originates in an existential structure. Notice, however, that (2) is a paraphrase of (1).

(2) It is true of the captain that he sold his soul.

I assume that (2) derives from something like (3), through extraposition.



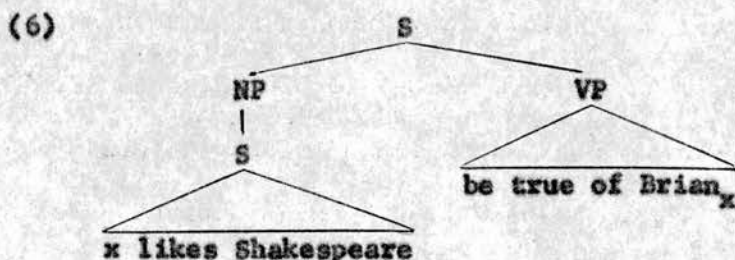
I want to suggest that (1) can also derive from (3). More generally, I want to suggest that any NP, definite or indefinite, can originate as an argument of be true.

The main independent evidence for this proposal is provided by sentences like the following.

(4) Brian likes Shakespeare, and that is true of Ron too.

(5) Brian likes Shakespeare, which isn't true of Ron.

Intuitively, that and which are anaphoric expressions, but they lack antecedents on the surface. On the face of it, this is a problem. On the present proposal, however, the initial clauses of (4) and (5) can derive from (6).



Here, we have an antecedent for that and which, namely the subject complement. On the present proposal, then, that and which do have antecedents in underlying structure. Many linguists would derive 'sentential pronouns' like that and which from copies of their antecedents. The sentences retain their significance, however, if

one assumes, as I do, that such pronouns are present in underlying structure.⁵ Unless the initial clauses of (4) and (5) derive from something like (6), there will be no clear antecedents for that and which. If these pronouns lack clear antecedents, their interpretation will be a problematic matter. I think, then, that sentences like (4) and (5) provide important evidence for the proposal.

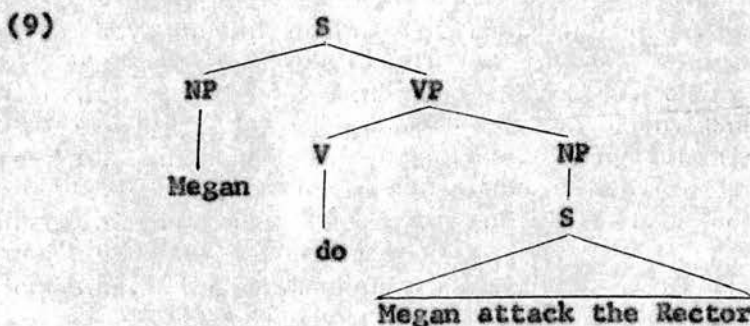
The derivations involved in this proposal are quite simple. All we need is a lowering rule, lowering the binding NP onto one of the variables it binds, and a deletion rule, deleting the rest of the upper sentence. Lowering is optional, as (2) indicates. I assume that deletion also is optional, so that (7) is a possible realization of (3).

(7) It is true that the captain sold his soul.

(7) will also derive from a structure in which the captain appears in its surface position.

Evidence similar to that adduced for structures involving be true supports the postulation of other higher predicates. One such predicate is do. Anderson (1976) and Ross (1972) argue that all action verbs originate inside complements of do. For Anderson, a sentence like (8) would derive from something like (9). Ross would assume a similar source, but with VSO ordering.

(8) Megan attacked the Rector.



5. I will discuss this question in 8.1.

As evidence for this proposal, we have sentences like the following.

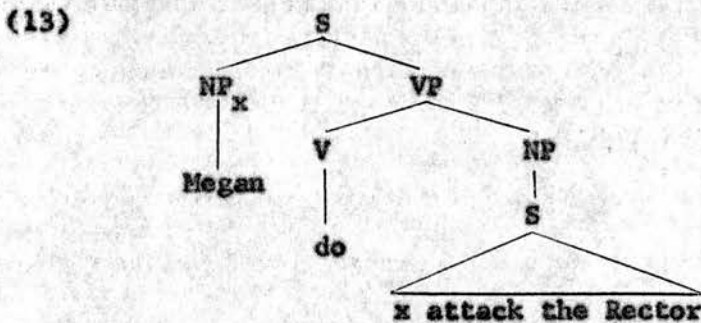
(10) Megan attacked the Rector, and John did it too.

(11) Megan attacked the Rector, which John didn't do.

Clearly, these support the postulation of a higher do in just the same way as sentences like (4) and (5) support the postulation of a higher be true. Further support is provided by question-answer pairs like the following.⁶

(12) What did Megan do? She attacked the Rector.

Structures like (9) seem quite well motivated. I want, however, to make one modification. Anderson and Ross assume that the derivation of a sentence like (8) involves equi and a rule of do deletion. I have argued that equi deletes a bound variable. I assume that it does not involve identity. Instead of (9), then, I would propose (13).



I thus assume that do like be true takes an NP and an open sentence as its arguments.

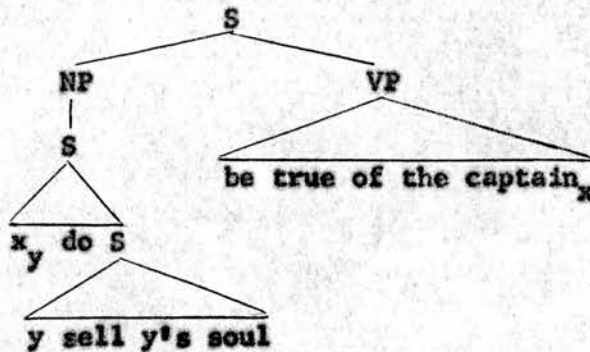
Anderson and Ross assume that a higher do is obligatory with every action verb. I assume that a higher be true is optional. On the face of it, we might assume that do is optional also. Unlike

- - - - -

6. For important discussions of the question-answer relation, see Katz (1972) and Hull (1975).

be true, however, do has a fairly precise semantic function. It expresses the notion of agency. This is suggested tentatively by Ross and argued forcefully by Langacker (1975). For this reason, I am inclined to assume, with Anderson and Ross, that do appears above every action verb. Given this assumption, we could define an agent as any NP that originates either as a subject of do or as the binder of a variable that is a subject of do. The second clause of this definition is necessitated by structures like (14), which is an expanded version of (3).

(14)

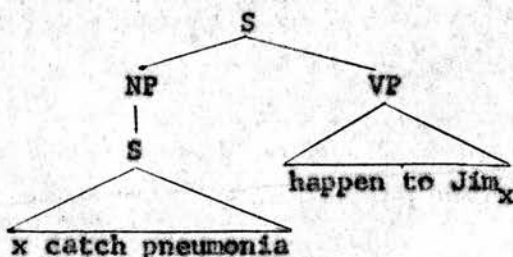


Here, we have one variable binding other variables. I know of no precedents for this, but it seems quite reasonable to allow it.

A second higher predicate which we can postulate is happen. There is evidence that a sentence like (15) with a patient as subject can derive from something like (16).

(15) Jim caught pneumonia.

(16)



Such a source is motivated by sentences like the following.

(17) Jim caught pneumonia, and it happened to Sam too.

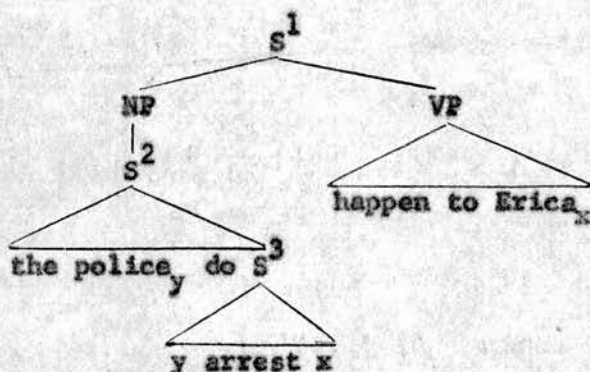
(18) Jim caught pneumonia, which didn't happen to Sam.

(19) What happened to Jim? He caught pneumonia.

Similarly, we might derive a passive sentence like (20) from something like (21).

(20) Erica was arrested by the police.

(21)



This will account for sentences like the following.

(22) Erica was arrested by the police, and it happened to Eve too.

(23) Erica was arrested by the police, which didn't happen to Eve.

(24) What happened to Erica? She was arrested by the police.

The derivation of (15) from (16) will simply involve the lowering of Jim onto the variable x, and the deletion of the rest of the upper sentence. The derivation of (20) from (21) will presumably involve equi and do-deletion, followed by passive on S^2 , and lowering and deletion on S^1 .⁷ I assume that both lowering and deletion are obligatory with happen. That lowering is obligatory is indicated by the ungrammaticality of (25).

(25) * It happened to Jim that he caught pneumonia.

The grammaticality of sentences like (26) might suggest that deletion is optional.

- - - - -

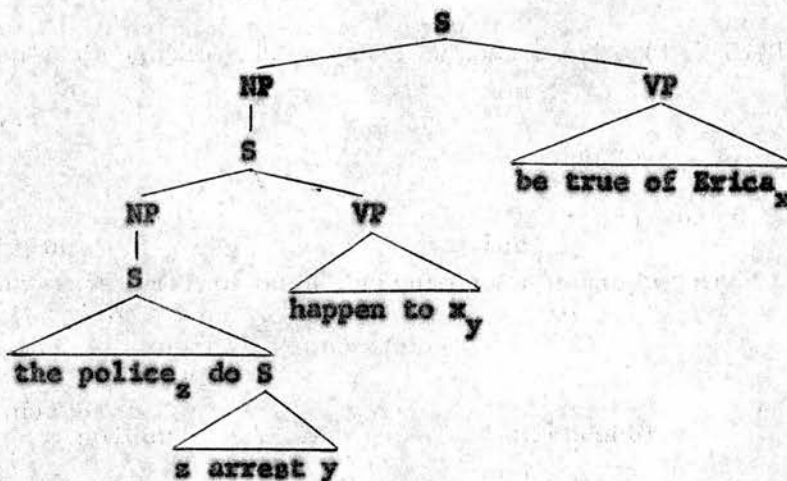
7. I will return briefly to passives at the end of this section.

(26) It happened that Jim caught pneumonia.

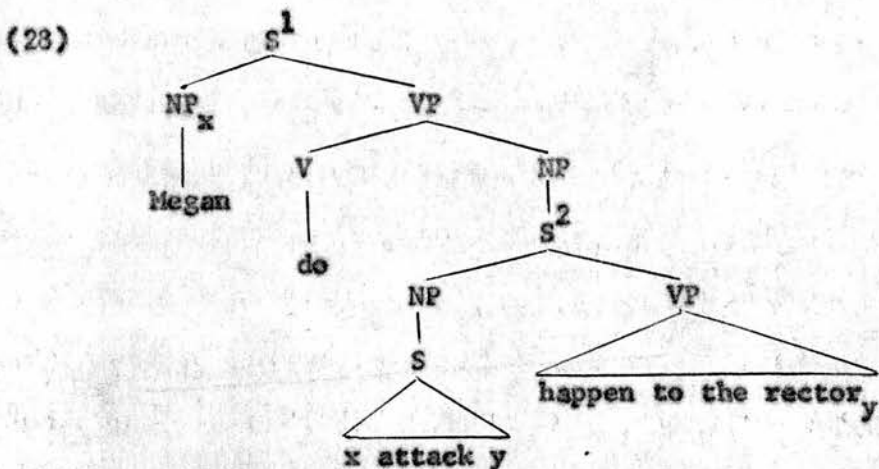
Notice, however, that happen here carries the implication that the event was unexpected. For this reason, I assume, following Eliot (1969), that this is a separate verb happen.

In (16) and (21), happen, like do, seems to have a fairly precise semantic function. Specifically, it seems to express the patient relation. It seems plausible, then, to suggest that it is obligatory in any sentence that contains a patient. A patient, then, will be any NP that originates either as a to argument of happen, or as the binder of a variable that is such an argument. This allows both for structures like (16) and (21), and for structures like (27), which is an alternative source of (15).

(27)



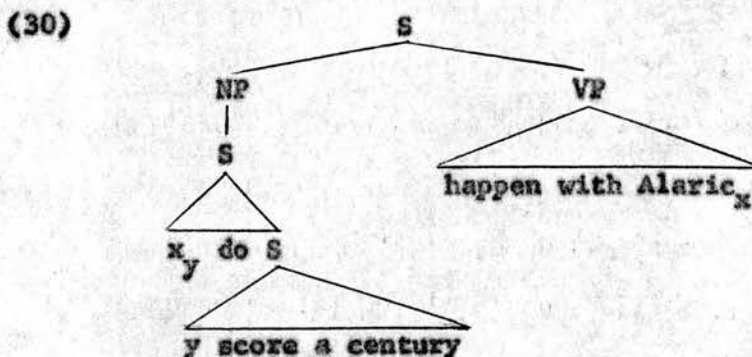
Again, we have here a variable binding another variable. If happen is obligatory in any sentence that contains a patient, it will appear in the underlying structure of actives as well as in that of passives. (13), then, should be expanded as (28).



The derivation of (8) will now involve lowering and deletion on S^2 , followed by equi and do-deletion on S^1 .

Two points cast doubts on this view of happen. Firstly, there is evidence for structures in which happen does not express the patient relation. Consider (29).

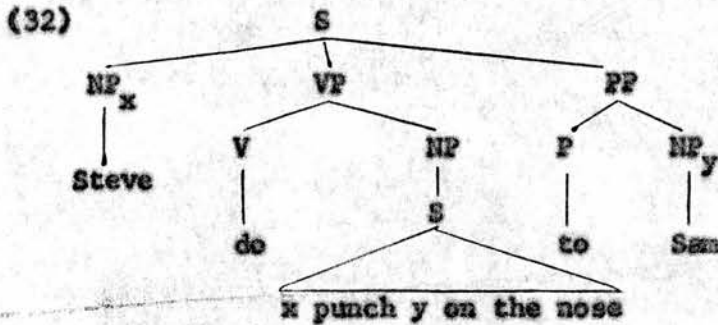
(29) Alaric scored a century, but it won't happen with Jim.
The obvious source for the first clause is something like (30).



Alaric here binds a variable that is subject of do. It is, thus, an agent. Clearly, then, happen here does not express the patient relation. Sentences like (29) are discussed by Chomsky (1971) and Lakoff (1970a). I will consider their discussion shortly. Secondly, there is evidence for structures where the patient is an argument of do. Consider (31).

(31) Steve punched Sam on the nose, but he won't do it to Ron.

The obvious source for the first clause is something like (32).



Sam here is a patient, but it is not an argument of happen.⁸

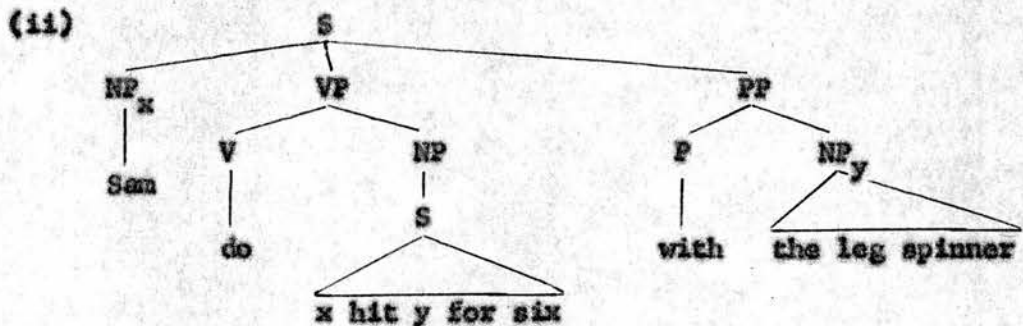
These points suggest quite strongly that happen does not express the patient relation in the same way as do expresses agency. I think, then, that happen should not be obligatory in sentences containing patients. Instead, I will assume that any NP can originate as an argument of happen, and that such an NP is preceded by to, if it is a patient, and with, if it is not. This means, of course, that there can be no simple definition of a patient.

8. Like happen, do can take a with argument as well as a to argument.

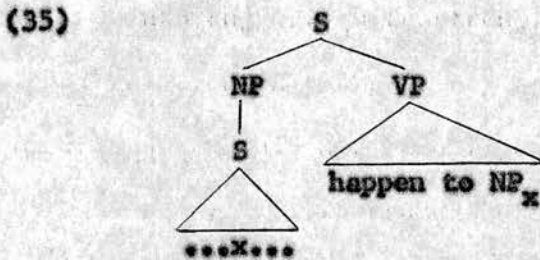
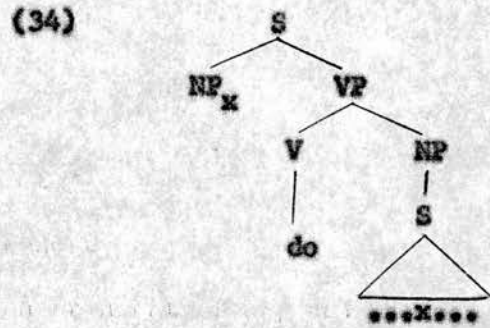
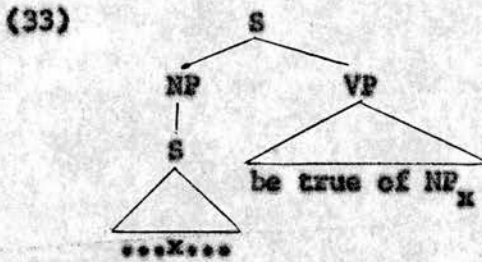
We have sentences like the following.

- (i) Sam hit the leg spinner for six, but he couldn't do it with the off spinner.

Here, the first clause will derive from something like (ii).



I have argued that various sentences derive from structures of one of the following kinds.



In all the sentences I have considered, the binding NP ends up in subject position. I want now to show that this is not the result of an arbitrary selection of data.

Consider firstly the following sentences.

(36) Mary admires Helen, and it's true of Jane too.

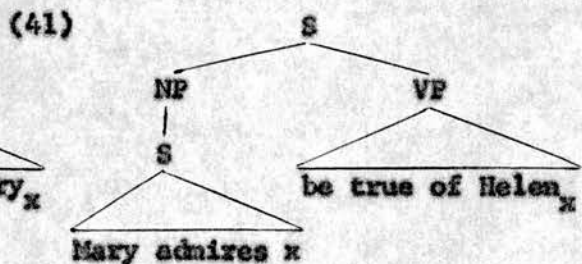
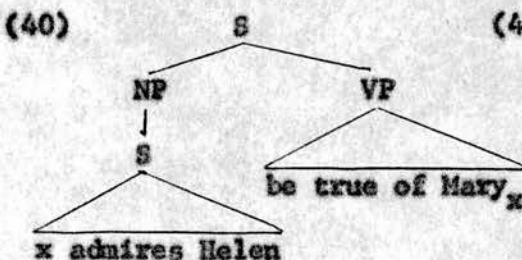
(37) Helen is admired by Mary, and it's true of Jane too.

These are most naturally understood as implying (38) and (39), respectively.

(38) Jane admires Helen.

(39) Jane is admired by Mary.

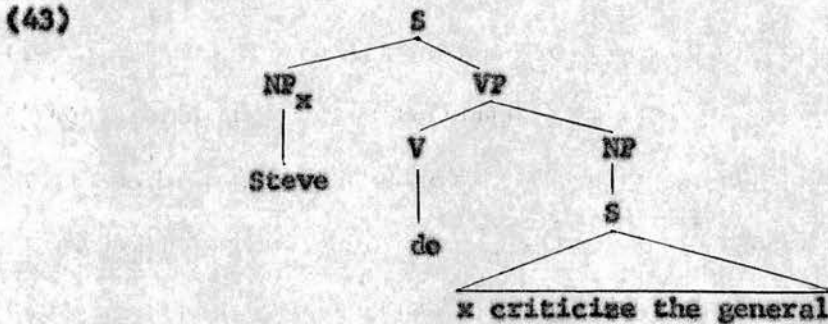
This suggests that the initial clauses of (36) and (37) must derive from something like (40) and (41), respectively. (I ignore inessential detail.)



In both cases, the binding NP ends up in subject position. It looks, then, as if the binding NP in a structure like (33) must end up in subject position. Consider now a typical sentence involving do.

(42) Steve criticized the general, and Tony did it too.

This implies, of course, that Tony criticized the general. The first clause, then, must derive from something like (43).



Again, the binding NP ends up in subject position. Notice now that (44) is much less natural than (42).

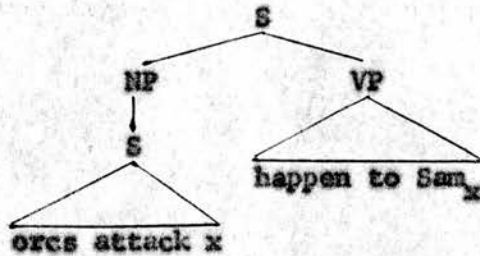
(44) ? The general was criticized by Steve, and Tony did it too.

The reason is quite simple, if we assume that the binding NP in a structure like (34) must end up in subject position. The character of the second clause suggests that the first clause must derive from (43), but, given the putative constraint, it cannot. It is not surprising, then, that (44) is unnatural. This suggests quite strongly, then, that the binding NP in a structure like (34) must end up in subject position. The situation is similar with happen. Consider firstly (45).

(45) Sam was attacked by orcs, and it happened to Jim too.

This implies that Jim was attacked by orcs. The first clause, then, must derive from something like (46).

(46)



Again, the binding NP ends up as subject. As we might expect (47) is much less natural than (45).

(47) ? Orcs attacked Sam, and it happened to Jim too.

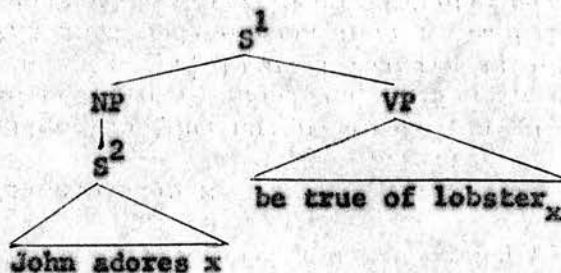
This suggests, then, that the binding NP in a structure like (35) must end up in subject position.

In the light of the foregoing, one might conclude that the binding NP in structures like (33) - (35) must end up in subject position. This would be a mistake, however. Consider (48).

(48) Lobster, John adores, and it's true of crab too.

This implies that John adores crab. The first clause, then, must derive from something like (49).

(49)



The derivation may involve lowering and a traditional topicalization rule, or it may involve a rule left Chomsky-adjoining lobster to S², followed by deletion of the variable x. The important point is that the binding NP does not end up in subject position. It does end up in sentence-initial position, however. It looks, then, as if we can suggest that the binding NP in structures like (33) - (35) must end up in sentence-initial position. Normally, but not always, this will be subject position.

I want now to relate our three structures to certain aspects of information structure. Notice firstly that a simple sentence like (50) can be understood as a comment about a topic.

(50) John kissed Mary.

As Kuno (1972b) puts it, it can be understood as 'Speaking of John, he kissed Mary'. Kuno suggests three other interpretations; contrast - 'John kissed Mary, but Bill did not', exhaustive listing - 'John (and only John) kissed Mary, among those under discussion, it was John who kissed Mary', and neutral description - 'What happened next? John kissed Mary'. In the present context, these other interpretations are not important. What is important is that John can be understood as a topic, and the rest of the sentence as a comment. John is subject of (50). Typically, it is the subject of a sentence that is a potential topic. Notice, however, that, in (51), Mary is a potential topic.

(51) Mary, John Kissed.

It looks, then, as if we can say that a definite NP in sentence-initial position is a potential topic. I have just suggested that the binding NP in structures like (33) - (35) must end up in sentence-initial position. It follows, then, that the ~~binding~~ NP in such structures is a potential topic, and the open sentence a potential comment. It has often been assumed that whether an NP is a potential topic can only be determined in surface structure. It now seems that for many sentences this can be determined in underlying structure.

We must now consider how our informal constraint should be formalized. I want to suggest that we already have an adequate formalization. In the last section, I proposed the following constraint.

- (52) If an NP, NP_i , asymmetrically commands another NP, NP_j , in underlying structure, but does not do so in surface structure, NP_i must precede NP_j .

Notice that, in structures like (33) - (35), the binding NP asymmetrically commands any NP in the embedded sentence. It follows from (52), then, that it must precede such an NP in surface structure, if it does not asymmetrically command it. Thus, (52) allows the first clause of (36) to derive from (40), but not from (41), and the first clause of (37) to derive from (41), but not from (40). It allows the first clause of (42), but not the first clause of (44), to derive from (43). It allows the first clause of (45), but not the first clause of (47), to derive from (46). Finally, it allows the first clause of (48), but not John adores lobster, to derive from (49). It looks, then, as if (52) provides a natural account of the facts considered here. (52), however, does not require the binding NP in structures like (33) - (35) to end up in sentence-initial position. Firstly, it permits (53) and (54) as realizations of (40), and (55) and (56) as realizations of (41).

(53) That she admires Helen is true of Mary.

(54) It is true of Mary that she admires Helen.

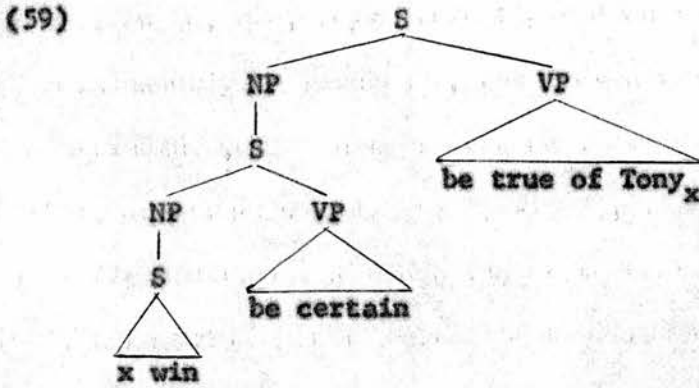
(55) That Mary admires her is true of Helen.

(56) It is true of Helen that Mary admires her.

This seems quite reasonable. Secondly, there is evidence that (52) will permit (57), as well as (58), to derive from something like (59).

(57) It is certain that Tony will win.

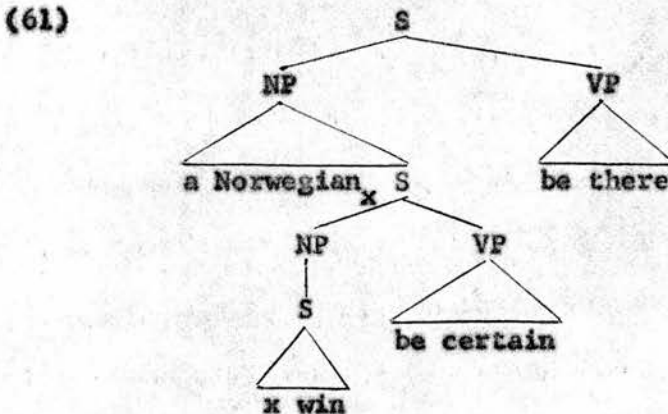
(58) Tony is certain to win.



One might suggest that (52) will block this derivation, since it will be the realization of an NP asymmetrically commanded by Tony in underlying structure.⁹ There is a problem with this line of argument, however. Notice that (60) is ambiguous.

(60) It is certain that a Norwegian will win.

a Norwegian here has both a specific and a non-specific reading. Where it is specific, (60) will derive from something like (61).



a Norwegian in (61) asymmetrically commands the NP that is realized as it. The derivation of (60) from (61) must not be blocked. It seems, then, that it in sentences like (57) and (60) should not

- - - - -

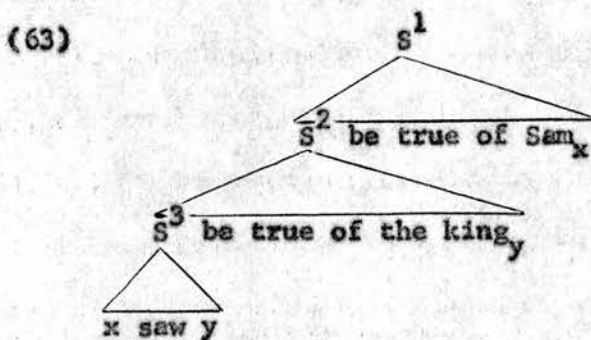
9. In the present context, it does not matter whether it is introduced transformationally or present in underlying structure. I think that it may well be present in underlying structure. See 9.1.

count as an NP for the purposes of (52). If this it does not count as an NP, (52) will not block the derivation of (57) from (59). Does this mean that (52) is inadequate? Notice that the following seems quite acceptable.

(62) It is certain that Tony will win, and that is true of Fritz too.

Given the second clause, the first clause must derive from something like (59). Thus, it seems quite reasonable to allow the derivation of (57) from (59). It looks, then, as if (52) is quite adequate.

In the last section, I considered the possibility of reformulating the second of Lakoff's constraints on quantifiers as a constraint on NP's. I considered, that is, the possibility of a constraint throwing out any derivation in which an asymmetrical command relationship between NP's is reversed. I noted cases where such a constraint is redundant. It may not be completely redundant, however. Consider the following structure.



It seems reasonable that both (64) and (65) should derive from (63).

(64) Sam saw the king.

(65) It is true of Sam that he saw the king.

It is questionable, however, whether (66) should derive from (63).

(66) It is true of the king that Sam saw him.

The proposed constraint will block this derivation. The question is whether it is blocked independently. Let us consider how (66) would

be derived. Clearly, the two main processes are the extraposition of S^3 and the lowering of Sam. Notice that Sam cannot be lowered until S^3 has been extraposed, because of the sentential subject constraint. It follows, then, that the derivation of (66) from (63) will be blocked, if, for some reason, extraposition cannot apply before lowering. Recall now that Ross (1967) argues that extraposition is a postcyclic rule. If he is right, it will be impossible for extraposition to apply before lowering, assuming that the latter is not postcyclic also. It is possible, then, that this derivation may be blocked without the proposed constraint. Recently, however, Jacobson and Neubauer (1976) have argued that extraposition is cyclic. If they are right, the derivation will not be blocked. Thus, the constraint may be necessary after all. Whether or not this constraint is necessary, some constraint seems necessary to rule out (67) as a realization of (63).

(67) * It is true of Sam that it is true of the king that he saw him.

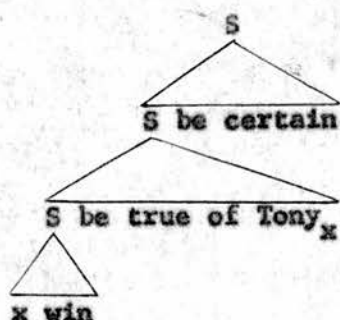
As far as I can see, this is not ruled out by any independent constraint.

In the last section, I also proposed the following constraint.

(68) A full NP cannot command an S in surface structure which it does not command in underlying structure.

The constraint is motivated by facts about indefinite NP's. I assume, however, that it applies to all full NP's. Given the constraint, (57) will derive from both (59) and (69), but (58) will only derive from (69).

(69)

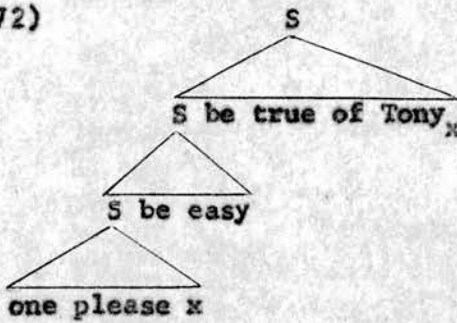


Similarly, while (70) will derive from (72) and (73), (71) will only derive from (72).

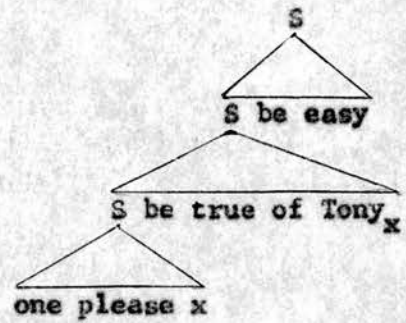
(70) It is easy to please Tony.

(71) Tony is easy to please.

(72)



(73)



These seem quite reasonable restrictions.

I want now to consider Chomsky and Lakoff's discussion of sentences like (29). Chomsky discusses such sentences (1971, fn. 24.) to argue against Lakoff's assumption that sentences like (74) motivate an analysis in which adverbs originate in higher sentences.

(74) Goldwater won in the west, but it could never happen here.

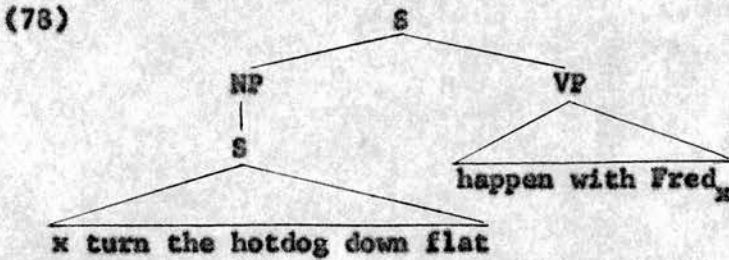
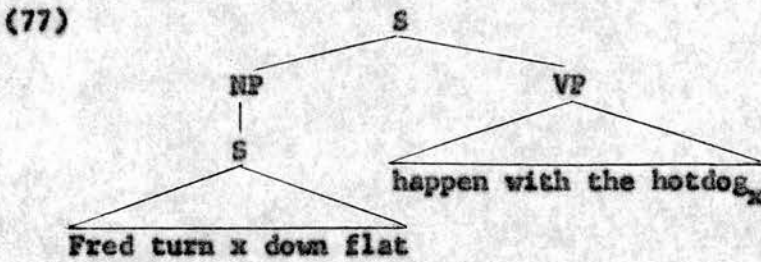
He argues that, by the same reasoning, sentences like (75) motivate an analysis in which objects originate in higher sentences.

(75) Fred turned the hotdog down flat, but it wouldn't have happened with filet mignon.

Equally, he suggests, sentences like (76) will motivate an analysis in which subjects originate in higher sentences.

(76) Fred turned the hotdog down flat, but it wouldn't have happened with Sally.

Chomsky seems to regard this as a *reductio ad absurdum* of Lakoff's approach. Why he regards it as such, however, is none too clear. Presumably, his view is that a sentence should not derive from more than one underlying structure, unless it is ambiguous. As I have said, I reject this view. I would suggest that the first clause of (75) should derive from (77), and the first clause of (76) from (78).



The two structures will have the same truth conditions. It seems to me, then, that sentences like (75) and (76) do not provide any evidence against Lakoff's analysis. Notice, however, that sentences like (75) present a problem for the present framework. In (75) the hotdog follows Fred, yet the former asymmetrically commands the latter in underlying structure. Given (52), this should be impossible. Clearly, then, (52) is not entirely adequate after all. It is not at all clear, however, how it should be revised. I will, therefore, leave it as it is.

Chomsky's discussion of sentences like (75) and (76) is entirely negative. He does not offer any suggestion as to how such sentences should be analyzed. Jackendoff (1972), however, outlines a proposal by Akmajian which takes Chomsky's discussion as its starting point. According to this proposal, the second clause in sentences like (75) and (76) associates the presupposition of the first clause with a new focus. It assumes, then, that (75) and (76) presuppose (79) and (80), respectively.

(79) Fred turned something down flat.

(80) Someone turned the hotdog down flat.

It is easy to show that this account is inadequate. Consider the following dialogues:

(81) A: What happened to Brian?

B: He was arrested in Italy.

A: It wouldn't have happened with Ron.

A's second statement means that Ron wouldn't have been arrested in Italy. On Akmajian's account, then, B's statement should presuppose that someone was arrested in Italy. In the context, however, it clearly presupposes not this, but that something happened to Brian. It seems, then, that Akmajian's proposal is untenable.

In his response to Chomsky, Lakoff (1970, fn.7) seems equally reluctant to derive subjects and objects from higher sentences. He seeks to show that his assumptions do not necessitate such derivations, given Ross's notion of sloppy identity. He considers the following sentence, which is, of course, similar to (75).

(82) Irving refused the peanut butter sandwich, but it
wouldn't have happened with a bagel.

He assumes that the first clause has a simple single clause underlying structure, and that the second clause derives from something like (83).

(83) [_{NP} it [_S Irving refuse it₁]] would never happen with a
bagel₁

He suggests then that the embedded clause in (83) is sloppily identical to the first clause, and, therefore, that it can be deleted. If this analysis were viable, we could account for the anaphoric phenomena considered earlier along similar lines, thus eliminating the need for structures of the kind I have proposed. As it stands, however, the analysis is not viable. The problem is that it misrepresents

Ross's notion of sloppy identity. Ross's position is that rules involving an identity condition can ignore the reference of pronouns commanded by their antecedents. Thus, for him, (84), on its most obvious reading, will derive from (85).

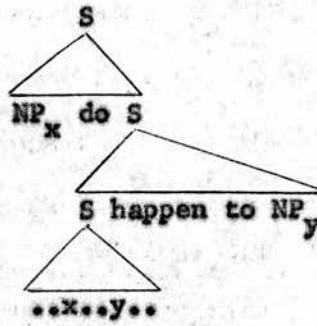
(84) Jim stood on his head, and so did Tony.

(85) Jim_i stood on his_i head, and Tony_j stood on his_j head

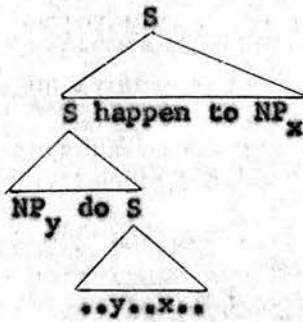
In (85), the two VP's are not strictly identical, since the pronouns differ in reference. VP-deletion, however, will ignore this difference, and reduce (85) to (84). Lakoff's analysis of (82) involves a rather different situation. The rule that deletes the embedded clause in (83) has to ignore the difference between the NP, the peanut butter sandwich, and the pronoun it. Thus, as it stands, Ross's notion of sloppy identity does not provide any support for Lakoff's analysis. In the last chapter I argued that sloppy identity should be understood as identity of constituents containing variables. This view of sloppy identity provides no more support for Lakoff's analysis than does Ross's. One might interpret it in (83) as a variable, but, on Lakoff's analysis, the parallel position in the antecedent will be filled by a full NP. I conclude, then, that Lakoff does not succeed in avoiding the derivation of subjects and objects from higher sentences.

I will conclude this section with some further remarks about passives. So far, I have assumed that the only underlying differences between actives and passives are those which follow from (52). Given (52), only actives can derive from a structure like (86), and only passives from a structure like (87).

(86)

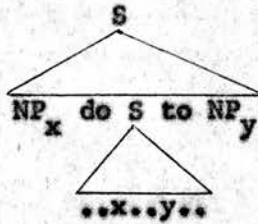


(87)



Both actives and passives, however, can derive from a structure like (88).

(88)

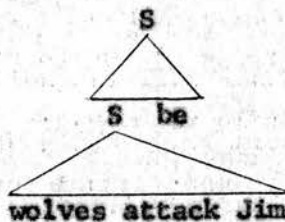


It is possible that we should recognize other differences.

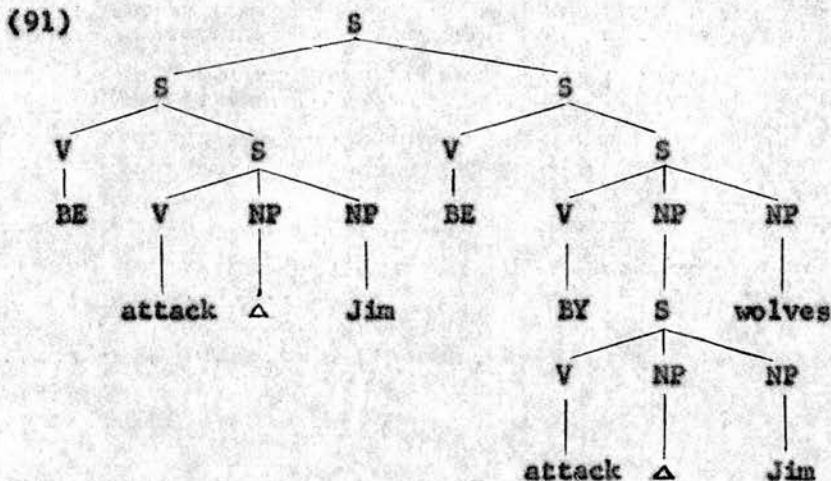
R. Lakoff (1971) suggests that passive be is present in underlying structure. Specifically, she suggests that passives derive from structures in which the underlying structure of the related active is embedded as subject of be. For her, then, (39) will derive from something like (90).

(39) Jim was attacked by wolves.

(90)

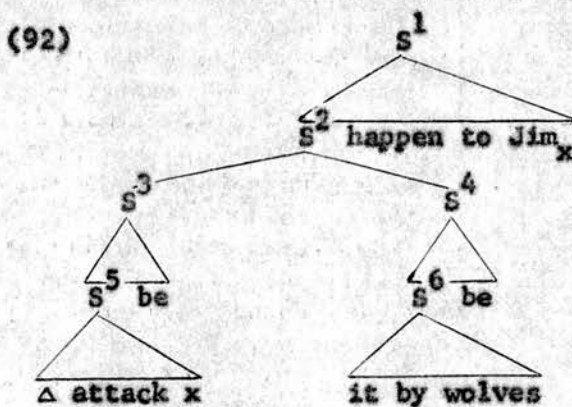


In the derivation of (89), wolves and Jim will be interchanged, and subject raising will make Jim subject of be. Langacker and Munro (1975) argue for a further difference between actives and passives. They suggest that passive agents originate in conjoined clauses. They would derive (89) from something like (91). (They assume predicate first order.)



In the derivation of (89), the second clause will be reduced and incorporated into the first clause.

Both these proposals seem quite plausible. It is quite easy to incorporate them into the present framework. We could suggest that (89) derives from something like (92), where S^5 is antecedent of it.



If passives do derive from such a source, my assumption that do appears above every action verb will have to be revised. So, obviously,

will my characterization of an agent NP.

It is worth noting one possible argument for such an analysis. Notice that, in the derivation of passives from structures like (87) and (88), passive can only apply after equi and do-deletion have made the subject of do subject of the embedded verb. Passive is a cyclic rule. Thus, equi and do-deletion must also be cyclic. It is possible however, that equi is post-cyclic. This is, in effect, the conclusion of Postal (1970). If it is, it is hard to see how to derive passives from structures like (87) and (88). Obviously, no such problem arises with a structure like (92). It is possible, then, that passives should derive from such structures. There is, however, one way to maintain structures like (87) and (88), if equi is post-cyclic. This is to assume that do governs not equi but lowering. There is no reason to assume that lowering is post-cyclic. Thus, if do governs lowering, there will be no problem about deriving passives from structures like (87) and (88). Therefore, the post-cyclic ordering of equi does not necessarily preclude the derivation of passives from such structures. Other considerations, however, may favour structures like (92). I will leave this issue unresolved.

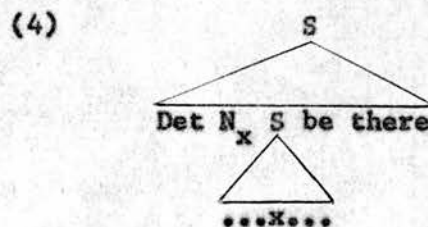
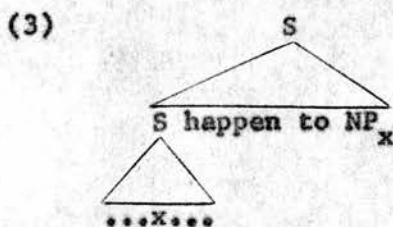
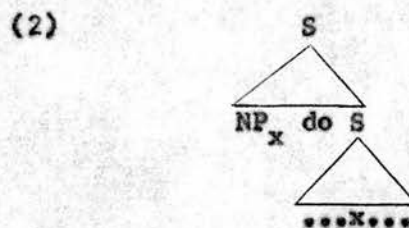
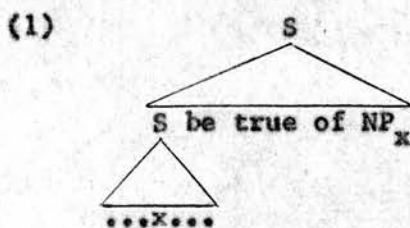
CHAPTER 5

BOUND VARIABLES: FURTHER QUESTIONS

In the last chapter, I considered some general questions about the underlying structures in which bound variables appear and the derivations with which they are associated. In this chapter, I will take up some more specific questions. Firstly, I will say something about plurality. Then, I will consider a number of aspects of the derivational processes which I am assuming. Finally, I will take a brief look at Bach-Peters sentences.

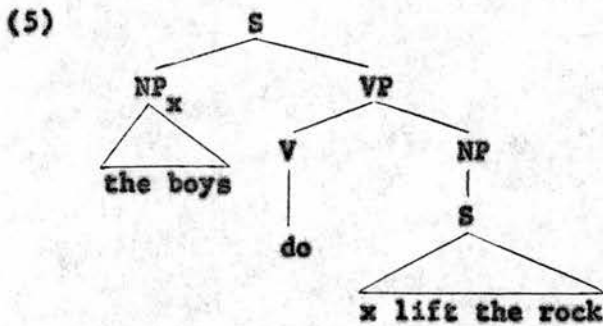
5.1 A Note on Plurality

I have argued that many sentences have underlying structures of one of the following forms.



The NP's in (1) - (3) and the N in (4) may be either singular or plural. Where they are plural, an important problem arises. In this section, I will say something about this problem.

We can illustrate the problem with a structure of the kind represented in (5).



Influenced by the practice of logicians, we might suppose that this is equivalent to the logical formula (6).

(6) $(\forall x \in \text{the boys})(\text{lift}(x, \text{the rock}))$

We might, that is, interpret (5) as meaning that each boy lifted the rock. It is natural, however, to regard (5) as the underlying structure of (7).

(7) The boys lifted the rock.

(7) is certainly appropriate where each boy lifted the rock, but it is also appropriate where the boys lifted the rock together. A natural suggestion is that sentences like (7) are ambiguous between a distributive and a collective reading.

This is not necessarily the case, however. An alternative possibility is that such sentences are simply vague. Lakoff (1970c) notes that VP-deletion provides a way of deciding between these alternatives. He points out that, if two sentences with identical VP's are ambiguous, VP-deletion can only apply if they are understood in the same way. (8) is a simple example of an ambiguous sentence.

(8) Sam hates boring students.

One might expect, then, that (9) would be four ways ambiguous. In fact, however, it is only two ways ambiguous.

(9) Sam hates boring students, and so does Steve.

In accordance with Lakoff's observation, both conjuncts must be

understood in the same way. Contrasting with (8) is (10), which no one would regard as ambiguous.

(10) Sam broke his leg.

Suppose, however, that someone claimed that (10) is ambiguous between a reading on which Sam broke his left leg and one on which he broke his right leg. This claim can be immediately refuted by (11).

(11) Sam broke his leg, and so did Steve.

If the claimed ambiguity were real, (10) would be impossible in a situation where Sam broke his left leg and Steve his right leg or vice versa. Clearly, however, this is not the case. Therefore, the claimed ambiguity is not real. (10) is simply vague as to which leg Sam broke. We can now consider whether sentences like (7) are in fact ambiguous. The crucial question is the interpretation of sentences like (12).

(12) The boys lifted the rock and so did the girls.

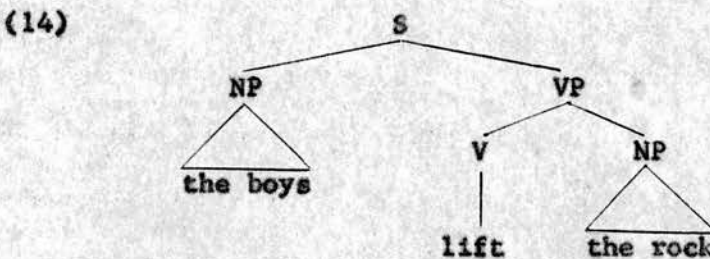
The judgement is fairly fine, but it seems to me that (12) is not appropriate where each boy lifted the rock but the girls lifted it together, or vice versa. This suggests, then, that sentences like (7) are in fact ambiguous. It is necessary, then, to consider how this ambiguity can be accommodated in the present framework.

We can begin with an approach to the distributive/collective distinction developed by Kroch (1974). Kroch uses an extension of standard logical notation for semantic representation. Standard logical notation handles distributive readings most naturally. Within standard logic, the obvious representation for (7) is (6), which is a natural representation for the distributive reading of (7). To handle collective readings, Kroch allows set representations as well as variables to appear as arguments of

predicates. The collective reading of (7) he would represent as something like (13).

(13) lift (the boys, the rock)

A somewhat similar approach is adopted in Fauconnier (1971). It is natural, then, to consider whether such an approach can be incorporated in the present framework. The obvious way to do so is to regard (5) as the source for (7) on its distributive reading, and to derive it from the simpler structure (14) on its collective reading.



Unfortunately, there are two good arguments against this approach.

The first argument returns to some of the main evidence for structures like (5). Evidence for such structures is provided by sentences like (15).

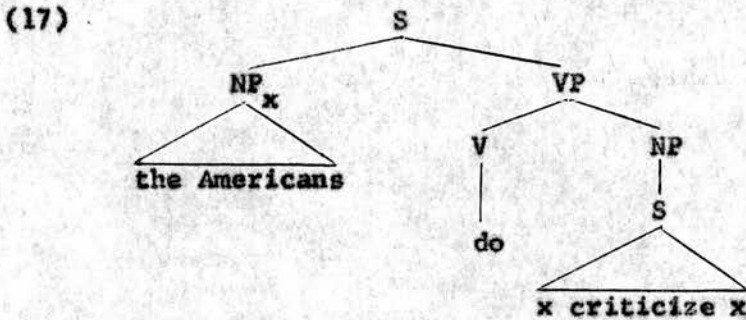
(15) The boys lifted the rock, and the girls did it too. The interpretation of the second clause here is handled quite naturally if the first clause derives from something like (5). Notice now that (15) can be understood either distributively or collectively. Thus, (15) provides evidence that both the distributive and the collective readings of (7) involve structures like (5).

The second argument involves sentences like (16).

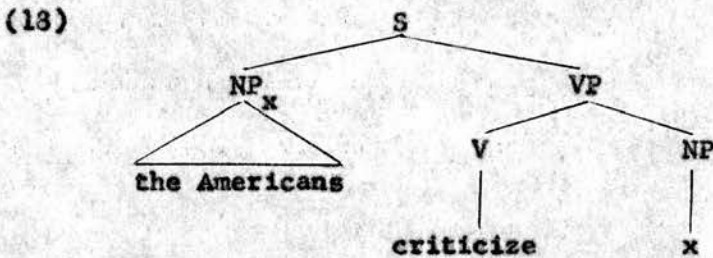
(16) The Americans criticized themselves.

(16) has both a distributive and a collective reading. It can mean

that each of the Americans in question criticized himself, or that the group criticized the group as a whole. I argued earlier that reflexive pronouns can only represent bound variables. In the present framework, then, the obvious source for (16) is something like (17).



We might regard this as the source of (16) on its distributive reading. For the collective reading of (16), we might try something like (18).



Notice, however, that the NP the Americans does not asymmetrically command the variable x . The variable, therefore, is not in the scope of the NP, and cannot be bound by it. Thus, the approach under consideration is incompatible with the conception of variable binding assumed here.

A second approach which naturally suggests itself to anyone influenced by standard logical notation interprets the distributive/collective distinction as a matter of quantifier scope. This approach is adopted in McCawley (1968). He represents the distributive and collective readings of (19) as (20) and (21) respectively.

(19) Those men went to Cleveland.

(20) $\forall x \in M \exists y_x$ 'go to Cleveland' (x, y_x)

(21) $\exists y \forall x \in M$ 'go to Cleveland' (x, y)

He does not explain the exact meaning of his symbolism, but the intended interpretation is fairly clear. (20) signifies that for each of the men there is a going to Cleveland. (21) signifies that there is a single going to Cleveland that all the men are involved in. Essentially the same approach is developed in somewhat more detail in Bartsch (1973). She represents the distributive and collective readings of (22) as (23) and (24), respectively.¹

(22) Three men are entering.

(23) $(\exists X)(X \subset \text{man}' \ \& \ f_p^m(X) = 3 \ \& \ (\forall x)(x \in X \rightarrow (\exists r)(I(x,r) \ \& \ \text{enter}' - V(r))))$

(24) $(\exists X)(X \subset \text{man}' \ \& \ f_p^m(X) = 3 \ \& \ (\exists r)(\forall x)(x \in X \rightarrow I(x,r) \ \& \ \text{enter}' - V(r))))$

X here is a set variable. f_p^m is a function which takes a set as its argument and gives as its value the number of members in the set. I(x,r) means 'x is involved in r'. enter' - V can be translated as 'an entering process'. The two representations might, then, be translated into 'logicians' English' as follows.

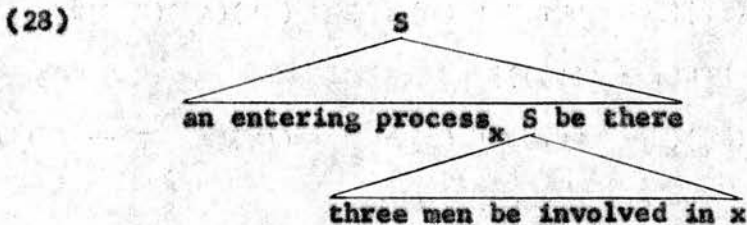
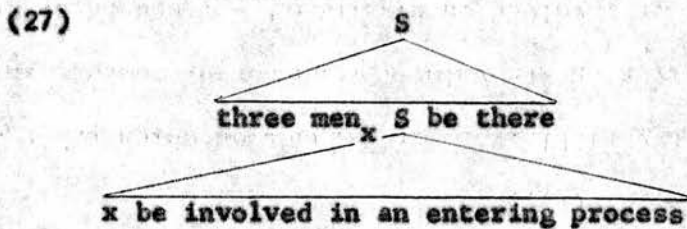
- - - - -

1. Bartsch terms her framework 'natural generative grammar', but she seems not to be concerned about the naturalness of her logical structures.

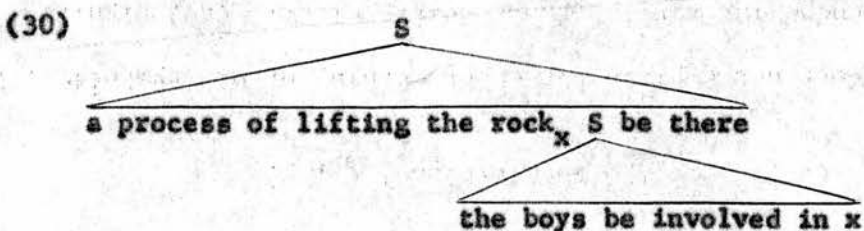
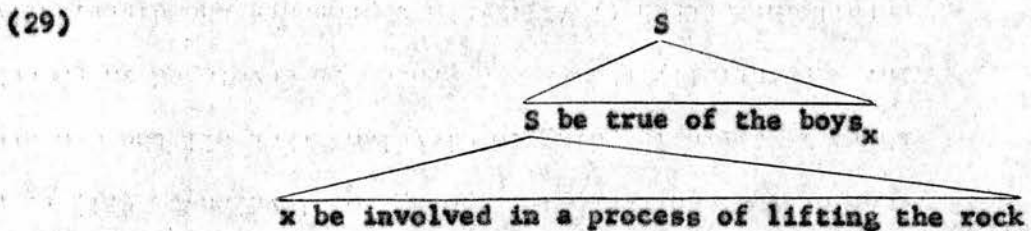
- (25) There are three men each of whom is involved in an entering process.
- (26) There is an entering process that each of three men is involved in.

This is hardly natural English, but it does capture the intended interpretation of (23) and (24).

The notational systems employed by McCawley and Bartsch are very different from the underlying structures assumed here. It is not too difficult, however, to incorporate their approach in the present framework. For the two readings of (22), we might suggest the following structures.



For the two readings of (7), we might try the following.



(In (30), the index following rock is to be understood as attached to the complex noun process of lifting the rock.) In one respect, however, these structures are clearly inadequate. On its distributive reading, (7) does not mean that each boy was involved in a process of lifting the rock, but that each boy actually lifted the rock himself. Similarly, on its collective reading, (7) does not mean that there was a process of lifting the rock that the boys were involved in, but that the boys lifted the rock between them. We might make this clear by replacing be involved in by accomplish or do. With this modification, the structures in (29) and (30) seem semantically appropriate.

The main problem with this approach is that, while it might work semantically, there is no real independent evidence for it. The crucial existential assertions never appear in surface structure, except in logicians' English. Such appearances hardly count as evidence for the assertions. The absence of independent evidence for these assertions does not necessarily mean that this approach should be rejected, but it does suggest that one should look for alternatives.

One alternative is that developed in Cresswell (1973). In Cresswell's system, a simple plural NP is interpreted distributively. To account for the collective interpretation of plural NP's he postulates a collective operator. This converts a nominal into a logically proper name. Semantically, this approach seems quite reasonable. Like the approach of McCawley and Bartsch, however, it lacks clear independent support. There seems to be no lexical item in English that can be regarded as the realization of a collective operator. One might perhaps suggest that together is the

realization of such an operator. It's general behaviour suggests, however, that it is some kind of adverb.

The obvious alternative to Cresswell's approach is one in which a simple plural NP is interpreted collectively, and in which the distributive interpretation of plural NP's is accounted for by some kind of distributive operator. This is essentially the approach adopted in Anderson (1974b). There is fairly clear independent support for such an approach. Notice that (31), unlike (7), has only a distributive reading.

(31) Each of the boys lifted the rock.

This suggests, then, that each is the surface realization of a distributive operator. (32) also has only a distributive reading.

(32) Every boy lifted the rock.

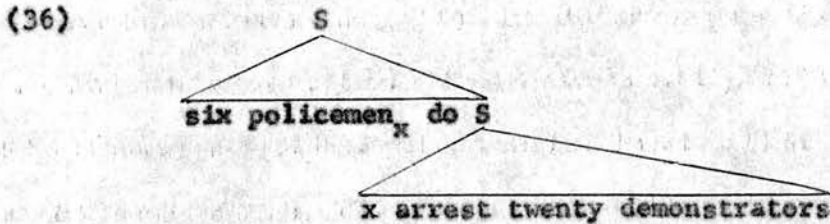
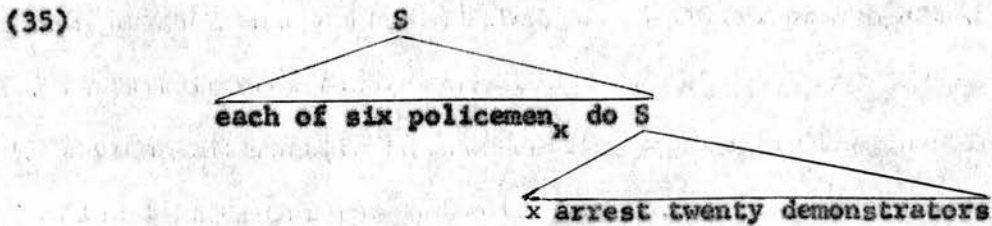
every, then, might be the realization of another distributive operator. All we need in this approach is a rule deleting a distributive operator.

To show how this approach might work, I will consider the following sentences.

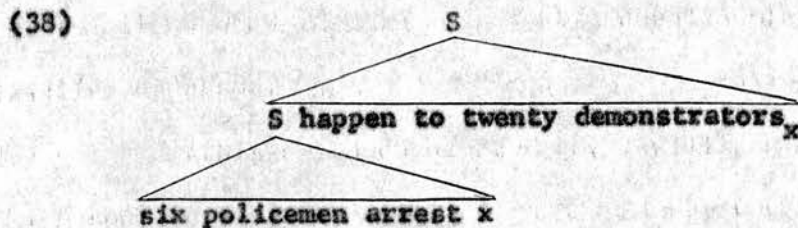
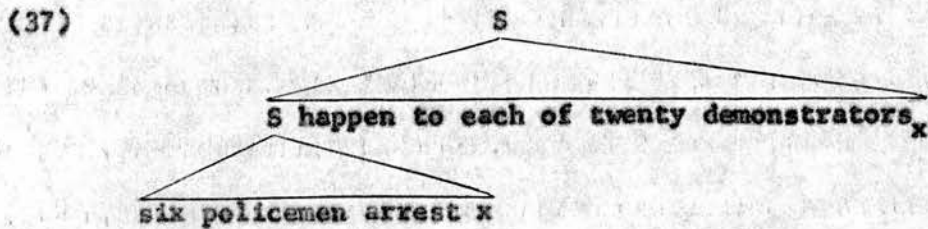
(33) Six policemen arrested twenty demonstrators.

(34) Twenty demonstrators were arrested by six policemen.

Both sentences have a distributive and a collective reading. (33) means that the policemen arrested twenty demonstrators each, or that they arrested twenty demonstrators between them. (34) means that each of the demonstrators was arrested by six policemen, or that the demonstrators as a group were arrested by six policemen. Notice that the collective readings of the two sentences are effectively the same. The two readings of (33) can be derived from (35) and (36).



Similarly, the two readings of (34) can be derived from (37) and (38).



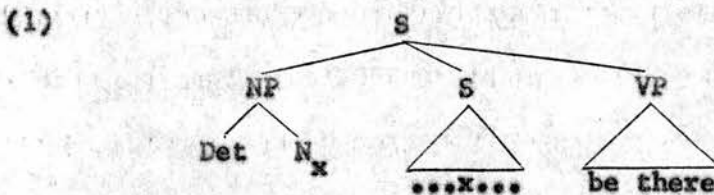
Although they have the same truth conditions, (36) and (38) differ quite radically. Notice, in particular, that the positions of the two quantifiers is reversed. In the present approach, such differences do not necessarily involve different truth conditions. This is an important difference between this approach and standard logical notations.

I would not claim to have established the clear superiority of the present approach, only to have given reasons for thinking that it is more promising than the obvious alternatives. It seems clear that the distributive/collective distinction can be incorporated in the present framework, and that this approach is a promising way of doing it.

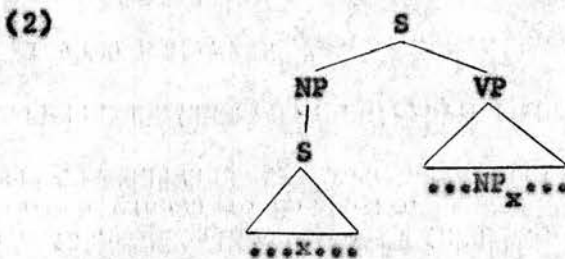
5.2. NP-lowering

In this section, I want to say something more about the NP-lowering rules that I assumed in the last chapter. I will consider, in particular, what independent evidence there is for these rules and their ordering. Before I do so, however, I want to say something about the basic form of the rules.

Assuming the first version of relative clause raising, the first NP-lowering rule will apply to a structure like (1), lowering the subject NP onto the variable in the following open sentence.



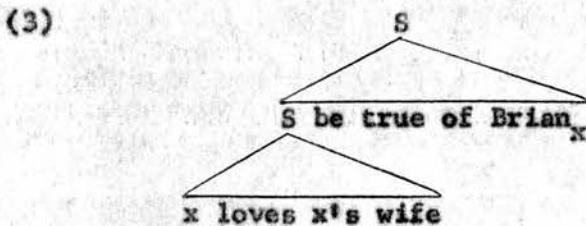
The second NP-lowering rule applies to structures like (2), lowering the indexed NP onto the variable in the sentential subject.



Clearly, these two rules are quite similar. Both substitute an NP for a variable. One might think, then, that they should be collapsed in some way. One obvious difference between them is that the first moves an NP to the right, while the second moves an NP to the left. In the present framework, this prevents the collapsing of the two rules. One might suggest, however, that linear order is not introduced until late in the derivation, perhaps at shallow structure. Thus, the different directions in which the NP's are moved does not

necessarily mean that the rules cannot be collapsed. There is, however, a further problem. In the first rule, the variable onto which the NP' is lowered is bound by the N within the NP, whereas, in the second rule, the variable onto which the NP is lowered is bound by the NP itself. Given this difference, I can see no obvious way of collapsing the two rules. Tentatively, then, I conclude that there are two distinct rules of NP-lowering.

Unlike a number of linguists, notably Keenan (1972) and McCawley (1970a), I assume that NP-lowering is unconstrained in the sense that an NP can be lowered onto any variable which it or its N binds. This means, for example, that Brian in (3) can be lowered onto either of the variables in the sentential subject.



Of course, the only possible realization of (3) is (4).

(4) Brian loves his wife.

(5) is not a possible realization of (3).

(5) He loves Brian's wife.

But it is not necessary to restrict NP-lowering to prevent the derivation of (5) from (3). It is more plausible, I think, to assume that such derivations are thrown out by output conditions.

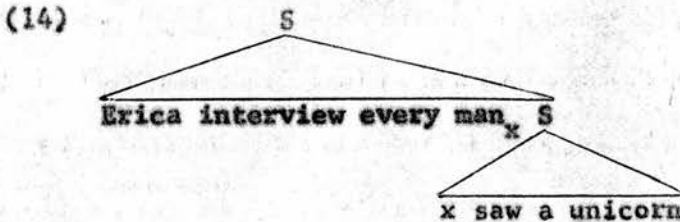
The main independent evidence for lowering rules is provided by their interaction with island constraints. This interaction was apparently first noted by McCawley. The earliest published discussion is in Lakoff (1970b).

a relative clause can have a scope extending outside the clause.²

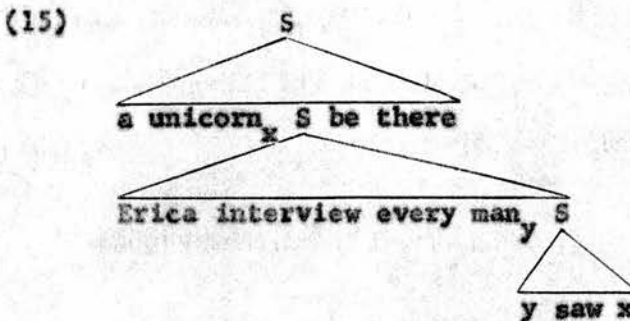
He illustrates with sentences like the following.

(13) Erica interviewed every man who saw a unicorn.

every here must have a wider scope than a. (13), then, will derive from something like (14).



It cannot derive from (15).



The reason, of course, is that the derivation of (13) from (15) is blocked by the complex NP constraint.

Lowering also interacts with the coordinate structure constraint. This is illustrated by sentences like the following, discussed by Rodman.

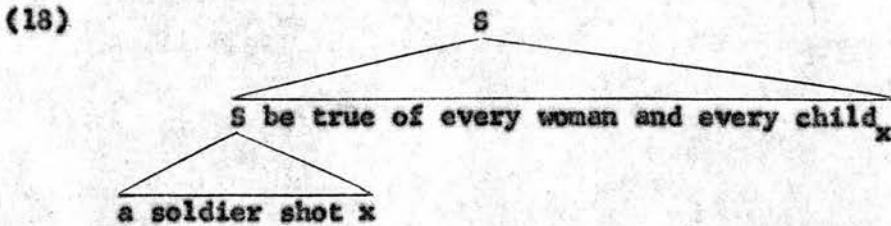
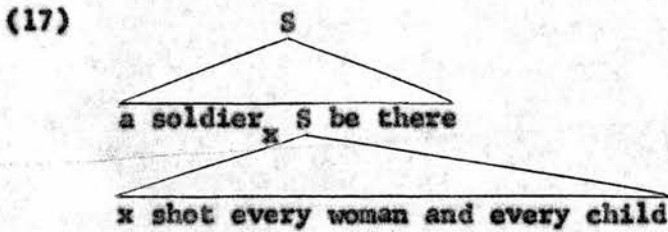
(16) A soldier shot every woman and every child.

As Rodman points out, (16) is only two ways ambiguous. The quantifiers

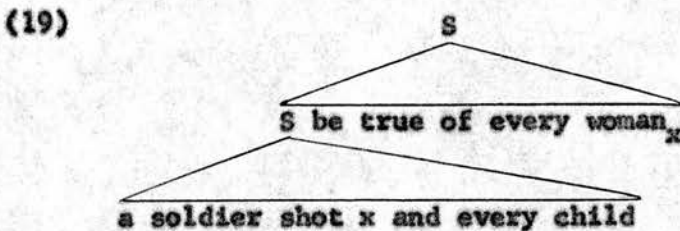
- - - - -

2. Rodman suggests that facts like these are accommodated particularly naturally in a Montague framework. They are accommodated just as naturally, however, in the present framework.

in the conjoined structure function as a single unit, and may be either inside or outside the scope of a. (16), then, will derive from either (17) or (18).



(The index following child is to be understood as attached to the conjoined structure.) Any structure in which the conjoined structure is not a single unit will be prevented from surfacing by the coordinate structure constraint. Consider, for example, (19).



Here, the coordinate structure constraint blocks the lowering of every woman onto the variable x. A structure like (19) but with the positions of every woman and every child reversed will be prevented from surfacing in just the same way.

The sentential subject constraint also provides support for lowering. Consider the following pair of sentences.

(20) It's likely that Sam insulted many Italians.

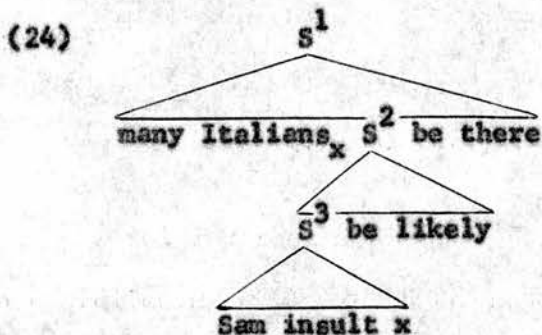
(21) That Sam insulted many Italians is likely.

(20) is ambiguous, having the specific reading (22), and the non-specific reading (23).

(22) There are many Italians that it's likely that Sam insulted.

(23) It's likely that there are many Italians that Sam insulted.

(21) is unambiguous, having only a non-specific reading. We can assume that the specific reading of (20) derives from something like (24).



If extraposition is a cyclic rule, as Jacobson and Neubauer (1976) argue, it will apply on S^2 . Then, on S^1 , many Italians will be lowered onto the variable x . If extraposition does not apply, the sentential subject constraint will block lowering. Thus, (21) will not be derived from (24).

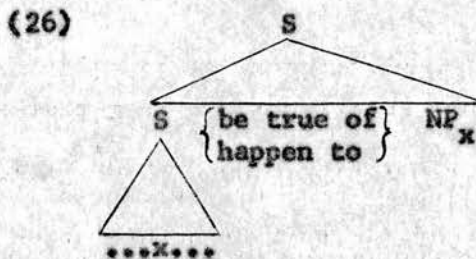
It seems, then, that we can explain a number of observations in terms of the interaction of lowering and island constraints. We should note, however, that lowering is not always blocked by island constraints. Consider (25), to which Rodman draws attention.

(25) A soldier found every student and shot him.

Here, every student is inside a coordinate structure. It must, however, have originated outside this structure, since it must have asymmetrically commanded the variable underlying him. Here, then, an NP has been lowered into an island. It is not at all clear, then, why (25) is acceptable.

Before I look more closely at the ordering of NP-lowering, a

further remark is necessary about island constraints. I have argued that many sentences derive from structures of the following form.



On the face of it, the lowering that this analysis involves should be blocked by the sentential subject constraint. There is, however, a fairly straightforward way out of this dilemma. Postal (1974b) suggests that the movement of elements across island boundaries is not blocked if the boundary is destroyed in the process. Given this conception of islands, we need only assume that the predicates be true and happen are deleted either before or at the same time as NP-lowering and the sentential subject constraint will no longer be a problem for our analysis.

I can now turn to the ordering of NP-lowering. In my discussion of the bound variable theory, I noted that Wasow's critique of the theory amounts to an argument for the precyclic nature of NP-lowering. I assumed in my discussion of (20) and (21), however, that NP-lowering is cyclic. Clearly, if Wasow's argument is sound, this discussion will require some revision. Before I discuss this question, however, I want to consider some other implications of Wasow's argument.

I suggested in chapter 1 that surface structure interpretation rules are in effect precyclic transformations with associated global constraints. As an example, I suggested that a rule which says that the scope of quantifiers corresponds to their surface order is equivalent to a precyclic lowering rule plus a constraint on

surface structure. It follows that any evidence that NP-lowering is precyclic will be evidence for the essential correctness of an important aspect of interpretivist claims. It will thus be of comparable importance to the evidence that predicate raising and nominalization are precyclic. I also suggested in chapter 1 that a transformation changes meaning if some aspect of the meaning of the sentence in whose derivation it applies is predictable from its output but not from its input. If NP-lowering is precyclic, movement transformations will often change meaning. Passive, for example, will change meaning in the derivation of (27).

(27) Two languages are known by everyone in the room.

The meaning of (27) will not be predictable from the input to passive, because this will figure in the derivation of (28).

(28) Everyone in the room speaks two languages.

Obviously, there will be similar examples with other movement rules. It is clear, then, that whether NP-lowering is precyclic is of some importance.

As I noted above, if NP-lowering is precyclic, my explanation of the contrast between (20) and (21) will need some revision. If NP-lowering is precyclic, the sentential subject constraint, as it stands, will prevent (20) as well as (21) from being derived from (24). The constraint will also fail to block derivations which it should block. Consider the following pair of sentences.

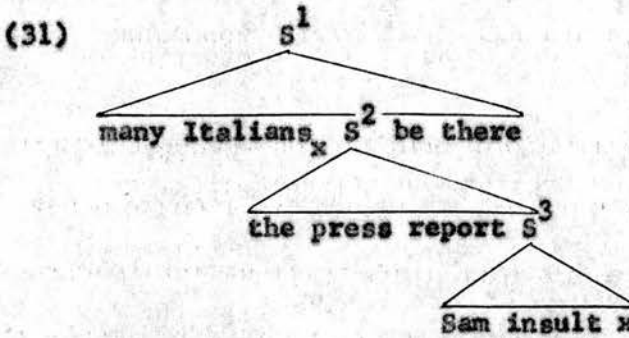
(29) The press reported that Sam insulted many Italians.

(30) That Sam insulted many Italians was reported by the press.

(29) is ambiguous, having both a specific and a non-specific reading.

(30) is unambiguous, having only a non-specific reading. The specific

reading of (29) will derive from something like (31).



Since S^3 is not in subject position, there is nothing to prevent the lowering of many Italians onto the variable x . If NP-lowering is cyclic, it will be blocked by the sentential subject constraint, if passive applies on S^2 , making S^3 subject. If NP-lowering is precyclic, it will apply before passive, and there will be nothing to prevent passive applying subsequently. Thus, if NP-lowering is precyclic, it will be possible to derive both (29) and (30) from (31).

It is clear from the foregoing that a reformulation of the sentential subject constraint will be necessary if NP-lowering is a precyclic rule. The constraint will have to be formulated to throw out any derivation in which a complement appears in surface subject position, and in which either some element that was originally outside the complement appears inside or some element that was originally inside appears outside. This formulation will permit the derivation of (20) from (24), where the complement is moved out of subject position after lowering. It will also block the derivation of (30) from (31), where the complement is moved into subject position after lowering.

The nature of island constraints is currently far from clear. Chomsky (1973) and Horn (1974, 1977) have proposed radical reanalyses

of the constraints.³ Rodman (1975) suggests that they are manifestations of more basic fuzzy constraints. Morgan (1975a) and Fauconnier (1975) show that certain apparently pragmatic phenomena are subject to them. In this situation, there is nothing obviously unreasonable about the suggested reformulation. It is clear, however, that the reformulation is more complex than the normal formulation. Other things being equal then, it is preferable to retain the normal formulation. We must ask, then, whether Wasow's arguments do necessitate a precyclic rule of NP-lowering, and hence the reformulation of the sentential subject constraint.

Wasow's arguments are based on the fact that, if NP-lowering is cyclic, it will be possible for other transformations to apply before it. Given this fact, problems will arise if there are transformations that distinguish between pronouns and full NP's. Such transformations will encounter structures containing variables, and it will be impossible to say how they should apply to these structures, since variables can be realized as pronouns or as full NP's. If NP-lowering is precyclic, however, this problem will not arise. The crucial transformations will not encounter structures containing variables. There will, therefore, be no problem about their application.

The two most plausible examples of transformations that distinguish between pronouns and full NP's are particle movement and dative movement. The following data suggest that particle movement is obligatory with pronouns, while dative movement is blocked.

- - - - -

3. I will return to Chomsky's 'conditions on transformations' in 7.3.

(32)a. * Eve gave away it.

b. Eve gave it away.

(33)a. Dick gave it to Brian.

b. * Dick gave Brian it.

Wasow, in fact, suggests, following Lasnik, that this data reflects not conditions on the application of particle movement and dative movement, but a cyclic rule encliticizing pronominal direct objects. Either account of the data will pose a problem for cyclic lowering. There is, however, an alternative approach which does not have this consequence. This will involve a surface structure constraint rejecting sentences with pronominal direct objects which are not adjacent to the verb. Such a constraint will obviously come into play after lowering, however it is ordered. It is thus quite compatible with a cyclic rule. Wasow considers this alternative, and suggests that it is 'probably not the best mechanism for accounting for the kinds of facts in question'. Unless the alternative can be ruled out more firmly than this, the above data cannot be regarded as providing firm evidence against cyclic lowering.

Wasow also seeks evidence against number agreement from the operation of number agreement and there-insertion. I will say something about number agreement later. For the moment, I will simply note that I do not think that the facts of agreement necessitate precyclic lowering. As for there-insertion, in the present framework, this can provide no evidence against cyclic lowering, because there is no such rule. In connection with there-insertion, Wasow discusses the following sentence.

(34) A man who discovered that there were some burglars in his house was shot by them.

In the bound variable theory, this will have to derive from something like (35).

(35) [X: some burglars] [_{S₁} X shot a man who discovered [_{S₂} X were
in his house]_{S₂}]_{S₁}

Its derivation will involve there-insertion, passive, and lowering. The problem in this framework is to prevent the derivation of (36), where there-insertion has applied, but not passive.

(36) * Some burglars shot a man who discovered that there were they in his house.

In the present framework, (34) will have a rather different analysis. some burglars can originate inside the complement of discover associated with there, and them can be a pronoun of laziness. We can restrict ambient there to indefinite NP's, thus preventing the generation of sentences like (36).

It is always possible that clear evidence will be found against cyclic lowering. I do not think, however, that Wasow has provided it. I conclude then that the case against such lowering is not proven.

5.3. The Command Constraint

In chapter 3, I alluded to the command constraint, which requires bound variables to be commanded by their antecedents. This constraint is identified in Witten (1972). Witten distinguishes a class of deep structure pronouns which correspond closely to my bound variables, and notes that, in general, they must be commanded by their antecedents. In this section, I will say something about this

constraint. I will say a little more than Witten, but I will leave a number of questions open.

It will be recalled that the command constraint is central to my explanation of various facts about the interpretation of VP-deletion sentences. It is perhaps worth reiterating this point. I considered firstly (1).

(1) John washed his car, and Sam did, and Steve did.

This is two ways ambiguous, not six, as Ross's approach to sloppy identity leads one to expect. It can mean that all three men washed John's car, or that each of them washed his own. I argued that, on the first reading, all three VP's contain pronouns of laziness referring to John, while, on the second, all three VP's contain bound variables. In the latter case, the command constraint ensures that each variable is bound by the subject of its own sentence. Without the constraint, the variable in the second sentence could be bound by John as well as by Sam, and the variable in the third sentence could be bound by John or Sam as well as by Steve. There would be nothing, then, to prevent the additional readings that Ross's approach predicts. I also considered sentences like (2) - (5).

(2) Marsha scratched herself, and so did Jan.

(3) Erica wants to see Max, and so does Eve.

(4) A Rumanian washed his car, and so did a Bulgarian.

(5) Every Rumanian washed his car, and so did every Bulgarian.

These are all unambiguous, having only sloppy identity readings. To account for this, I assume that the anaphors represent bound variables. The command constraint then ensures that each variable is bound by the subject of its sentence.

Consider now the following sentences.

(6) One boy washed his car before Sam did.

(7) Every boy washed his car before Sam did.

Although the judgements are rather fine, it seems to me that these can have both sloppy and strict identity readings. They, thus, contrast with (4) and (5), where only sloppy identity readings are possible. The reason for this contrast is fairly simple. Whereas in (4) and (5) the variable in the deleted VP is not commanded by the NP that commands the variable in the first clause, in (6) and (7), it is. In (6) and (7), then, the variable in the deleted VP can be bound by the NP that binds the variable in the first clause. Thus, strict identity readings are possible. For the same reason, one would expect (8) and (9) to have strict identity readings.

(8) Jim criticized himself before Sam did.

(9) Tony wants to leave before Steve does.

It seems to me, however, that they do not. Presumably, some additional factor is involved in such sentences.

It is not at all clear how Ross's approach could account for facts like these. Nor is it clear how they could be accounted for within the bound variable theory. Both Keenan (1970) and Bonney (1976) discuss sloppy identity in connection with their versions of the bound variable theory. Neither, however, provides any account of these facts. In contrast, the present theory provides a quite straightforward account. The command constraint is an integral part of this account. Thus, these facts provide strong support for it.

There are various other kinds of evidence for the command constraint. Notice that it explains why (10) cannot be reduced to (11).

(10) Sam washed his car, and the man who knew Mary washed her car.

(11) Sam washed his car, and so did the man who knew Mary.

her in the second clause is not commanded by its antecedent. Therefore, it cannot represent a bound variable. Thus, whether his in the first clause is a bound variable or a pronoun of laziness, the identity required for VP-deletion is lacking. The constraint also explains why (12) cannot be reduced to (13).

(12) The man who knew Mary washed her car, and Sam washed his car.

(13) The man who knew Mary washed her car, and so did Sam.

Again, her cannot represent a bound variable. Again, then, whether his is a bound variable or a pronoun of laziness, VP-deletion is blocked. Ross noted that pronouns in sloppy identity must be commanded by their antecedents. He did not, however, relate the distinction to wider facts, as I am doing here.

Reflexives and the null anaphors produced by equi provide particularly clear evidence for the command constraint. I have argued that both can only represent bound variables. It follows, then, that they should be commanded by their antecedents. In general, this is the case. Sentences like (14) are impossible, while (15) can only mean that the man who knows Mary wants to end it all himself, not that he wants Mary to end it all.

(14) * The man who knows Mary admires herself.

(15) The man who knows Mary wants to end it all.

This is exactly what we expect.

Indefinite NP's do not provide direct evidence for the command constraint, because they can normally serve as antecedents for pronouns of laziness, as long as they do not command them. Thus,

sentences like (16) and (17) are quite acceptable.

(16) The man who saw a film hated it.

(17) Eve tried a drink, and she liked it.

In contrast, NP's containing every provide clear evidence for the constraint, because they cannot serve as antecedents for singular pronouns of laziness. Contrasting with (16) and (17), then, we have (18) and (19).

(18) * The man who saw every film hated it.

(19) * Eve tried every drink, and she liked it.

NP's containing every can serve as antecedents for plural pronouns of laziness. Thus, contrasting with (18) and (19), we have the following.

(20) The man who saw every film hated them.

(21) Eve tried every drink, and she liked them.

Like NP's containing every in not serving as antecedents for singular pronouns of laziness are NP's containing each and no. Like (18) and (19), then, are the following.

(22) * The man who saw each film hated it.

(23) * Eve tried each drink, and she liked it.

(24) * The man who saw no film hated it.

(25) * Eve tried no drink, and she liked it.

These NP's can also serve, to varying extents, as antecedents for plural pronouns of laziness.

I suggested another constraint in chapter 3. I suggested that no anaphor that represents a bound variable can have an antecedent inside an NP. This constraint accounts for the ungrammaticality of sentences like (26) and (27), and certain other phenomena.

(26) * Jim and Mary scratched herself.

(27) * The girl's father hurt herself.

It is possible that this constraint is simply a special case of the command constraint. On the standard definition of command, A commands B if the first S node above A also dominates B. On this definition, Mary commands herself in (26), and The girl commands herself in (27). On this definition, then, the ungrammaticality of (26) and (27) cannot be a consequence of the command constraint. It is not clear, however, that this is the most appropriate definition of command. Jackendoff (1972:140) suggests a different definition. He suggests that A commands B if the first cyclic node above A also dominates B, where a cyclic node is either S or NP. On this definition, Mary does not command herself in (26), and The girl does not command herself in (27). On this definition, then, the ungrammaticality of (26) and (27) will be a consequence of the command constraint. It is possible, then, that we will not need a separate constraint for such sentences.

It is fairly clear that the command constraint explains a number of facts. It is natural to ask whether the constraint itself can be explained. In a brief remark on this subject, Witten suggests that the constraint stems from facts about specificity. More precisely, he suggests that an NP can only serve as antecedent of a pronoun derived from a bound variable, if it can have a specific interpretation. What he means here is far from clear. The distinction between specific and non-specific readings is normally applied only to indefinite NP's, yet all pronouns derived from bound variables must be commanded by their antecedents. The antecedent of her in (10) and (12) does not seem to be non-specific in any sense, yet the pronoun can only

represent a pronoun of laziness. Nor do every film in (18) and every drink in (19) seem to be non-specific, yet the sentences are ungrammatical because of the command constraint. Witten's suggestion is thus not a very promising one. One might suggest instead that the constraint is a result of the interaction of lowering and island constraints. In (18), every film has been lowered into a complex NP. Thus, the complex NP constraint will explain why (18) is ungrammatical. In (19), every drink has been lowered into the first conjunct of a coordinate structure. Here, then, the coordinate structure constraint will explain the ungrammaticality. Unfortunately, there are examples which cannot be explained along these lines. Consider, for example (28).

(28) * Sam thinks every girl is beautiful, although he hasn't seen her.

Here, every girl has not been lowered into an island. It seems, then, that not all instances of the command constraint can be attributed to island constraints. Thus, I have no real explanation for the constraint.

Another unsatisfactory aspect of the command constraint is that two classes of sentences provide exceptions to it. These classes are exemplified by sentences like the following.

(29) What Sam painted was a picture of his father.

(30) The picture of his father that Sam painted was hung in the attic.

That the pronouns can represent bound variables although they are not commanded by their antecedents is shown by the fact that they can figure in sloppy identity. The following illustrate.

(31) What Sam painted was a picture of his father, and what Steve painted was one too.

- (32) The picture of his father that Sam painted was hung in the attic, but the one that Steve painted was hung in the hall.

As one might expect, reflexives are acceptable in these sentences. The following illustrate.

- (33) What Sam painted was a picture of himself.

- (34) The picture of himself that Sam painted was hung in the attic.

Notice also that null anaphors produced by equi are acceptable.

- (35) What Sam denied was the intention to defect.

- (36) The will to win that Sam always shows is widely admired.

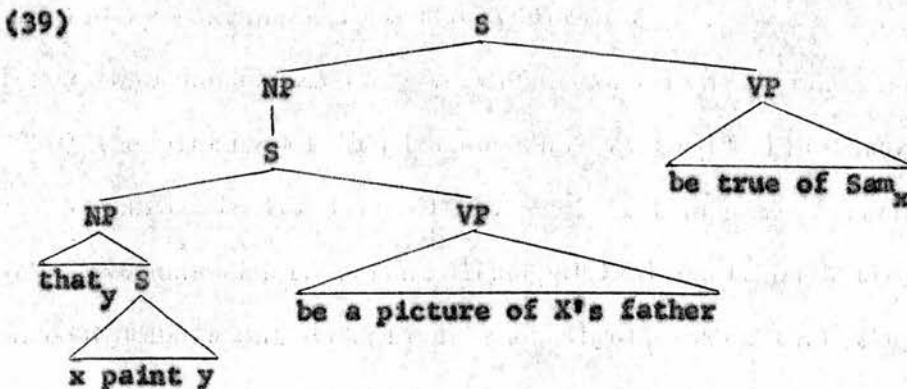
Finally, notice that the following are acceptable.

- (37) What every man painted was a picture of his father.

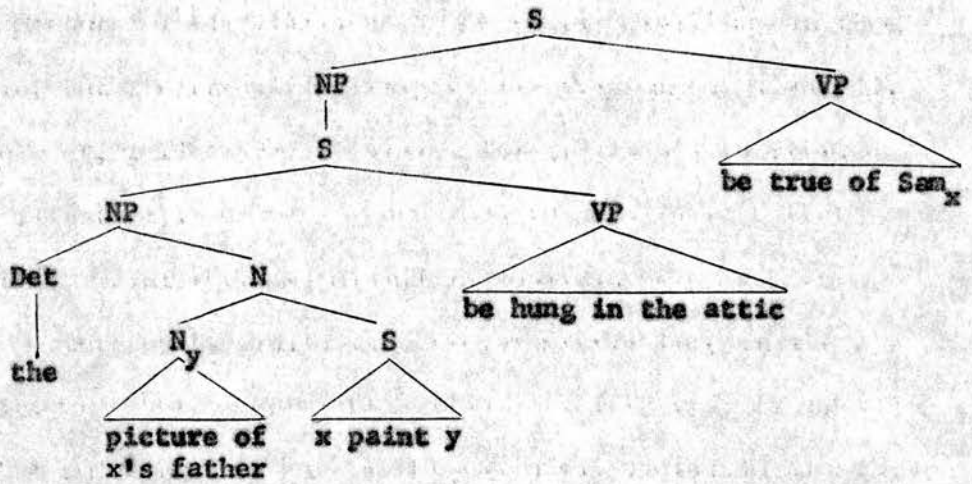
- (38) The picture of his father that every man painted was hung in the attic.

It seems, then, that these two classes of sentences are exceptions to the command constraint in a quite general way.

Not only are these sentences exceptions to the command constraint, they also involve violations of the complex NP constraint. Consider (29) and (30). The obvious sources for these sentences are (39) and (40).



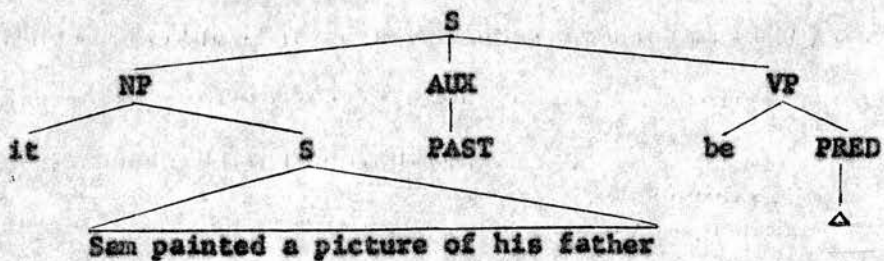
(40)



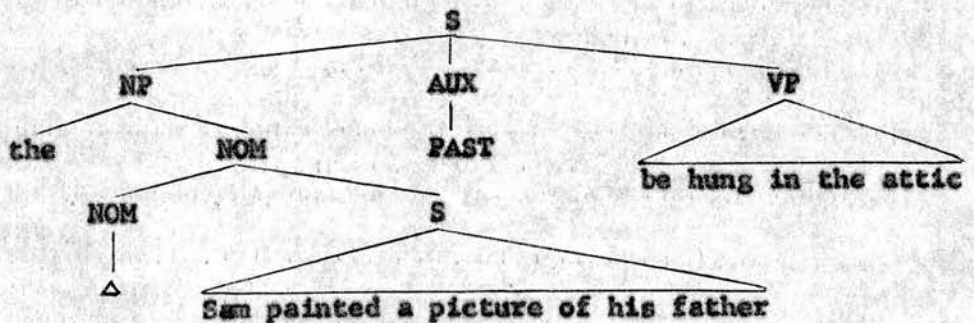
Given such sources, Sam will be lowered into a complex NP in both sentences. This is not a happy situation, but I can see no alternative.

One linguist who has discussed these sentences is Schachter (1973a). His concern is with the traditional generalizations that no pronoun may both precede and command its antecedent and that a reflexive and its antecedent must be clause mates. Both generalizations are violated in these sentences. He argues that pseudo clefts and relatives involve extraction rules. For him, (29) and (30) will derive from structures like the following.

(41)



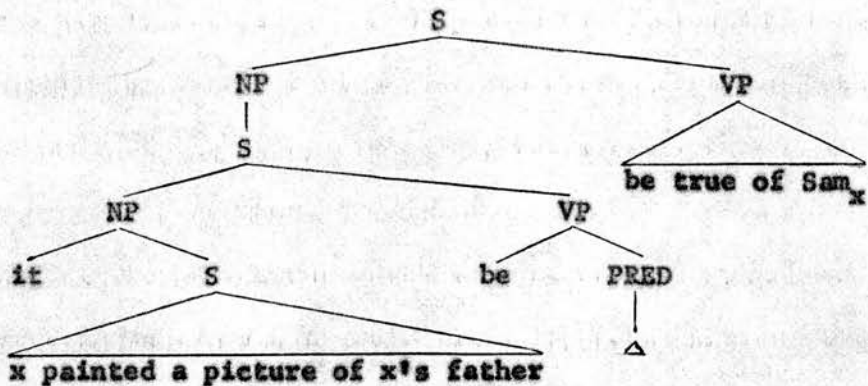
(42)



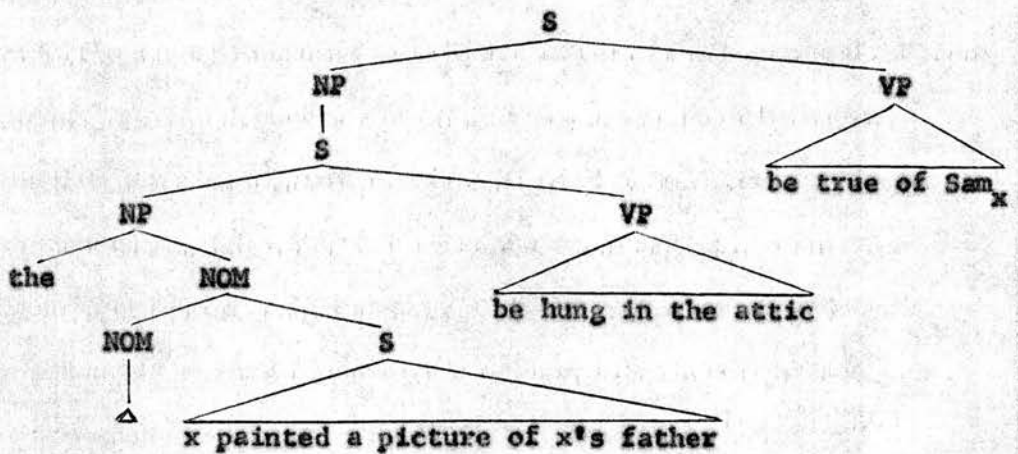
Given such structures, the traditional generalizations hold prior to extraction. Similar analyses of pseudo clefts are advanced by Chomsky (1970), Grosu (1973), and Hurford (1973).

One might suggest that the analyses I have sketched should be modified to incorporate extraction rules. One might suggest that (29) should derive from something like (43), and (30) from something like (44).

(43)



(44)



With such analyses, (29) and (30) will still involve violations of the complex NP constraint, but, if extraction is post-cyclic, they will

conform to the command constraint in shallow structure.⁴

I think, however, that extraction rules are rather dubious. Pseudo clefts might perhaps involve extraction, but semantic considerations argue against an extracting analysis of relative clauses. Such an analysis appears incompatible with any clear account of the semantics of relative clauses. Certainly, Schachter offers no account. In contrast the analysis of relative clauses developed earlier permits a straightforward account of their semantics. I think, then, that an extracting analysis of relative clauses is not at all plausible.

Why, then, are these sentences grammatical? The best I can suggest is that their grammaticality stems from some kind of analogy. The crucial sentences all imply simple sentences in which the pronoun is commanded by its antecedent. Notice that (33) and (34) imply (45).

(45) Sam painted a picture of himself.

The unacceptable (14) does not imply such a simple sentence. It is possible, then, that (33) and (34) are acceptable by analogy with (45), and that the other exceptions to the command constraint are acceptable by analogy with simple sentences in the same way.

To conclude this section, I want to note the implications of the command constraint for the analysis of the quantifier any. A number of writers, notably Quine (1960), Labov (1972), Cresswell (1973), and LeGrand (1974), have argued that any always represents a universal

- - - - -

4. Hankamer (1974) suggests an interesting argument for an analysis of pseudo clefts involving post-cyclic extraction. His argument depends, however, on the assumption that reflexives and their antecedents are clause mates at the end of the cycle. This assumption is untenable unless relative clauses also involve post-cyclic extraction, which I think is unlikely.

quantifier. The command constraint provides evidence against this proposal.

The proposal receives initial support from the similarity in meaning between (46) and (47).

(46) Anyone can come.

(47) Everyone can come.

On the face of it, however, the quite different meanings of (48) and (49) argue against it.

(48) I didn't see anyone.

(49) I didn't see everyone.

One approach to sentences like (48), developed, for example, by Klima (1964), assumes that any is the form taken by some in a negative environment. On this analysis, then, (48) is the negation of (50).

(50) I saw someone.

One need not analyze sentences like (48) in this way, however. Quine's suggestion is that '...every, by a simple and irreducible trait of English usage, always calls for the shortest possible scope... any, by a simple and irreducible trait of English usage, always calls for the longer of two possible scopes' (1960: S.29.). Thus, he would analyze (48) and (49) as (51) and (52), respectively.

(51) $(\forall x) \sim(I \text{ saw } x)$

(52) $\sim(\forall x)(I \text{ saw } x)$

Effectively, then, the proposal is that any is the form taken by every in certain environments.

The proposal is an attractive one, holding out, as it does, the prospect of a unified account of any. It faces at least one serious problem, however. Notice that (53) is a perfectly acceptable sentence.

(53) If anyone moves, I'll kill him.

The pronoun here is not commanded by its antecedent. But, if any is a form of every it should be. If any is a form of every, him must represent a bound variable, and bound variables must, in general, be commanded by their antecedents. Notice that (54) is ungrammatical for this reason.

(54) * If everyone moves, I'll kill him.

In contrast, (55) is perfectly acceptable.

(55) If someone moves, I'll kill him.

This is what we expect, since someone can serve as antecedent for a singular pronoun of laziness. (53) is also very close in meaning to (55). It seems natural, then, to suggest that any in (53) is a form of some, and that the pronoun is a pronoun of laziness. If any in (53) is a form of some, it seems likely that it is in (48) also.

I think, then, that sentences like (53) suggest strongly that any is not always a universal quantifier. This does not mean, however, that it never is, as some linguists, e.g. Fauconnier (1971), have argued. It seems natural to regard any in (46) as a universal quantifier. If it is, the command constraint will account for the unacceptability of (56).

(56) * Anyone can come, but he probably won't.

It is not my aim, however, to develop a general account of any. I simply want to note the problem that the command constraint poses for one quite widely canvassed analysis.

5.4. The Realization of Bound Variables

I want now to say something about the various forms that bound variables can assume in surface structure. Many variables are

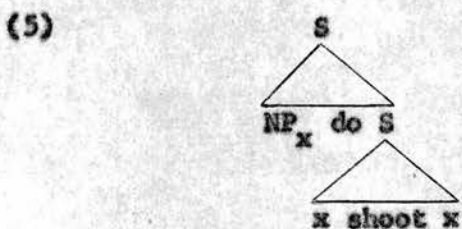
realized as full NP's as a result of the operation of NP-lowering. Other variables may have a null realization as a result of the operation of equi. Finally, they may be realized as various kinds of reflexive and non-reflexive pronouns. Clearly, we need some mechanism to account for the possibilities.

Where a variable is not replaced by an NP, the form it assumes on the surface depends on two questions: (1) its structural position, (2) the nature of the binding NP. The role of both factors is intuitively fairly clear. Taking (1) first, it is clear that for a variable to be deleted by equi, it must be in subject position. Similarly, for a variable to be realized as a reflexive pronoun, the binding NP must normally be a clause mate. Where a variable does not meet the structural condition for equi or reflexivization, it will be realized as an ordinary pronoun. Turning to (2), it is clear that the number and gender that a bound variable assumes depends on the binding NP. It is this aspect of the realization of variables that I am concerned with here.

The role of the binding NP in determining the form of a variable can be illustrated quite briefly. Consider the following sentences.

- (1) The king shot himself.
- (2) The queen shot herself.
- (3) The men shot themselves.
- (4) The women shot themselves.

These all have underlying structures of the following form.



In (1), the binding NP is [+ masculine] and [- plural]. The second variable then must also be marked [+ masculine] and [- plural]. In (2), the binding NP is [+ feminine] and [- plural]. The second variable must be marked similarly. In (3) and (4), the binding NP's are [+ plural]. In both, then, the second variable must be marked [+ plural]. Clearly, what we need is a rule copying certain features from a binding NP onto the variables it binds.

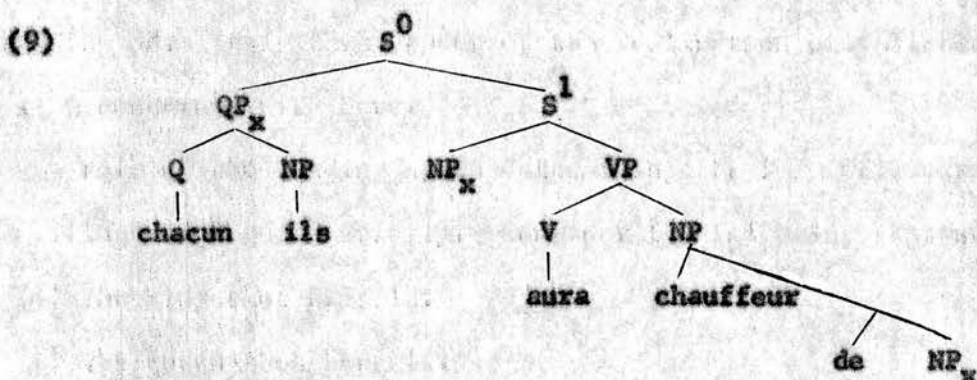
A feature copying rule is proposed for French in Fauconnier (1971). Part of the data that Fauconnier cites to support such a rule is the following.

(6) Chacun d'eux aura son chauffeur.

(7) Ils auront chacun son chauffeur.

(8) Ils auront chacun leur chauffeur.

All three sentences can be translated as 'each of them will have his chauffeur'. Fauconnier derives them from (9).



Empty indexed NP's in Fauconnier's system are broadly similar to variables in the present framework. In the derivation of all three sentences, the quantifier phrase is lowered onto the empty subject NP in S^1 . In the derivation of (6), the only other rule of importance is feature copying, which marks the second empty NP [+ masculine] and [- plural]. In the derivation of (7), feature copying is followed

by quantifier postposition, which moves the quantifier chacun into the VP. In the derivation of (8), quantifier postposition applies first. Once it has applied, the subject NP is [+ plural]. It is this feature, therefore, that is copied onto the second empty NP. We have, then, the following derivations.

(6) lowering, feature copying.

(7) lowering, feature copying, quantifier postposition.

(8) lowering, quantifier postposition, feature copying.

It is clear, I think, that feature copying permits an illuminating account of the data.

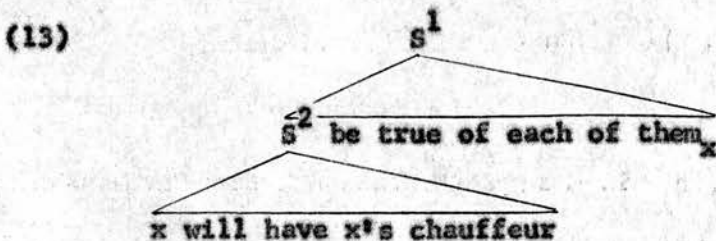
Returning to English, one finds that the situation is slightly different. Consider the following sentences.

(10) Each of them will have his chauffeur.

(11) They will each have his chauffeur.

(12) They will each have their chauffeur.

(10) and (12) are ambiguous, with the pronouns having anaphoric and non-anaphoric interpretations. (11) is unambiguous, with the pronoun having only a non-anaphoric interpretation. When the pronouns are anaphoric, (10) and (12) will derive from something like (13).



In the derivation of (10), lowering applies on S¹, followed by feature copying. In the derivation of (12), lowering is followed by quantifier postposition, which is in turn followed by feature copying. The fact that (11) cannot have an anaphoric interpretation

suggests that quantifier postposition cannot follow feature copying in English. It is interesting to note here that there are dialects of French in which (7) has no anaphoric interpretation, presumably for the same reason. (See Fauconnier, 1971, Chap. 1., fn. 14.)

Fauconnier suggests that feature copying in French applies not only to variables but also to adjectives. He considers the following data.

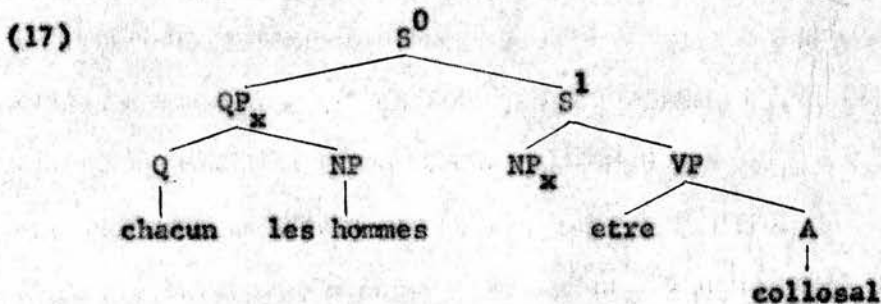
(14) Chacun des hommes est colossal.

(15) Les hommes sont chacun colossal.

(16) Les hommes sont chacun collosaux.

All these sentences can be translated as 'each of the men is colossal'.

Fauconnier derives them from (17).



In all three derivations, an adjective agreement rule applies on S^1 , marking the adjective colossal with the index x . In all three derivations, lowering applies on S^0 . In the derivation of (14), the only other transformation of importance is feature copying. This copies the features [+ masculine] and [- plural] onto the indexed adjective. In the derivation of (15), copying is followed by quantifier-postposition. In the derivation of (16), quantifier postposition applies first, and then copying marks the indexed adjective [+ masculine] and [+ plural]. Clearly, these derivations are very similar to those of (6) - (8).

In English, number agreement can be handled along similar lines.

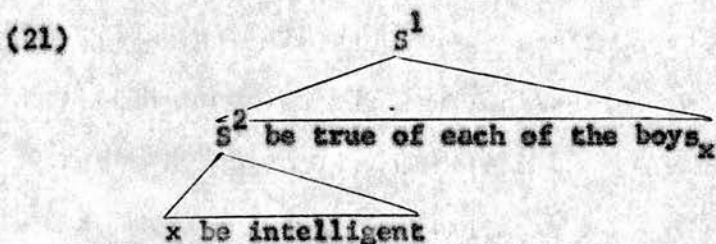
We have data like the following.

(18) Each of the boys was intelligent.

(19) * The boys was each intelligent.

(20) The boys were each intelligent.

(18) and (20) will derive from something like (21).



In both derivations, the verb be is marked with the index x on S^2 , and in both, lowering applies on S^1 . In the derivation of (18), the only other transformation of consequence is feature copying, which marks the indexed verb [- plural]. In the derivation of (20), quantifier postposition applies first, and then feature copying marks the indexed verb [+ plural]. The fact that quantifier postposition cannot apply after feature copying accounts for the impossibility of (19). There are also sentences in which feature copying applies to both a variable and a verb. The following illustrate.

(22) Each of the boys said he was intelligent.

(23) The boys each said they were intelligent.

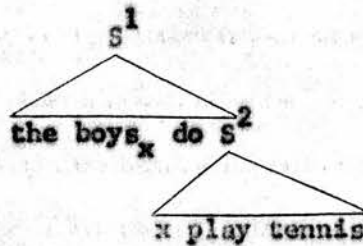
These will have derivations exactly like those of (18) and (20).

One minor complication must now be considered. It can be illustrated with (24).

(24) The boys play tennis, and the girls do it too.

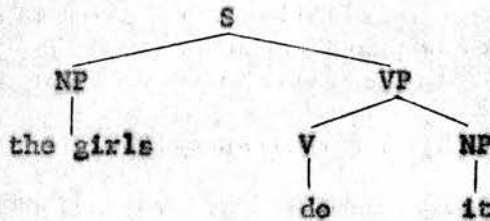
I assume that the first clause here derives from something like (25).

(25)



On S^2 , the verb play will be marked with the index x . Then, on S^1 , it will be marked [+ plural]. The second clause will derive from something like (26).

(26)



Here the subject is not a variable but a full NP. It might seem then that a different account of number agreement is necessary here. In fact, however, this is not the case. We need only assume that every NP has an index, whether it binds any variables or not. Then, when number agreement applies to (26), it will mark do with the index on the girls. Feature copying will then mark it [+ plural].

I suggested earlier that distributive plurals involve a distributive operator that is either deleted or realized as each. Notice now that, while (27) is acceptable, (28) is not.

(27) Each of the boys admires himself.

(28) * The boys admire himself.

Notice also that (29) is quite acceptable, and can have the same meaning as (27).

(29) The boys admire themselves.

To account for these phenomena, we need only assume that deletion of our distributive operator is blocked after feature copying, like quantifier postposition. (27), then, will involve just feature copying. (29) will involve deletion followed by feature copying. And (28) will be ungrammatical because deletion has applied after

feature copying.

The conception of feature copying developed here is largely the same as Fauconnier's. I assume one important difference, however. Unlike Fauconnier, I assume that feature copying, like NP-lowering, is unconstrained, so that any variable, whatever its position, receives features. For Fauconnier, an empty indexed NP can only receive features if it is either preceded or commanded by its antecedent. This prevents the derivation of (31) from the structure underlying (30).

(30) Steve loves his wife.

(31) He loves Steve's wife.

As I noted in connection with NP-lowering, I assume that such derivations are thrown out by output conditions. There is thus no need to restrict the operation of feature copying.

5.5. Bach-Peters Sentences

In chapter 2, I argued that Bach-Peters sentences provide crucial evidence against the classical theory's assumption that anaphoric pronouns derive from copies of their antecedents. I also suggested that the bound variable theory could handle such sentences quite naturally. Does this mean that pronouns in Bach-Peters sentences must represent bound variables, not pronouns of laziness? Clearly, it need not mean this, since pronouns of laziness are not derived from copies of their antecedents. I will argue, however, that there are various reasons for deriving these pronouns from bound variables.

There is evidence firstly, that these pronouns cannot represent pronouns of laziness. I argued earlier that the pronoun in a sentence

like (1) cannot be a pronoun of laziness with the definite description that contains it as its antecedent.

(1) The Rumanian who said he was Napoleon was arrested.

The reason for this, I suggested, is that, if it were, the definite description would involve a vicious circle. The description identifies an individual as the contextually unique member of the intersection of two sets. Suppose now that he is a pronoun of laziness referring to the same individual as the description. In this case, the description will identify an individual by reference to a set which is itself identified by reference to the individual. Clearly, this is circular. For this reason, then, pronouns like he in (1) must either be non-anaphoric, or represent bound variables.

Consider now the standard Bach-Peters sentence, (2).

(2) The pilot who shot at it hit the mig that chased him.

Here, we have the following definite descriptions.

(3)a. the pilot who shot at it

b. the mig that chased him

Each refers to the contextually unique member of the intersection of two sets. Suppose now that the pronouns are pronouns of laziness, with it referring to the same thing as (3)b., and him referring to the same individual as (3)a. In this case, (3)a. would identify an individual by reference to a set identified by reference to (3)b., and (3)b. would identify a thing by reference to a set identified by reference to (3)a. In effect, then, each description would identify an individual or thing by reference to a set identified by reference to himself or itself. In short, one would have the same kind of circularity as is involved in (1), if the pronoun is taken to be a pronoun of laziness with the description as its antecedent.

This suggests quite strongly, then, that the pronouns in (2) cannot be pronouns of laziness. If they are not pronouns of laziness, they must be bound variables.

I have argued that pronouns deriving from bound variables must be commanded in surface structure by their antecedents. If the pronouns in Bach-Peters sentences represent bound variables, such sentences should be ungrammatical if one or other of the pronouns is not commanded by its antecedent. As Witten (1972) notes, this appears to be the case. Among the examples he cites are the following.

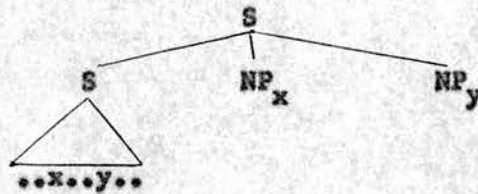
(4) * Although the pilot who shot at it was swift, the plane that chased him was even swifter.

(5) * People who know the man that threatened to kidnap her admire the woman who laughed at his threat.

In both sentences, the second pronoun is not commanded by its antecedent. Witten comments that they 'seem reasonable at first, but make less sense the more you think about them'. I would agree with him. These sentences seem, then, to support the view that the that the pronouns in Bach-Peters sentences represent bound variables.

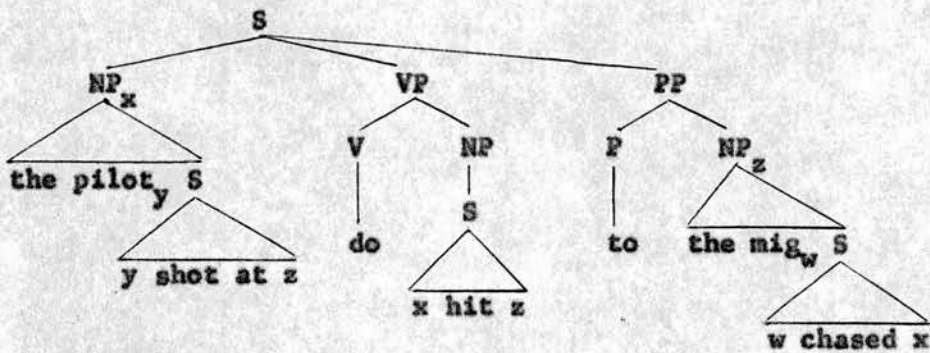
Assuming that the pronouns in Bach-Peters sentences represent bound variables, we can consider what sort of underlying structure they should derive from. In a discussion of Bach-Peters sentences, Keenan (1972:458) points out that, if one NP originates inside the scope of another, any variable inside the latter cannot be bound by the former. In my discussion of the bound variable theory, I took it to involve structures like the following.

(6)



Here, neither NP is inside the scope of the other. It is thus quite possible for a variable inside either of the NP's to be bound by the other. Given such structures, Bach-Peters sentences can be handled quite straightforwardly. In many of the underlying structures I have proposed the surface object is within the scope of the surface subject. Clearly, such structures will not do for Bach-Peters sentences. It seems likely, however, that suitable underlying structures will always be available. We can look firstly at (2). Here, the two NP's are agent and patient. I have suggested that do can take both an agent and a patient as arguments. We can, therefore, propose an underlying structure involving do. Specifically, we can propose something like the following.

(7)

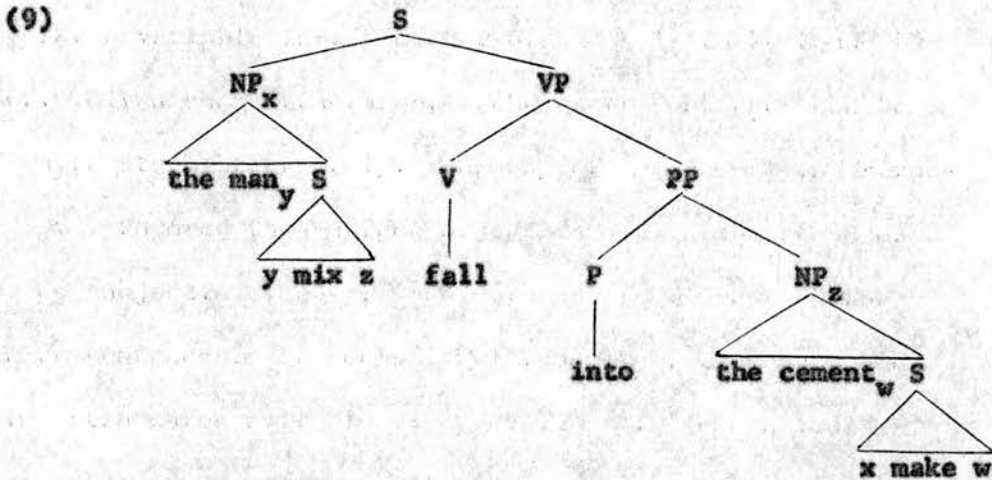


Here, neither NP is inside the scope of the other, and the variables that are realized as it and him are both within the scope of their antecedents. This, then, is quite plausible source for (2).

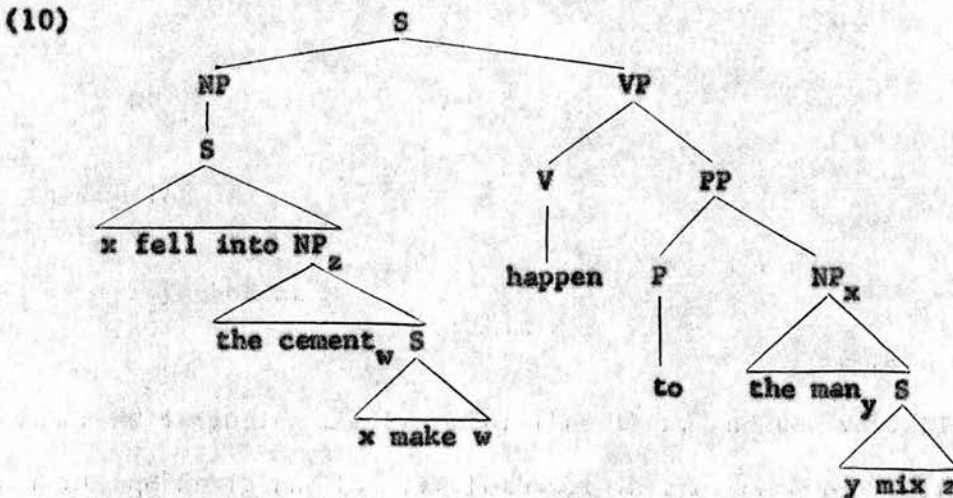
Consider now (8).

(8) The man who was mixing it fell into the cement he was making.

Here, the subject is a patient. I have rejected the view that patients should always originate as arguments of happen. Thus, the subject of (8) can originate in its surface position. (8), then, can derive from something like (9).



Obviously, this is a well formed structure. If we assumed that patients always originate as arguments of happen, (8) would have to derive from something like (10).



This, however, is ill-formed because the variable z is outside the scope of the NP that is supposed to bind it. It seems, then, that Bach-Peters sentences provide additional evidence against the view that patients always originate as arguments of happen.

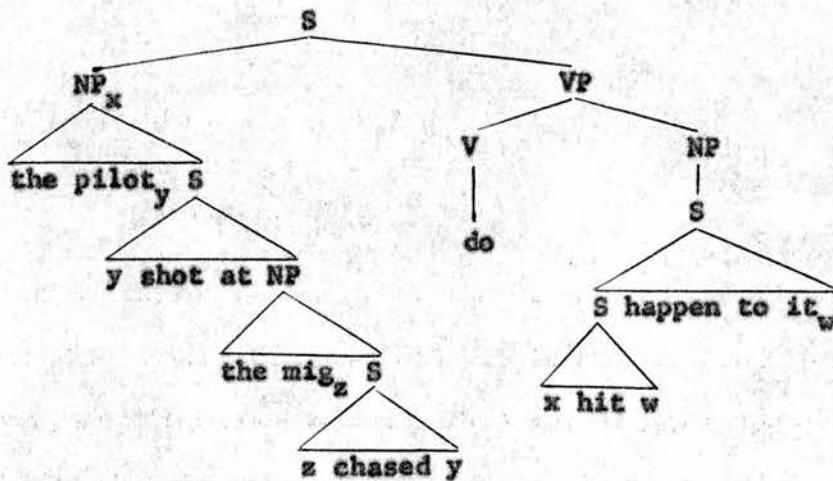
I want to conclude this section by considering the following sentences, which are closely related to (2).

(11) The pilot who shot at the mig that chased him hit it.

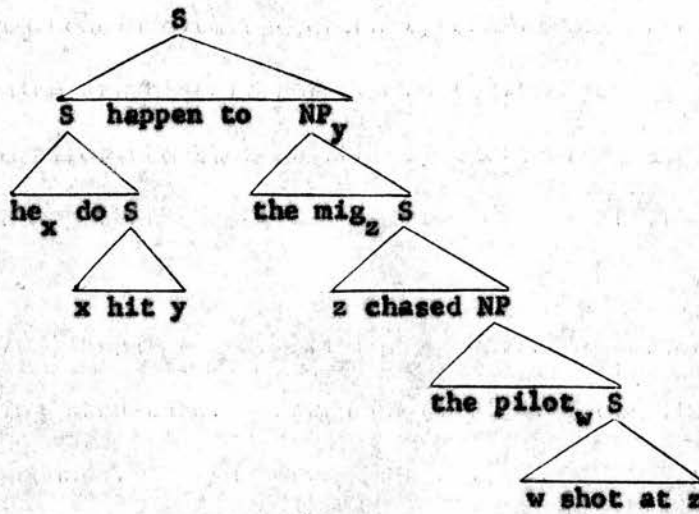
(12) The mig that chased the pilot who shot at it was hit by him.

McCawley (1970a) assumes that all three sentences derive from the same underlying structure. Karttunen (1971) rejects this assumption on semantic grounds. He suggests that (11) and (12) have different truth conditions, and that (2) is ambiguous between (11) and (12). Dik (1972) argues that all three sentences have different truth conditions. In the present framework, the three sentences would have to have different underlying structures even if their truth conditions were the same. Notice that neither it in (11) nor him in (12) is commanded by its antecedent. Neither, then, can represent a bound variable. They must, therefore, be pronouns of laziness. The obvious sources for (11) and (12) in the present framework are something like (13) and (14), respectively.

(13)



(14)



In (14), I assume my original conception of passives. As I have noted, this may have to be revised. This, however, does not affect the main point.

CHAPTER 6

PRONOUNS OF LAZINESS

Having discussed bound variables at some length, I can return now to pronouns of laziness. I can also return (at last) to non-anaphoric pronouns. I will argue that pronouns of laziness and non-anaphoric pronouns are the same thing. More precisely, I will argue that there is a class of pronouns, which I will call 'referential pronouns', which are ordinary referring expressions, in fact, a kind of definite description. Like ordinary definite descriptions, they have an anaphoric and a non-anaphoric use. In their anaphoric use, they can be termed pronouns of laziness. My views here owe much to Lasnik (1976). Lasnik assumes that all pronouns are of the same kind. He fails to recognize that many pronouns function as bound variables. The account he develops, however, is quite similar to that I will develop here. In effect, he assumes that all pronouns are referential pronouns.¹

6.1. Definite Descriptions

We can begin by taking a look at definite descriptions. I suggested earlier that a definite description refers to the contextually unique member of some set. A definite description of the form the + N is used when there is just one member of the set denoted

- - - - -

1. Also somewhat similar to my account of referential pronouns is the account of pronouns developed in Lyons (1975).

by N that the hearer will understand the speaker as referring to.² We can include plural definite descriptions in this account, if we assume with Bartsch (1973) that a plural noun denotes the set of all subsets of the set denoted by the corresponding singular noun. The contextually unique member of such a set will, of course, itself be a set. Contextual uniqueness may stem from various aspects of background belief and communicative context, including preceding discourse. Some examples will illustrate. If I utter (1) at the start of a conversation, I will be understood as referring to the British Prime Minister.

(1) The Prime Minister is calling for sacrifice.

If, however, I utter the same sentence in the following discourse, I will be understood as referring to the Prime Minister of Portugal.

(2) The Portuguese are facing austerity. The Prime Minister is calling for sacrifice.

Rather similar is the following discourse, where again the speaker will be understood as referring to the Prime Minister of Portugal.

(3) Portugal has a President and a Prime Minister. The Prime Minister is calling for sacrifice.

Some linguists would call the Prime Minister in (3) an anaphoric definite description and regard a Prime Minister as its antecedent. Such a description is quite reasonable. It would be wrong, however, to regard the Prime Minister in (3) as fundamentally different from the same definite description in (2). In both cases, the referent

- - - - -

2. As in chapter 2, I am ignoring definite descriptions containing mass nouns. I think, however, that the formulations of this chapter could be extended quite naturally to include such definite descriptions.

of the definite description is determined by the preceding discourse. Both cases contrast with (1), where the referent of the definite description is determined by background belief and communicative context alone.

As a first approximation, we can characterize an anaphoric definite description as follows.

- (4) An anaphoric definite description is a definite description which refers to an individual, thing, or set which is either referred to or established as existing by some other NP, and whose contextual uniqueness stems from this other NP.

This characterization can be explained quite briefly. Consider firstly (5).

- (5) Mary interviewed the Russian poet. The poet complained about the weather.

Here, the poet in the second sentence refers to an individual referred to by another NP, namely the individual referred to by the Russian poet in the first sentence.³ (5) contrasts with (6).

- (6) Mary interviewed a poet. The poet complained about the weather.

Here, the poet in the second sentence does not refer to an individual referred to by another NP. a poet in the first sentence does not refer to a poet. It does, however, establish the existence of a poet.

- - - - -

3. Sentences like (5) show the inadequacy of the definition of antecedent proposed in Lakoff (1976), which rules out the possibility of definite descriptions with definite descriptions as antecedents.

Here, then, the poet refers to an individual established as existing by another NP. The final clause of this characterization implies that the second occurrence of the poet in (7) is not an anaphoric definite description.

(7) Mary interviewed the poet. The poet complained about the weather.

Obviously, it refers to the same individual as the first occurrence of the poet. However, the contextual uniqueness associated with the former does not stem from the latter. For the latter to refer successfully, there must already be a contextually unique poet. Clearly, then, it does not establish a contextually unique poet.

To complement this characterization, we must specify when a definite description can refer to an individual, thing, or set referred to or established as existing by another NP, and when the contextual uniqueness of a definite description can stem from another NP. Here, we can suggest the following.

(8) Given two NP's, NP_i and NP_j , where NP_j is a definite description of the form Det + N_j , NP_j can refer to the individual, thing, or set referred to or established as existing by NP_i just in case NP_i precedes NP_j and refers to a member of the extension of N_j . The contextual uniqueness of NP_j can stem from NP_i just in case NP_j differs in form from NP_i .

In (5), NP_i is the Russian poet and NP_j the poet. Clearly, then, NP_i refers to a member of the extension of N_j , which is the set of poets. In (6), NP_i is a poet and NP_j the poet. Clearly, NP_i establishes the existence of a member of the extension of N_j , which is again the set of poets. Notice now that the Russian poet

in (9) cannot refer to the individual referred to by the poet.

(9) Mary interviewed the poet. The Russian poet complained about the weather.

Here, NP_i is the poet and NP_j the Russian poet. Obviously, NP_i does not refer to a member of the extension of N_j . Clearly, then, NP_j cannot refer to the same individual as NP_i .

What (8) makes clear is that the reference to a member of some set, or the establishment of the existence of a member of some set can establish a contextually unique member of a larger set but not a contextually unique member of a smaller set. In (5), the reference to a contextually unique member of the set of Russian poets establishes a contextually unique member of the set of poets. In (9), however, the reference to a contextually unique member of the set of poets cannot establish a contextually unique member of the set of Russian poets.

In the examples I have considered so far the fact that NP_i refers to or establishes the existence of a member of the extension of N_j is a purely linguistic fact. This is the case whenever NP_i is a definite or indefinite NP of the form Det + N_i and the extension of N_i is a subset of the extension of N_j . It is quite possible, however, for NP_i to refer to a member of the extension of N_j as a result of non-linguistic fact. This is the case, for example, in (10).

(10) Mary interviewed Yevtushenko. The poet complained about the weather.

Here, NP_i is Yevtushenko and NP_j the poet. It is a matter of non-linguistic fact that NP_i refers to a member of the extension of N_j .

Contrasting with (10), we have (11).

- (11) Mary interviewed Brezhnev. The poet complained about the weather.

Here, NP_i is Brezhnev and NP_j the poet. It is a matter of non-linguistic fact that NP_i does not refer to a member of the extension of N_j .

Nothing in what I have said so far allows for sentences like (12) from Stockwell, Schachter, and Partee (1973).

- (12) John, Bill, and Mary all set out at noon, but only the boys got back by dinner time.

Here, the boys refers to the set to which John and Bill jointly refer.

Like (12) is (13).

- (13) A Rumanian, a Bulgarian, and a Malayan set out at noon, but only the Europeans got back by dinner time.

Here, the Europeans refers to the set which a Rumanian and a Bulgarian jointly establish as existing. In the light of such sentences, it is necessary to revise our characterization of anaphoric definite descriptions. We can propose the following.

- (14) An anaphoric definite description is a definite description which refers to an individual, thing, or set which is either referred to or established as existing by some other NP or set of NP's, and whose contextual uniqueness stems from this other NP or set of NP's.

It is also necessary to revise (8). We can replace it by (15).

- (15) Given an NP, NP_i or a set of NP's, $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ and another NP, NP_j , where NP_j is a definite description of the form Det + N_j , NP_j can refer to the individual, thing, or set referred to or established as existing by

NP_i , or to the set referred to or established as existing
 by $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ just in case NP_i or $NP_{i_1}, NP_{i_2}, \dots$
 NP_{i_n} precedes NP_j and NP_i or the conjunction of $NP_{i_1},$
 $NP_{i_2}, \dots, NP_{i_n}$ refers to or establishes as existing a
 member of the extension of N_j . The contextual uniqueness
 of NP_j can stem from NP_i or $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ just in
 case it differs in form from NP_i or the conjunction of
 $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$.

The complexity of this formulation emphasizes the varied character of anaphoric definite descriptions.

I noted in chapter 1 that the underlying structure of a sentence represents its basic meaning and that this must be distinguished from the propositions it expresses. It is easy to show that the anaphoric relations that we are concerned with here are a feature of the propositions expressed by sentences in specific contexts and thus that they should not be represented in underlying structure. The reference of a definite description is a function of the context in which it is used. It is only in a specific context that one can say who or what a particular definite description refers to. It follows, then, that it is only in a specific context that one can say whether a definite description refers to the individual, thing, or set referred to or established as existing by some other NP or set of NP's. It is possible, however, to specify necessary conditions for these anaphoric relations independent of context. (15) is an attempt to do this.

Anaphoric definite descriptions differ from other definite descriptions in the source of their contextual uniqueness. It is fairly clear, however, that this difference is not a fundamental one. If anaphoric definite descriptions are not fundamentally different from other definite descriptions, they should not have a different source. Nor should a subset of anaphoric definite descriptions have a different source. A number of linguists, e.g. Kempson (1975), have suggested that an anaphoric definite description with an indefinite antecedent should derive from a copy of its antecedent through a rule of definitization. On this approach, the boy in (16) would derive from a boy.

(16) Someone called a boy to the telephone, while the boy was talking to a pretty girl.

Clearly, this approach treats a subset of definite descriptions as a special category. Since this subset is not fundamentally different from other definite descriptions, it should not be treated in this way. For this reason, then, this approach must be rejected.

There are other reasons for rejecting this approach. Firstly, definitization is in a clear sense superfluous. Since definite descriptions can be introduced in underlying structure, all the sentences that involve the rule will still be generated without it. If the rule can be dropped without loss, Occam's razor dictates that it should be dropped. Secondly, this approach is unacceptable for semantic reasons. In deriving definite NP's from indefinite NP's, it derives referring expressions from non-referring expressions. But, if underlying structure is logical structure, a referring expression cannot be represented in underlying structure as a non-referring expression. It is fairly clear, then, that there is no

place for definitization in the present framework.

6.2. Referential Pronouns

I can now turn to what I am calling referential pronouns. As I have said, these are pronouns which are ordinary referring expressions, in fact a kind of definite description.

The definiteness of ordinary pronouns is demonstrated quite clearly in Postal (1966). We know, then, that he, she, it, and they involve some sort of contextual uniqueness when they are not bound variables. We know that he is a masculine pronoun. It seems plausible, then, to suggest that he refers to the contextually unique male when it is not a bound variable. Similarly, we can suggest that she refers to the contextually unique female, it to the contextually unique thing, and they to the contextually unique set when they are not bound variables. It seems plausible, then, to suggest that referential pronouns are a special kind of definite description.

As with ordinary definite descriptions, the contextual uniqueness required by referential pronouns may stem from various aspects of background belief and communicative context. However, the fact that referential pronouns involve particularly large sets means that the necessary contextual uniqueness is less easily established than it is with typical definite descriptions. While I can assert that the British Prime Minister is calling for sacrifice by uttering (1), I cannot do so by uttering (2), unless certain special conditions obtain.

(1) The Prime Minister is calling for sacrifice.

(2) He is calling for sacrifice.

Such contrasts, however, do not indicate any fundamental difference

between referential pronouns and ordinary definite descriptions. There are examples like (2), where special conditions are not necessary. Lasnik (1976) gives the following example.

As I sit here in my office in early January, 1974, I would not regard it as unusual if someone I have never met were to come in and announce, 'He resigned'. Here the knowledge assumed by the speaker to be shared by me is so minimal that the possible male human beings he could have in mind form a very limited class. I would immediately assume he meant Richard Nixon.

There are also examples like (1), where special conditions are required. If I utter (3), for example, it will not be clear who I am referring to unless special conditions obtain.

(3) The minister is calling for sacrifice.

Thus, referential pronouns are not fundamentally different from ordinary definite descriptions.

There are, however, certain differences between referential pronouns and ordinary definite descriptions. An obvious difference is that referential pronouns consist of single morphemes, rather than the definite article and a noun. A more important difference is that they permit paralinguistic indication of intended reference. Thus, a speaker of (4) can use a gesture to indicate who he is referring to, but a speaker of (5) cannot do this.

(4) He is a Pabloite.

(5) The man is a Pabloite.

Notice, however, that a gesture is possible with (6).

(6) That man is a Pabloite.

Here, the definite description has a demonstrative instead of an

ordinary definite article. The obvious conclusion, then, is that referential pronouns are not simply definite, but demonstrative as well. I will note some further differences between referential pronouns and ordinary definite descriptions shortly.

If referential pronouns are a kind of definite description, they will have an anaphoric use like ordinary definite descriptions. It is natural, then, to suggest that pronouns of laziness are referential pronouns used anaphorically. In other words, it is natural to characterize a pronoun of laziness as follows.

- (7) A pronoun of laziness is a referential pronoun which refers to an individual, thing, or set which is either referred to or established as existing by some other NP or set of NP's, and whose contextual uniqueness stems from this other NP or set of NP's.

This, of course, is very similar to our characterization of anaphoric definite descriptions. There are, however, certain differences between pronouns of laziness and ordinary anaphoric definite descriptions.

One difference is that pronouns of laziness can precede their antecedents. It seems that referential pronouns can anticipate the establishment of the necessary contextual uniqueness. Consider the following.

- (8) When he arrived, Sam was out of breath.
 (9) In front of him, Jim saw a gorilla.
 (10) Either he eats his supper or Sam goes to bed.
 (11) Not only did she insult me, but Ruth accused me of insulting her.

In (8) and (9), the pronouns are commanded by their antecedents.

Presumably, then, they can represent bound variables. In (10) and (11), however, the pronouns are not commanded by their antecedents. It is fairly clear, then, that they must represent pronouns of laziness. Presumably, the pronouns in (8) and (9) can also.⁴

A second difference is that pronouns of laziness, unlike ordinary anaphoric definite descriptions, can be commanded by their antecedents. (12) illustrates.

(12) The Russian poet said $\left\{ \begin{array}{l} \text{he} \\ * \text{the poet} \end{array} \right\}$ was angry.

Such contrasts show, incidentally, that (6.1.15) is not wholly adequate.

In spite of these differences, pronouns of laziness and ordinary anaphoric definite descriptions have broadly similar distributions. Notice, for example, the following parallels.

(13) Sam met the professor of anthropology. $\left\{ \begin{array}{l} \text{The professor} \\ \text{He} \end{array} \right\}$ was boring.

(14) Sam met a professor. $\left\{ \begin{array}{l} \text{The professor} \\ \text{He} \end{array} \right\}$ was boring.

In (13), we could repeat the antecedent, while, in (14), we could use the more complex definite description the professor that Sam met. Such facts provide the basis for Geach's definitions of pronouns of laziness.

- - - - -

4. Witten (1972) assumes that only deep structure pronouns, i.e. bound variables, can precede their antecedents. He fails to notice the existence of sentences like (10) and (11), which show this position to be untenable.

We must now specify when a referential pronoun can refer to an individual, thing, or set referred to or established as existing by some other NP or set of NP's, and when the contextual uniqueness of a referential pronoun can stem from another NP or set of NP's. We can suggest something like the following.

(15) Given an NP, NP_i , or a set of NP's, $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$,

and a referential pronoun, RP_j , RP_j can refer to the individual, thing, or set referred to or established as existing by NP_i , or to the set referred to or established as existing by $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ just in case RP_j does not both precede and command NP_i or $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ and NP_i or the conjunction of $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ refers to or establishes as existing a member of the set associated with RP_j . The contextual uniqueness of RP_j can stem from NP_i or $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$ just in case it differs in form from NP_i or the conjunction of $NP_{i_1}, NP_{i_2}, \dots, NP_{i_n}$.

Obviously, this is quite similar to (6.1.15).⁵

Both Partee (1975a) and Witten (1972) assume that certain pronouns that I regard as pronouns of laziness are derived through a rule of pronominalization. Witten does not actually use the term

- - - - -

5. (15) is inadequate in a number of ways, as the kinds of data discussed in Lakoff (1976) indicate. Nevertheless, it is adequate for a wide range of cases.

pronoun of laziness. However, he distinguishes a class of 'classical pronouns', which correspond to pronouns of laziness with definite antecedents. These result from pronominalization. He also has a class of 'definition deletion pronouns', which correspond to pronouns of laziness with indefinite antecedents. These have a different derivation which I will discuss later. Partee does use the term pronoun of laziness. She apparently regards all pronouns of laziness as the result of pronominalization. She assumes, however, following a suggestion of Parsons', that only pronouns with definite antecedents can represent pronouns of laziness. Thus, her rule has essentially the same domain as Witten's.

Partee has no real arguments for her position. Witten's main argument centres on the generalization that every environment that excludes 'non-pronominalization' also excludes classical pronouns. In my terms, this means that wherever the second occurrence of a definite description is impossible, so, too, is a pronoun of laziness. Witten's suggestion is that this generalization is explained if pronouns of laziness with definite antecedents derive from copies of their antecedents.

Witten's generalization can be illustrated fairly briefly. Consider firstly the contrast between (16) and (17).

(16) The Minister hates his portrait, and so does the Under Secretary.

(17) The Minister hates the Minister's portrait, and so does the Under Secretary.

(16) is ambiguous, meaning either that the Under Secretary hates the Minister's portrait or that he hates his own. (17) is unambiguous, having only the former reading. On the first reading of (16),

the pronoun is a pronoun of laziness. On the second, it represents a bound variable. We can say, then, that a sloppy identity reading is impossible in (16), if the pronoun is a pronoun of laziness, while a sloppy identity reading is quite impossible in (17), where we have not a pronoun but the second occurrence of a definite description. Consider also the contrast between (18) and (19).

(18) Only the Minister hates his portrait.

(19) Only the Minister hates the Minister's portrait.

(18) is ambiguous, meaning either that no one else hates the Minister's portrait or that no one else hates his own portrait. (19) is unambiguous, having only the former reading. On the first reading of (18), the pronoun is a pronoun of laziness. On the second, it represents a bound variable. Thus, the second reading of (18) is impossible, if the pronoun is a pronoun of laziness, and this reading is impossible in (19), where we have the second occurrence of a definite description.

Do facts like these motivate a rule of pronominalization? I think it should be clear that they do not. I have argued that sloppy identity involves constituents containing bound variables. Naturally, then, it is not possible, if, instead of a bound variable, one has either a pronoun of laziness or an ordinary definite description. Similarly, I have argued that the second reading of (18) stems from the presence of a bound variable. Naturally, again, then, this reading is not possible if one has a pronoun of laziness or an ordinary definite description. There is, then, nothing in these facts to motivate a rule of pronominalization.

There are a number of arguments against analyses like Partee's

and Witten's. Firstly, it is fairly clear that pronouns of laziness are not fundamentally different from other referential pronouns. If they are not fundamentally different, they should not have a different source. Clearly, in these analyses, certain pronouns of laziness do have a different source from other referential pronouns. For this reason, then, the analyses must be rejected.

A second argument against these analyses is that pronominalization is superfluous. Since referential pronouns can be introduced in underlying structure, sentences like (20) will still be generated if the rule is dropped.

(20) Roberta spoke to the policeman, but he told her to go away.
If the rule can be dropped without loss, it should be dropped.

A third argument against these analyses is that they treat pronouns of laziness quite differently from ordinary anaphoric definite descriptions. But they are not fundamentally different from ordinary anaphoric definite descriptions. Consider firstly a simple discourse involving a pronoun of laziness.

(21) Jim read the article quickly. It didn't say anything new.
Here, the reference in the first sentence to a member of the set of articles establishes a contextually unique member of the much larger set of things in the second sentence. Exactly the same situation arises in discourses involving ordinary anaphoric definite descriptions. Consider the following.

(22) Sam was talking to the girl from Athens. The girl was shouting.

Here, the reference in the first sentence to a member of the set of girls from Athens establishes a contextually unique member of the rather larger set of girls. Thus, the same anaphoric relation is

involved in both (21) and (22). Given this, it and the girl should have the same kind of derivation. Thus, if it derives through pronominalization from a copy of its antecedent, so should the girl. It is doubtful whether anyone would contemplate such an analysis.

6.3. Pronouns of Laziness with Indefinite Antecedents

I want now to say something more about pronouns of laziness with indefinite antecedents. I have assumed that pronouns in sentences like (1) are pronouns of laziness.

(1) A man explored the Amazon, and he caught typhoid.

Such pronouns appear to be referential pronouns used anaphorically. Furthermore, given the command constraint, they cannot represent bound variables. For the same reasons, I assume that pronouns in sentences like (2) are pronouns of laziness.

(2) The woman who lost a diamond ring later found it.

Both these pronouns appear to be pronouns of laziness on Geach's (1972) definition. They can be regarded as used in lieu of repetitious expressions. Geach, however, is generally cautious about analyzing pronouns with indefinite antecedents as pronouns of laziness. Furthermore, in a number of places, he explicitly denies that such pronouns are pronouns of laziness. I want, then, to look at his arguments.

Geach (1962 S.76) seeks to show that he in (3) cannot be a referring expression, and hence that it cannot be a pronoun of laziness.

(3) Just one man broke the bank at Monte Carlo, and he has recently died a pauper.

He bases his argument on the general principle that, if a term in a proposition has reference, there must be some way to specify its reference regardless of the truth value of the proposition. If we look at the first clause of (3), it is clear that it is only if this clause is true that there is a man who broke the bank at Monte Carlo. The principle implies, then, that one man is not a referring expression. In the second clause, the situation is different. he here refers to the man who broke the bank at Monte Carlo regardless of whether the clause is true or false. It seems, then, that he is a referring expression. Of course, if the first clause of (3) is false, he will lack a reference. It seems to be this that leads Geach to deny that he is a referring expression. This fact does not support Geach's conclusion, however. The status of he in (3) is just like that of the man who broke the bank at Monte Carlo in (4).

(4) The man who broke the bank at Monte Carlo has recently died a pauper.

If the first clause of (3) is false, the man who broke the bank at Monte Carlo in (4) will have no reference. Surely, though, Geach would not claim that the term is not a referring expression in this situation. This would involve making the question of whether or not some term is a referring expression dependent on extralinguistic fact. Geach would presumably not be prepared to do this. This, however, is what his argument seems to imply. I conclude, then, that this argument provides no reason for denying that pronouns in sentences like (1) are pronouns of laziness.

Geach (1972:110-111) tries to show that he in (5) cannot be a referring expression.

(5) A Cambridge philosopher smoked a pipe and he drank a lot of whisky.

He considers a situation where two Cambridge philosophers, X and Y, both smoked pipes, and X drank a lot of whisky, whereas Y drank none at all. In this situation, he suggests, (5) is unambiguously true, just as (6) is.

(6) A Cambridge philosopher smoked a pipe and drank a lot of whisky.

He suggests that this would not be the case, if (5) were a conjunctive proposition, and he an ordinary referring expression. In this situation, he suggests, (5) would not be unambiguously true. It would be true if he referred to X, and false if he referred to Y. Therefore, he concludes, (5) is not a conjunctive proposition, and he is not a referring expression. Is this argument sound? I think it is not. I would dispute Geach's claim that (5) is unambiguously true in the situation he describes. I would suggest that the first clause of (5) is effectively false in this situation, since the hearer is entitled, on the basis of Grice's maxims, to assume that only one Cambridge philosopher smoked a pipe. As in (3), if the first clause is false, he will fail to refer. Again, though, this does not mean that it is not a referring expression. I think, then, that the argument collapses.⁶

6. Witten (1972) recognizes the difference between sentences like (5) and sentences like (6), when he points out that (ii) is not equivalent to (i), since, unlike (i), it would be appropriate if many Spaniards entered and exactly one ordered coffee.

(i) A Spaniard entered and he ordered coffee.

(ii) There is a Spaniard with the property that he entered and ordered coffee.

Geach (1972:118-119) develops a similar argument in connection with (7).

(7) Socrates owned a dog and it bit Socrates.

He wants to reject the view that this is a conjunctive proposition with it a referring expression. He suggests that, if it were, (8) would be a contradictory of (7).

(8) Socrates did not own a dog, or else: Socrates owned a dog and it did not bite Socrates.

He claims that (8) is not, in fact, a contradictory of (7), since both can be true. His view presumably is that the second disjunct of (8) can be true at the same time as (7) is true. He must, then, be thinking of a situation in which Socrates had two dogs, one of which bit him and one of which did not. But, in this situation, the first clause of (7) is effectively false, since the hearer is entitled to assume that Socrates had only one dog. I think, then, that (7) and (8) are contradictories, and, therefore, that the view that (7) is a conjunctive proposition with it a referring expression is a sound one.

Geach also tries to show (1972:99 - 101) that it in (9) is not a pronoun of laziness.

(9) The only man who ever stole a book from Snead made a lot of money by selling it.

His argument is based on a comparison between (9) and (10).

(10) The woman whom every true Englishman most reveres is his mother.

Here, the pronoun must represent a bound variable. The sentence is an exception to the command constraint of the kind discussed earlier. It can be paraphrased as (11).

(11) It is true of every true Englishman that the woman he most reveres is his mother.

What does this show about (9)? On the most obvious reading of (9), the scope of a book is limited to the relative clause. Does it have a reading in which the pronoun represents a bound variable and the scope of a book includes the whole clause? I would suggest that it does not. Notice that (12) is ungrammatical.

(12) * The man who stole every book from Snead made a lot of money by selling it.

This suggests that sentences like (9) cannot be exceptions to the command constraint. But, even if they could, this would not alter the fact that the scope of a book is limited to the relative clause on the most obvious reading of (9). On this reading, then, the pronoun cannot represent a bound variable. Therefore, it must be a pronoun of laziness.

Having considered Geach's arguments, I can now turn to Witten's account of pronouns of laziness with indefinite antecedents. As I noted earlier, Witten distinguishes a class of definition deletion pronouns which correspond to pronouns of laziness with indefinite antecedents, such as the pronouns in (1) and (2). Witten assumes that such pronouns are derived transformationally from repetitious expressions. Specifically, he would derive he in (1) from the one who explored the Amazon, and it in (2) from the thing that she lost. To these structures, a rule of definition deletion applies, deleting the relative clauses. the one and the thing are then realized as he and it. Witten suggests that this rule is also involved in the derivation of anaphoric definite descriptions with indefinite antecedents. Thus, he would derive the wolf in (14) from the wolf that she spotted.

(14) Mary spotted a wolf, and the wolf bit her.

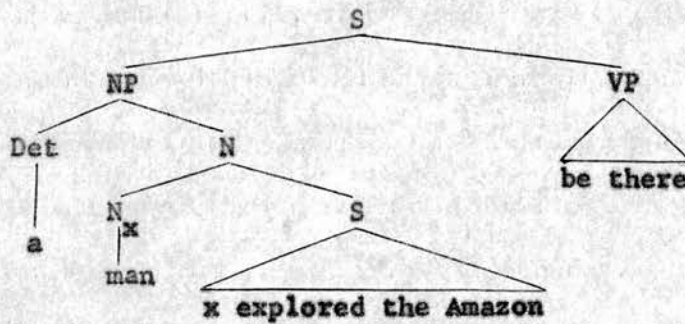
The arguments developed earlier against pronominalization are equally applicable here. Deriving pronouns of laziness with indefinite antecedents through definition deletion involves treating them quite differently from other referential pronouns. Since they are not fundamentally different, such an approach is untenable. Furthermore, definition deletion, like pronominalization, is superfluous. Since referential pronouns can be introduced in underlying structure, sentences like (1) and (2) will still be generated, if the rule is dropped.

A further argument against definition deletion is provided by sentences in which the obvious source for the pronoun is unnatural. Consider the following.

(15) Once upon a time, there was a young prince. He lived with his aged aunt.

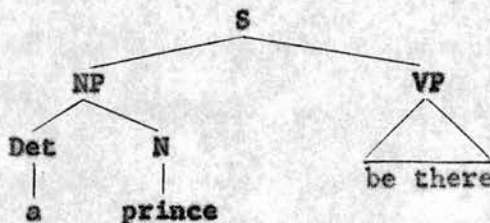
The source for he ought to be something like the one that there was. Unlike the other sources assumed by Witten, however, this is an extremely odd expression. There is no explanation for this oddness in Witten's approach. In the present framework, however, it receives a natural explanation. I suggested earlier that the general naturalness of expressions involving relative clauses as paraphrases for pronouns of laziness with indefinite antecedents is a result of the kind of structure in which indefinite NP's originate. the man who explored the Amazon is a natural paraphrase for he in (1), because the first clause of (1) can derive from (16).

(16)



Obviously, this establishes a contextually unique member of the set of men who explored the Amazon, which is what is necessary for the expression the man who explored the Amazon to be used. The first sentence in (15) will derive from something like (17) (ignoring the time adverbial).

(17)



This establishes a contextually unique member of the set of princes, not a contextually unique member of the set of princes that there was. Naturally, then, it is the prince, not the prince that there was, that is the natural substitute for he in (15).

6.4. A Note on Existence

I have suggested that a definite description of the form the + N refers to the contextually unique member of the set denoted by N. It follows, of course, that it presupposes the existence of a member of this set. I have also suggested that an indefinite NP of the form a + N establishes the existence of a member of the set denoted by N. What I want to consider now is just what is meant by existence in these formulations.

What becomes clear as soon as one looks beyond the simplest sentences is that existence need not be real world existence. Instead, it can be various kinds of hypothetical and imaginary existence. Consider, for example, (1).

- (1) Sam wants to catch a fish and he wants to eat the fish for supper.

This is ambiguous. On one reading, a fish establishes the existence of a fish in the real world. On the other reading, it only establishes the existence of a fish in the world of Sam's wants. In each case, the fish presupposes the same existence. Broadly similar are the following.

- (2) Sue must buy a car and she must drive the car to Naples.
 (3) Tony will buy a picture and he will put the picture on his wall.

Like (1), both are ambiguous, and can be understood as involving either real world or hypothetical existence.

I have argued that referential pronouns are a kind of definite description. This suggests that they should be able to presuppose various kinds of hypothetical and imaginary existence. This is, of course, the case. (4) - (6) are ambiguous in just the same way as (1) - (3).

- (4) Sam wants to catch a fish and he wants to eat it for supper.
 (5) Sue must buy a car and she must drive it to Naples.
 (6) Tony will buy a picture and he will put it on his wall.

Obviously, this supports the view that referential pronouns are a kind of definite description.

Notice now that (7), unlike (1), is unambiguous.

(7) Sam wants to catch a fish. You can see the fish from here. This can only be understood as involving real world existence. The reason is fairly simple. the fish is in a position where it can only be understood as presupposing real world existence. a fish, then, must be understood as establishing real world existence. As we expect, (8) is unambiguous in just the same way.

(8) Sam wants to catch a fish. You can see it from here. Again, this supports the view that referential pronouns are a kind of definite description.

These phenomena have been discussed by a number of linguists, most notably Karttunen (1976), Jackendoff (1972), and Wasow (1972). Of these, only Karttunen notes that pronouns and definite descriptions behave in the same way here. Karttunen suggests that it is possible to refer to an individual that does not exist as long as the discourse continues in the proper mode. This, of course, raises the question of what it is for the discourse to continue in the proper mode. Considering this question, Jackendoff suggests that the elements that produce ambiguities of specificity fall into two categories. With one type, an indefinite NP in its scope can only act as antecedent for a pronoun that is also in its scope. With the other type, an indefinite NP in its scope can act as antecedent for a pronoun in its scope and for a pronoun in the scope of another element of the same kind. The former is said to involve a 'strong coreference condition' and the latter a 'weak coreference condition'. This distinction is motivated by contrasts like that between (9) and (10), considered in chapter 2.

(9) Leon wants to catch a fish and I want to cook it.

- (10) John will bring a girl to the party and she will be beautiful.

As we have seen, a fish in (9) must be specific, whereas a girl in (10) can be specific or non-specific. In (9), then, a fish cannot be within the scope of want, but, in (10), a girl can be within the scope of will. Jackendoff concludes, then, that want is subject to a strong coreference condition and will to a weak coreference condition. Jackendoff's proposal faces an obvious problem in sentences like (4). As we have seen, (4) is ambiguous. a fish can be specific or non-specific. Clearly, then, want is not always subject to a strong coreference condition. A more general weakness, as Wasow notes, is that it provides no explanation for the distribution of the coreference conditions. Their distribution is simply treated as a brute fact.

Wasow suggests that the key to these phenomena is what he calls the 'Novelty Constraint'. He formulates this as follows.

- (11) An anaphor may not introduce any presuppositions not associated with its antecedent.

I think that this points in the right direction. It is unclear in a number of respects, however. Firstly, it does not make it clear that pronouns and definite descriptions behave in the same way. Secondly, it does not specify that it is presuppositions of existence that are at issue. Finally, it does not make it clear that indefinite NP's do not presuppose existence but establish it. I want, then, to reformulate the constraint as follows.

- (12) The existence presupposed by an anaphoric definite description must be of the same kind as that presupposed or established by its antecedent.

Anaphoric definite descriptions include pronouns of laziness, of course. The constraint rectifies a major inadequacy in (6.1.15) and (6.2.15), which ignore the kinds of existence associated with NP's.

The way the constraint works can be illustrated fairly briefly. Consider firstly (1). Here, if both a fish and the fish are outside the scope of want, the former establishes existence in the real world and the latter presupposes the same existence. Obviously, then, the former can be antecedent of the latter. If, on the other hand, both are inside the scope of want, both involve existence in the world of Sam's wants. Again, then, a fish can be antecedent of the fish. (2) - (6) and (10) are broadly similar. (7) - (9) are rather different. In (7), as we have seen, the fish can only presuppose existence in the real world. a fish, therefore, must establish existence in the real world, if it is to be understood as antecedent of the fish. (8), of course, is just like (7). In (9), if a fish and the fish are in the scope of want, the former establishes existence in the world of Leon's wants, while the latter presupposes existence in the world of my wants. Obviously, then, the former cannot be antecedent of the latter. It follows that both must be outside the scope of want.

Some examples are rather more complex. Consider, for example, the following from Karttunen.

(13) Mary wants to marry a rich man. He must be a banker.

This is ambiguous, with a rich man being specific or non-specific. The first sentence refers to the world of Mary's wants. The second sentence does not do this. On the face of it, then, it is rather odd that a rich man can be antecedent of he when it is in the scope of want. We can, however, understand the second sentence as

referring to the world as it must be for Mary. This is equivalent to the world of Mary's wants. Consider also Geach's example, (14).

- (14) Hob thinks a witch has blighted Bob's mare, and Nob wonders whether she killed Cob's sow.

As we have seen, a witch can be specific or non-specific. The first sentence refers to the world of Hob's thoughts. The second sentence, however, refers to the world of Nob's thoughts. It is odd, then, that a witch can be antecedent of she when it is in the scope of think. The crucial fact, I suspect, is that the interpretation of (14) in which a witch is outside the scope of think is rather unnatural because witches are generally assumed not to exist. It is natural, then, to prefer an interpretation in which a witch is inside the scope of think. To understand (14) in this way, one must interpret a witch as establishing the existence of a witch in both Hob's thoughts and Nob's thoughts. It seems, then, that this is what one does.

Notice now that the constraint explains why an Italian cannot be antecedent of him in (15).

- (15) The suggestion that an Italian is a spy annoys him.
an Italian is inside a complex NP. Given the complex NP constraint, it must have originated in this position. For this reason, it cannot establish existence in the real world. he presupposes existence in the real world. Obviously, then, an Italian cannot be its antecedent. The constraint cannot, however, explain why a Spaniard cannot be antecedent of him in (16).

- (16) The fact that a Spaniard has pneumonia worries him.
a Spaniard must have originated inside the complement of the fact. This complement is presupposed to be true. Clearly, then, the Spaniard

must exist. It is not at all clear, then, why him cannot refer to him. Presumably, some other constraint is involved here.⁷

I want now to consider when exactly an indefinite NP establishes the existence of an individual in the real world. Notice firstly that (17) establishes the existence of a fish in the real world.

(17) Jim caught a fish.

(17) is a simple positive declarative sentence. We can suggest, then, that an indefinite NP in a simple positive declarative sentence establishes the existence of an individual in the real world. Notice next that (18) establishes the existence of a fish in the real world.

(18) Jim managed to catch a fish.

(18) implies (17). It seems, then, that an indefinite NP in a sentence which implies a simple positive declarative containing that NP establishes the existence of an individual in the real world. Consider now (19).

(19) Jim regretted that he caught a fish.

Clearly, we can go on to refer to the fish. It looks, then, as if (19) establishes the existence of a fish. Notice, however, that (19) presupposes rather than implies (17). The fact that it presupposes (17) means that it can only be used when the truth of

- - - - -

7. Rather like (16), are (i) and (ii) from chapter 2.

(i) That John saw a girl annoyed her.

(ii) That some demonstrators were arrested worried them.

Clearly, both the girl and the demonstrators must exist. It is not clear, then, why the pronouns cannot refer to them.

(17) has been established. This in turn means that it can only be used when the existence of a fish has been established. Strictly speaking, then, (19) does not establish the existence of a fish. We can conclude, then, that an indefinite NP establishes the existence of an individual in the real world just in case it is either in a simple positive declarative sentence or in a sentence which implies a simple positive declarative sentence containing it.

I noted earlier that an ordinary pronoun commanded by an indefinite antecedent can only represent a bound variable. I can now suggest an explanation for this. I have said that (17) and (18) establish the existence of a fish. It is, however, only when one of them has been said and gone unchallenged that the existence of a fish is established. Consider now (20).

(20) An Italian shot his wife.

(20) establishes the existence of an Italian. It is, however, only when (20) has been said and gone unchallenged that the existence of an Italian is established. It follows that, when his is used, the existence of an Italian is not established. For this reason, then, his cannot be a referential pronoun referring to the Italian. (21), of course, is different.

(21) The Italian shot his wife.

Here, the existence of an Italian must have been established (or be obvious from the context). Naturally, then, his can be a referential pronoun referring to this Italian.

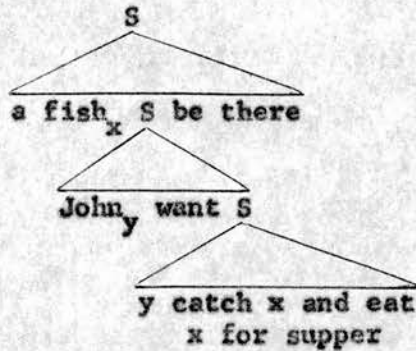
So far, I have said nothing about sentences like (22) and (23), which contain a single ambiguity producing element.

(22) Jim wants to catch a fish and eat it for supper.

(23) Jim will catch a fish and eat it for supper.

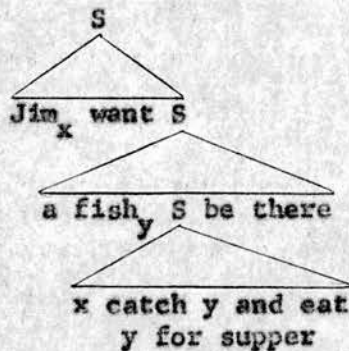
In both sentences, the pronoun is commanded by an indefinite antecedent. This suggests, then, that it must be a bound variable. Both sentences are ambiguous with a fish being either specific or non-specific. For (22), when a fish is specific, we can suggest something like (24) as its source.

(24)



When a fish is non-specific, we can suggest something like (25) as a source.

(25)



So far things are simple enough. Notice, however, that we also get sentences like (26) and (27).

(26) Jim wants to catch a fish and eat the fish for supper.

(27) Jim will catch a fish and eat the fish for supper.

Here, instead of the pronouns of (22) and (23), we have anaphoric definite descriptions. This suggests that the pronouns in (22) and (23) can be pronouns of laziness, even though they are commanded by indefinite antecedents. There is a way, however, of avoiding this conclusion. This is to assume that the definite descriptions in

(26) and (27) are idiomatic realizations of bound variables and not genuine definite descriptions. Support for this approach is provided by sentences like the following from Geach (1972).

(28) One woman whom every tribesman admires is that tribesman's wife.

It is quite impossible to interpret that tribesman here as an ordinary definite description. The obvious suggestion, then, is that it represents a bound variable. If this represents a bound variable, so, too, can the fish in (26) and (27). If it represents a bound variable, there is no need to assume that it in (22) and (23) can represent a pronoun of laziness.

6.5. The Classical Theory Revisited

It is appropriate now to return briefly to the classical theory of pronouns. I want to suggest that the conception of pronouns of laziness developed here preserves what is valid in the classical theory.

It will be recalled that I interpreted the classical theory as making two distinct claims as follows.

(A) Pronouns are coreferential with their antecedents.

(B) Pronouns have the same underlying form as their antecedents.

My position is that claim (A) is true of a subset of pronouns of laziness, but that claim (B) is not true of any pronouns.⁸

- - - - -

8. I will qualify this statement somewhat in 8.2.

We can consider claim (A) first. I assume that bound variables are not referring expressions. Clearly, then, the claim is not true of pronouns that represent bound variables. The claim is true, however, of a subset of pronouns of laziness. I have argued that pronouns of laziness are referential pronouns used anaphorically. As such, of course, they are referring expressions. I have also argued, however, that pronouns of laziness and ordinary anaphoric definite descriptions are of two kinds. They can refer to an individual, thing, or set referred to by another NP, or they can refer to an individual, thing, or set established as existing by another NP. The former is the case where the antecedent is definite. The latter is the case where the antecedent is indefinite. It is clear, then, that claim (A) is true of pronouns of laziness with definite antecedents, but not of pronouns of laziness with indefinite antecedents.

What now of claim (B)? Obviously, it is not true of pronouns that represent bound variables. I have argued in this chapter against the view that certain pronouns of laziness derive from copies of their antecedents. It seems, then, that claim (B) is not true of any pronouns.

It should be clear that the relation of the present theory to the classical theory is rather different from its relation to the bound variable theory. I have argued that a subset of pronouns have very much the character that the bound variable theory takes all pronouns to have. There is not in the same way a subset of pronouns with the character that the classical theory takes pronouns to have. Partee and Witten assume that there is a subset of pronouns

with this character. I reject their view that claim (B) is true of pronouns of which claim (A) is true. Thus, in the present theory, there are no pronouns of this kind.

When I first discussed the classical theory, I argued that its two claims are independent in the sense that it is possible to make one without making the other. While this is true, there is an interesting relation between the two claims. This is that, within a framework in which underlying structure is logical structure, claim (B) is plausible only if one assumes that claim (A) is true. Lees and Klima (1963) made claim (B) without making claim (A), but they did not regard underlying structure as logical structure. This point can be illustrated fairly briefly.

I noted in chapter 3 that, if one has a sentence containing a referring expression in a non-opaque environment, it is normally possible to replace the expression by any other expression with the same reference without changing the truth value of the sentence. Claim (A) implies that a pronoun and its antecedent are referring expressions with the same reference. If this is so, it should be possible to replace a pronoun by its antecedent. This is possible with pronouns of which claim (A) is true. In (1), for example, although the result is awkward, he can be replaced by Steve.

(1) Steve said he was angry.

With such sentences, then, claim (B) has some plausibility. With pronouns of which claim (A) is not true, the pronoun cannot be replaced by the antecedent. Claim (A) is not true, if the antecedent is not a referring expression. Thus, in (2), he cannot be replaced by a Rumanian.

(2) A Rumanian said he was angry.

Claim (A) is not true either, if the pronoun is not a referring expression. In (3), therefore, he cannot be replaced by every Rumanian.

(3) Every Rumanian said he was angry.

With these sentences, then, because claim (A) is not true, claim (B) is not at all plausible. In the light of these observations, it is not surprising that Partee and Witten assume that claim (B) is true of pronouns of which claim (A) is true.

I want now to suggest that the classical theory involves two main mistakes. The first mistake is the assumption that claim (A) is true. As we have seen, it is only if one assumes this that claim (B) is at all plausible. A second mistake, I would suggest, is a tacit assumption, perhaps shared by Partee and Witten, that definite descriptions can have the same reference only if they have the same meaning. Underlying this, I think, is a failure to recognize the importance of context for definite descriptions. A cursory investigation of definite descriptions shows quite clearly that they are context dependent, in particular that different descriptions can have the same referent in different contexts. Context here includes linguistic context. In (4), we have two different descriptions with the same referent.

(4) Mary interviewed the King of Rumania. The King was handsome. the King here has the same referent as the King of Rumania because of its linguistic context, specifically because it directly follows the King of Rumania. The same situation obtains in (5), except that here we have a pronoun of laziness instead of an ordinary anaphoric definite description.

(5) Mary interviewed the King of Rumania. He was handsome.

If one does not appreciate the role of context, and particularly of linguistic context, in the use of definite descriptions, one is likely to assume that the anaphoric definite description in (4) and the pronoun of laziness in (5) have not only the same reference as their antecedents, but also the same meaning. If one assumes this, one will assume that they have the same underlying structure, and hence that their derivations involve pronominalization rules.

Summarizing, we can say that the classical theory is correct in recognizing that many anaphoric pronouns are ordinary referring expressions. It is wrong, however, in assuming that they all are. It is correct also in recognizing that many anaphoric pronouns which are referring expressions refer to the individual, thing, or set referred to by their antecedents. It is wrong, however, in thinking that they all do. I think it is clear that what is correct in the theory is preserved in the present conception of pronouns of laziness.

CHAPTER 7

THE EMERGING PICTURE

In this chapter, I will draw together the various elements in the preceding discussion, and try to clarify the nature of the mixed theory that I have been developing. I will also discuss a number of additional issues that arise in connection with the theory.

7.1. Some Conclusions

The central contrast in the theory I am advancing is between bound variables and referential pronouns. Bound variables here are much like bound variables in standard logic. Referential pronouns are essentially a specialized kind of definite description. Where they are used anaphorically, they can be termed pronouns of laziness. Their anaphoric use, however, is not fundamentally different from their non-anaphoric use. Any pronoun that is commanded by its antecedent may represent a bound variable. In many cases, such pronouns can only represent a bound variable. Pronouns with antecedents that do not command them can only be pronouns of laziness. The following examples illustrate the basic possibilities.

- (1) Every Russian thinks he is clever.
- (2) Sam thinks he is clever.
- (3) The man who saw a unicorn chased it.

In (1), the pronoun can only represent a bound variable. In (2), it can represent a bound variable or a pronoun of laziness. In (3), the pronoun can only represent a pronoun of laziness.

The fact that both bound variables and pronouns of laziness are possible in certain environments leads to certain ambiguities.

Sentences like the following illustrate.

(4) Harriet hates her father, and so does Mary.

(5) Only Harriet hates her father.

These ambiguities provide some of the most obvious evidence for a mixed theory. They are by no means essential, however. If pronouns commanded by their antecedents could only represent bound variables, there would be no such ambiguities. Pronouns, however, would still fall into two main classes, with one class having the properties of bound variables, and the other having the properties of definite descriptions. We can note here that, while Witten and Partee pay considerable attention to these ambiguities, Geach proposed a mixed theory without noting their existence.

I have argued that the present theory preserves what is valid in the bound variable theory and the classical theory. It might, then, be seen as a synthesis of the two theories. It would be more accurate, however, to see it as a synthesis of the bound variable theory and the theory sketched in Lasnik (1976). As we have seen, the relation of the present theory to the classical theory is different from its relation to the bound variable theory. A subset of pronouns have the character that the bound variable theory takes all pronouns to have, but no pronouns have the character that the classical theory takes pronouns to have. The present conception of pronouns of laziness preserves what is valid in the classical theory, but, as we have seen, there is little that is valid. This conception of pronouns of laziness, in fact, owes more to Lasnik's theory. As I have remarked, Lasnik's account of pronouns is similar to my account of referential pronouns. We can say, then, that a subset of pronouns have the character that Lasnik takes all pronouns to have. Thus, the relation

of the present theory to Lasnik's theory is similar to its relation to the bound variable theory. I think, then, that it is reasonable to describe this theory as a synthesis of the bound variable theory and Lasnik's theory.

I think we can also describe the present theory as a synthesis of two ways of looking at language. In much twentieth century work on language, we can discern a conflict between two basic perspectives. One, which we might term the logician's perspective, concentrates on sentences conceived as abstract objects with certain truth conditions and certain syntactic and phonetic properties. The other, which we might term the perspective of the speech act theorist, emphasizes situated discourse, and regards the speaker's intentions and the hearer's expectations as central.¹ Looking at pronouns from the logician's perspective, it is natural to assume that they represent bound variables. From the perspective of the speech act theorist, it's natural to assume that pronouns are a kind of definite description. I have argued that some pronouns have the properties of bound variables, and others the properties of definite descriptions. We can say, then, that both perspectives are adequate for certain pronouns, but that neither is adequate for all pronouns.

- - - - -

1. Much the same point is made in Strawson (1969). He talks of a conflict between theorists of formal semantics and theorists of communication intention. In the former camp, he puts Chomsky, Frege and the early Wittgenstein. In the latter, he puts Grice, Austin, and the later Wittgenstein. In somewhat similar vein, Morgan (1975b) contrasts the view of sentences as abstract formal objects existing independently of speaker, time, and context with the view of sentences as events carried out by individuals with intentions, purposes and goals and occurring in time.

7.2. Some Comparisons

As I have noted in earlier chapters, a number of people have advocated mixed theories of pronouns. In this section, I want to compare my theory with other mixed theories. I will consider the work of Geach, Witten, Partee, and Cresswell.

When I first considered the possibility of a mixed theory of pronouns, I did so by reference to the work of Geach (1962, 1972). Geach does not develop any systematic theory of pronouns. He gives reasons for making a distinction between bound variables and pronouns of laziness, but does not develop any precise characterization of the two kinds of pronoun, or specify clearly this distribution. The main contrast between Geach's position and my own is that he assumes that bound variables have a wider distribution and pronouns of laziness a narrower distribution than I do. As I noted in the last chapter, he assumes that pronouns like he in (1) and it in (2) represent bound variables.

(1) Just one man broke the bank at Monte Carlo, and he has recently died a pauper.

(2) The only man who ever stole a book from Snead made a lot of money by selling it.

I argued against this view in the last chapter. I think Geach's discussion of these pronouns shows the limitations of the logician's view of language.

Witten (1972) and Partee (1975a) both develop their views in a more systematic way than Geach. As should be clear, my theory owes a considerable amount to their work, especially Witten's. The main weakness of their theories is a failure to recognize that pronouns of laziness and non-anaphoric pronouns are the same kind of pronoun.

This is the import of the assumption they both make that pronouns of laziness with definite antecedents are the result of pronominalization, and of Witten's assumption that pronouns of laziness with indefinite antecedents derive through a rule of definition deletion. A further weakness of Partee's theory is her assumption that only pronouns with definite antecedents can be pronouns of laziness. Presumably, like Geach, she would regard the pronouns in (1) and (2) as bound variables. We have seen that they must be pronouns of laziness.

Unlike Geach, Witten, and Partee, Cresswell (1973) pays some attention to non-anaphoric pronouns. As I noted in chapter 2, he assumes that anaphoric pronouns with antecedents in the same sentence derive from bound variables, while all other pronouns, anaphoric and non-anaphoric, represent a kind of referring expression. His account of non-variable pronouns is broadly similar to the account of referential pronouns developed here. He does not explicitly identify them as a kind of definite description, but this is implicit in his remarks. He suggests that he, as a non-variable pronoun, means the person the utterer is talking about, or intends to refer to. Similarly, he suggests that a definite description, the + N, is used when there is only one member of the set denoted by N that the speaker intends to refer to. Cresswell is wrong, I think, in defining contextual uniqueness in terms of the speaker's intentions, and not in terms of the hearer's expectations. He is right, however, in recognizing that the same kind of contextual uniqueness is involved in non-variable pronouns and definite descriptions.

The main difference between Cresswell's non-variable pronouns and my referential pronouns is in their distribution. For Cresswell, pronouns with antecedents in the same sentence can only represent

bound variables. They cannot represent non-variable pronouns. In the present theory, in contrast, pronouns with antecedents in the same sentence can often represent both bound variables and pronouns of laziness, i.e. referential pronouns. Cresswell artificially restricts the role of non-variable pronouns. In fact, he considers limiting their role further. As I noted in chapter 2, he talks about the possibility of developing a paragraph semantics, which will allow a variable to be bound by an element in an earlier sentence. He seems to envisage a system in which only non-anaphoric pronouns do not derive from variables. I think it is clear that this is a mistaken approach.

7.3. A Note on Chomsky

Another linguist who has advocated a mixed theory of pronouns is Chomsky (1975, 1976). Developing the ideas of Lasnik (1976), he makes distinction between free and bound anaphora. The former falls outside the domain of sentence grammar. The latter falls inside. The main example of bound anaphora that Chomsky discusses is reciprocal interpretation. That this is an aspect of sentence grammar is suggested by the fact that reciprocal forms like each other require an antecedent in the same sentence. Note here the impossibility of (1).

(1) * Some of the men left today. Each other will leave
tomorrow.

Contrasting with (1) is (2).

(2) Some of the men left today. The others will leave
tomorrow.

This suggests that the relation between others and its antecedent is

an instance of free anaphora. Reflexive pronouns have a similar distribution to reciprocals. They, too, then, can be regarded as an example of bound anaphora. Chomsky also suggests (1975:104) that pronouns which can only have an anaphoric interpretation, such as his in (3) are examples of bound anaphora.

(3) John lost his way.

In contrast, his in (4) will be an instance of free anaphora, since it can have either an anaphoric or a non-anaphoric interpretation.

(4) John found his book.

The distinction between free and bound anaphora is a rather vague one. Clearly, however, it is desirable to establish the relation of the distinction to the theory developed here. What I want to suggest is that pronouns of laziness are an example of free anaphora, and bound variables an example of bound anaphora.

Pronouns of laziness, I have argued, are simply referential pronouns used anaphorically. It is fairly clear, I think, that the relation between such a pronoun and its antecedent falls outside the domain of sentence grammar, on any reasonable interpretation of the latter term. In contrast, a bound variable must be asymmetrically commanded by its antecedent in underlying structure, and commanded by it in surface structure. I can, therefore, see no basis for regarding bound variables as anything but an integral part of sentence grammar. I am suggesting, then, that, if the terms free and bound anaphora are applied in anything like the way Chomsky suggests, pronouns of laziness must be regarded as an example of the former, and bound variables as an example of the latter. The importance of this conclusion is that it presents problems for the

conditions on rules advanced in Chomsky's recent work.

Chomsky (1973) proposes the specified subject condition and the tensed S condition. Both relate to structures of the following form.

(5) ...X... [_{α} Z - ...Y...]

The specified subject condition states roughly that no rule may relate X and Y in such a structure, where α is a cyclic category, and Z is its subject. The tensed S condition states that no rule may relate X and Y in such a structure, where α is a tensed sentence. Support for the constraints is provided by sentences like the following.

(6) The candidates expected to see each other on T.V.

(7) * The candidates expected Mary to like each other.

(8) The candidates expected each other to win.

(9) * The candidates expected that each other would win.

In (7), but not in (6), the reciprocal each other and its antecedent are separated by a specified subject. In (9), but not in (8), they are separated by the boundary of a tensed sentence. Whatever the source of reciprocals, it appears that the conditions can account for their distribution. One finds similar data with reflexives.

(10) The candidates expected to see themselves on T.V.

(11) * The candidates expected Mary to like themselves.

(12) The candidates expected themselves to win.

(13) * The candidates expected that themselves would win.

With ordinary pronouns, however, the situation is rather different.

Consider the following.

(14) The candidates expected Mary to like them.

(15) The candidates expected that they would win.

In (14), the pronoun and its antecedent are separated by a specified

subject. In (15), they are separated by a tensed sentence boundary. Both sentences, however, are perfectly acceptable. In Chomsky (1973), this is seen as a problem. Chomsky (1976) suggests, however, that the conditions are only relevant to bound anaphora. Sentences like (14) and (15), he assumes, exemplify free anaphora. This, then, is why they are acceptable.

So far, Chomsky's line of argument is plausible enough. The pronouns in (14) and (15) can be pronouns of laziness. Therefore, they can, as Chomsky's argument requires, be an example of free anaphora. Consider, however, the following.

(16) One candidate expected Mary to like him.

(17) One candidate expected that he would win.

I have argued that an ordinary pronoun commanded by an indefinite antecedent can only represent a bound variable. In (16) and (17), then, the pronouns must be an example of bound anaphora. But, if Chomsky's conditions are relevant to bound anaphora, (16) and (17) should be unacceptable. Thus, the acceptability of (16) and (17) casts serious doubt on the conditions. Consider also the following.

(18) Every candidate expected Mary to like him.

(19) Every candidate expected that he would win.

I have argued that a singular pronoun with an antecedent containing every can only represent a bound variable. Here also, then, the pronouns must be an example of bound anaphora. Thus, (18) and (19) should be unacceptable. That they are not, then, casts further doubt on Chomsky's conditions.

While Chomsky's conditions appear plausible in the light of sentences like (6) - (13), consideration of a wider range of anaphoric phenomena casts serious doubt on them. Postal (1974a) shows that

the impression that the conditions can account for the distribution of reciprocals and reflexives is an illusory one. Thus, the conditions can draw no comfort at all from anaphoric phenomena. Bach and Horn (1976) develop a sustained critique of Chomsky's conditions.² The present observations add some additional weight to their critique. Thus, while my investigations lead to a clarification of Chomsky's distinction between free and bound anaphora, they also put an additional nail in the coffin of his conditions on rules.

7.4. The Anaphora Relation

I will conclude this chapter by saying something about Dougherty's (1969) 'anaphora relation'. Dougherty claims that the following relation holds.

- (1) The set, Σ_A , of surface structure sentences which contain a proform that is understood anaphorically is a subset of the set, Σ_N , of surface structure sentences which contain a proform that is not understood anaphorically.

Dougherty discusses the relation as evidence against the classical theory. It does not seem to me that the relation, if it held, would provide evidence against the theory. In any event, there is evidence that it does not hold. This does not mean, however, that Dougherty's claim is not of interest.

Put somewhat differently, Dougherty's claim is that every pronoun can be understood non-anaphorically, but not every pronoun can be

- - - - -

2. Chomsky has responded to this critique in Chomsky (1977a). For a critical assessment of this response, see Horn (1977).

understood anaphorically. To refute the claim, we need only find pronouns which can be understood anaphorically, but not non-anaphorically. There are various such pronouns. The following examples from Wasow (1972) illustrate.

(2) Mary washed herself.

(3) The President lost his head.

(4) The chairman gnashed his teeth.

(5) The losers had to buy beer for the winners, didn't they.

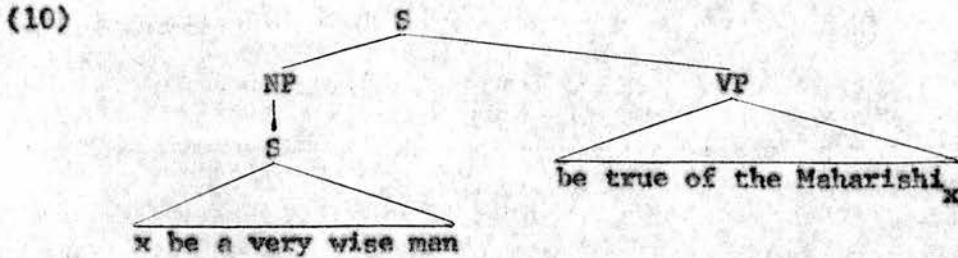
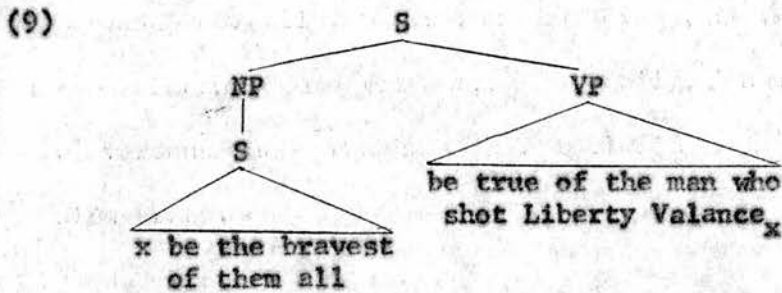
(6) She is a happy girl, is Sue.

(7) The man who shot Liberty Valance, he was the bravest of them all.

(8) He is a very wise man, the Maharishi.

Such sentences show that Dougherty's claim is false. The obvious question is whether they form a natural class.

In the present framework, the obvious suggestion is that all counterexamples to the anaporn relation involve bound variables. Obviously, pronouns that can only represent bound variables can only have an anaphoric interpretation. We know that reflexives can only represent bound variables. Here, then, we have a ready explanation for the fact that (2) is an exception to the anaporn relation. It seems reasonable to suggest that the idioms in (3) and (4) involve bound variables. It looks, then, as if we can explain why (3) and (4) are exceptions to the anaporn relation. It also seems reasonable to derive (7) and (8) from (9) and (10), respectively, through specialized lowering rules.



In (7), the lowered NP is left Chomsky-adjoined to the embedded S.

In (8), it is right Chomsky-adjoined. On this analysis, the pronouns in (7) and (8) represent bound variables. It looks, then, as if we can explain a further class of counterexamples. It also seems plausible to suggest that (6) derives from (11) through a rule that copies an 'auxiliary'.

(11) She is a happy girl, Sue.

If it does, She will represent a bound variable in (6), just as it does in (7). I think, then, that we can explain why (6) is a counterexample. Unfortunately, there is no obvious reason to think that the pronoun in (5) represents a bound variable. It is doubtful, then, whether we can claim that all counterexamples to the anaporn relation involve pronouns representing bound variables.

Wasow suggests that all counterexamples to the enaporn relation are the result of copying processes. Following Helke (1971), he assumes that reflexives are represented in underlying structure by the element self, which has an empty determiner which is filled by a copying transformation. He assumes that head and teeth in (3) and (4) also have empty determiners filled by this transformation.

Following Cullicover (1971), he assumes that the tags in (5) and (6) result from copying transformations, and, following Ross (1967), he assumes that (7) and (8) involve the copying rules, left and right dislocation. I argued earlier against the analysis of reflexives assumed here. I also think that the analyses I have sketched for (7), (8), and (6) are preferable to those assumed by Wasow. Notice, however, that one can reject these analyses without rejecting Wasow's basic suggestion. I have argued that the surface form of bound variables is the result of feature copying. Thus, on my analysis, as well as on Wasow's, these sentences will involve copying. It looks, then, as if the suggestion that the exceptions to the anaphora relation are the result of copying can be maintained.

It looks as if the counterexamples to the anaphora relation form a unified class. I think, however, that this is illusory. (5) remains a problem. I think that tag questions may well involve a copying rule. It seems, however, that this will be quite different from feature copying. It will introduce new structure, whereas feature copying simply fills in existing structure. (5), then, will be different from the other counterexamples. I don't think, then, that the counterexamples to the anaphora relation form a unified class.

It seems quite likely that pronouns in tag questions are pronouns of laziness. This is suggested by the fact that we have they, not he, when the subject of the main clause is everyone.

(12) Everyone likes beer, { don't they?
*doesn't he? }

If they are, they will be referential pronouns which must have an anaphoric interpretation. There are other referential pronouns which

must have an anaphoric interpretation. I argued earlier that the relative pronoun in a non-restrictive relative clause is a pronoun of laziness. who in (13), for example, is a pronoun of laziness.

(13) Sam, who knows about these things, says Mary is a spy. Obviously, who can only have an anaphoric interpretation. It is thus a referential pronoun that can only have an anaphoric interpretation. A further example of a referential pronoun that can only have an anaphoric interpretation is he in (14).

(14) Sam, and he knows about these things, says Mary is a spy. It is clear, then, that classifying pronouns in tags as pronouns of laziness will not present us with any new situation.

Summarizing, we can say that the counterexamples to the anaphoric relation do not form a unified class. The main cases involve pronouns which represent bound variables. There are also, however, cases like (13), (14), and probably tag questions which involve pronouns of laziness.

CHAPTER 8

SOME MORE PRONOUNS

There are two types of pronoun that I have not yet considered. These are what I will call 'sentential pronouns' and 'intensional pronouns'. In this chapter, I will say something about them.

8.1. Sentential Pronouns

By sentential pronouns, I mean anaphoric pronouns with complement sentences as their antecedents. Such pronouns are illustrated in the following sentences.

- (1) Sam says that Megan is an existentialist, but I don't believe it.
- (2) I know that Eve is a freudian, but I wouldn't have thought it of Jim.

I want to suggest that such pronouns are ordinary pronouns of laziness, i.e. that they are referential pronouns used anaphorically.

When it is a referential pronoun, it refers to the contextually unique thing. Among things are included not only concrete physical objects, but also various kinds of abstract objects. Among such objects are propositions and propositional functions. it, then, can be used to refer to a proposition or a propositional function. Consider now (1). Following e.g. Delacruz (1976), we can understand the complement of the first clause of (1) as referring to a proposition. it, then, refers to the same proposition. Consider also (2). Here, I assume that Eve has been lowered into an open sentence. This open sentence can be understood as referring to a propositional function. It is this propositional function, then,

that it refers to. Similar to (2), of course, are sentences like (3), which we discussed in chapter 4.

(3) Brian likes Shakespeare, and that is true of Ron too.
It should be noted that it is quite possible for a non-anaphoric referential pronouns to refer to propositions and propositional functions. Hankamer and Sag (1976) give the following example.

(4) Hankamer (observing Sag ripping a phone book in half):

I don't believe it.

Here, it is understood as something like that he's ripping the phone book in half. Consider also (5).

(5) Same context:

I wouldn't have thought it of him.

Here, it refers to a propositional function presumably something like that he could rip a phone book in half.

Various linguists have assumed that sentential pronouns derive through a pronominalization rule from copies of their antecedents. On this view, (6) represents a more basic form of (1).

(6) Sam says that Megan is an existentialist, but I don't believe that Megan is an existentialist.

If sentential pronouns were derived in this way, they would not be ordinary pronouns of laziness. An immediate reason for rejecting this position is that it treats it in (1) quite differently from it in (4), although their roles do not appear to be fundamentally different. There are, however, facts that give it some plausibility. It is necessary, then, to consider these facts.

Notice firstly that from (1), one can infer (7).

(7) I don't believe that Megan is an existentialist.

If (1) derives from something like (6), the inference from (1) to (7)

will be a simple instance of the following schema.

(8) $(p \wedge q) \rightarrow q$

If (1) does not have such a source, it looks as if a special interpretive process will be required to account for the inference. This is not the case, however. In (1), that Megan is an existentialist and it refer to the same proposition. Where two NP's have the same reference, one can normally be substituted for the other. Given that Cicero and Tully denote the same person, one can infer (10) from (9) (and vice versa).

(9) Cicero denounced Catiline.

(10) Tully denounced Catiline.

This means that the sentence that Megan is an existentialist can be substituted for it in (1). Thus, one can infer (6) from (1), and from this one can infer (7). Therefore, inferences like that from (1) to (7) do not motivate a rule of pronominalization.

Consider next the following sentence.

(11) Steve doesn't believe that Sam caught a unicorn, but

Eve believes it, and she expects him to give it to the zoo.

This exemplifies the 'missing antecedent' phenomenon discussed in Grinder and Postal (1971). The pronoun in the third conjunct has no antecedent on the surface. Rather its antecedent is part of the interpretation of the sentential pronoun in the second conjunct. Grinder and Postal discuss the missing antecedent phenomenon in connection with sentences like (12).

(12) Brian didn't catch a unicorn, but Jim did, and he gave it to the zoo.

Here, the antecedent of it is part of the interpretation of the missing VP in the second conjunct. Grinder and Postal take such sentences to

be evidence for the traditional assumption that missing VP's result from a rule of VP-deletion. It might seem that, if sentences like (12) motivate a rule of VP-deletion, sentences like (11) will motivate a rule of pronominalization. This is not the case, however. Sentences like (11) can be handled quite naturally without a rule of pronominalization. In (11), that Sam caught a unicorn and it refer to the same proposition. Thus, from the first two conjuncts of (11), one can infer (13).

(13) Eve believes that Sam caught a unicorn.

Here, then, we have an antecedent for it in the third conjunct. With sentences like (12), the situation is rather different. One cannot say that the VP's in the first two conjuncts of (12) have the same reference, since VP's are not referring expressions. Therefore, one cannot substitute one for the other in the same way as one can substitute that Sam caught a unicorn for it in (11). Thus, missing antecedents do seem to motivate a rule of VP-deletion, which is motivated anyway by various other facts. They do not, however, motivate a rule of pronominalization.

In passing, it should be noted, that many sentences in which the antecedent of some pronoun is part of the interpretation of a sentential pronoun are unacceptable. Consider, for example, the following.

(14) * Jim didn't buy a dragon, but Sam did it, and it singed his beard.

(15) * Tony wasn't attacked by a dragon, but it happened to Ron, and it mauled him badly.

Bresnan (1971) assumes that all such sentences are unacceptable, and takes this as evidence that sentential pronouns are not transformationally

derived. (11) and many other sentences show her assumption to be false. As we have seen, however, such sentences do not necessitate a rule of pronominalization. In (14) and (15), the pronouns with missing antecedents are subjects. As Postal (1972) points out, such sentences are generally unacceptable. Where the pronouns are not subjects, the sentences are much better.

(16) Jim didn't buy a dragon, but Sam did it, and he's having a job feeding it.

(17) Tony wasn't attacked by a dragon, but it happened to Ron, and he had a job to fight it off.

Better sentences also result, if the pronoun is not it.

(18) Jim didn't buy any dragons, but Sam did it, and they singed his beard.

(19) Tony wasn't attacked by dragons, but it happened to Ron, and they mauled him badly.

The natural suggestion, I think, is that sentences like (14) and (15) are unacceptable for perceptual reasons. I would hypothesize that the close proximity of two identical pronouns, where the interpretation of the first provides the antecedent for the second, causes perceptual difficulties.

Having shown that two kinds of facts that appear to support a rule of pronominalization do not in fact do so, I will now consider some evidence against such a rule. It has often been noted that sentences like (20) are ambiguous.

(20) Sam believes that the earth is larger than it is.

On one reading, Sam believes a contradiction. On the other, he believes that the earth is a certain size, but in fact it is not

that large. Consider now (21).

(21) Sam believes that the earth is larger than it is, but
Eve doesn't believe it.

Here, there is no ambiguity. The first clause can only mean that Sam believes a contradiction. If sentential pronouns are derived through pronominalization, (22) will represent a more basic form of (21).

(22) Sam believes that the earth is larger than it is, but
Eve doesn't believe that the earth is larger than it is.

But (22) is ambiguous. It is not at all clear, then, on this account, why (21) is not ambiguous also. Notice that (23), which derives from (22) through VP-deletion remains ambiguous.

(23) Sam believes that the earth is larger than it is, but
Eve doesn't.

If we assume that sentential pronouns are ordinary pronouns of laziness, and not the result of pronominalization, the absence of ambiguity in (21) is fairly straightforward. It is only where (20) is understood as asserting that Sam believes a contradiction that it provides a contextually unique proposition for a pronoun to refer to. On the other reading of (20), what Sam believes is not specified, only compared with reality. On this reading, then, (20) does not provide a contextually unique proposition for a pronoun to refer to. Thus, what is mysterious if sentential pronouns are seen as the result of pronominalization is quite straightforward if they are seen as ordinary pronouns of laziness.

Similar evidence against pronominalization is provided by sentences like (24).

(24) Jim says that many Italians are spies.

In the present framework, (24) can derive from four different structures. many Italians may originate either inside or outside the complement of say, and it may be either distributive or collective. Whether (24) has four different readings is not entirely clear. Where many Italians originates inside the complement, the distributive/collective distinction seems of no real significance. Where it originates outside the complement, a distributive interpretation is most natural, though a collective interpretation is also possible, I think. Where many Italians originates outside the complement and is distributive, (24) is equivalent to (25).

(25) There are many Italians each of whom Jim says is a spy. In the present context, this is the crucial reading. Consider now (26).

(26) Jim says that many Italians are spies, and Sam says it too. It is clear, I think, that the first clause here cannot mean (25). If sentential pronouns derive through pronominalization, (27) will represent a more basic form of (26).

(27) Jim says that many Italians are spies, and Sam says that many Italians are spies too.

Here, the first clause can mean (25), and the second clause can have a parallel meaning. Thus, if sentential pronouns are the result of pronominalization, it is not at all clear why the crucial reading is lacking in (26). Notice that (28), the result of applying VP-deletion to (27), has this reading.

(28) Jim says that many Italians are spies, and Sam does too. If sentential pronouns are ordinary pronouns of laziness, the absence of the crucial reading in (26) is quite straightforward. (25) describes a situation involving a set of distinct propositions. Thus,

where (24) means (25), it does not provide a contextually unique proposition for a pronoun to refer to. Again, then, we have evidence against pronominalization and in favour of the view that sentential pronouns are ordinary pronouns of laziness.

I am suggesting, then, that sentential pronouns are ordinary pronouns of laziness, and that the interpretation of a sentential pronoun is simply the substitution of one expression for another with the same reference. This can be illustrated with (29).

(29) Eve thinks Tony is ill, and Mary thinks it too.

I assume that the second clause in (29) derives from something like (30).

(30)

it here has the same reference as the complement in the first clause. The latter, therefore, can be substituted for it, giving (31).

(31)

Clearly, this gives the correct interpretation of the second clause in (29).

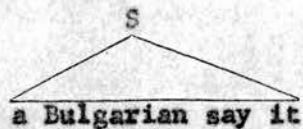
A rather different situation is found in (32).

(32) A Rumanian said he was ill, and a Bulgarian said it too.

it in the second clause has only a sloppy interpretation. The clause can only mean that the Bulgarian said that he himself was ill.

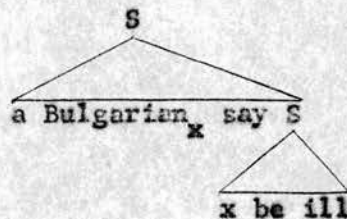
This is exactly what the present framework predicts. The clause will derive from something like (33).

(33)



it in the second clause has the same reference as the complement in the first clause. The latter, therefore, can be substituted for the former. We know, however, that he in the complement can only represent a bound variable. The complement, then, is an open sentence. When this open sentence is substituted for it the variable underlying he is no longer within the scope of a Rumanian. It, therefore, cannot be bound by a Rumanian. It can only be bound by a Bulgarian. The result of substitution, then, must be (34).

(34)



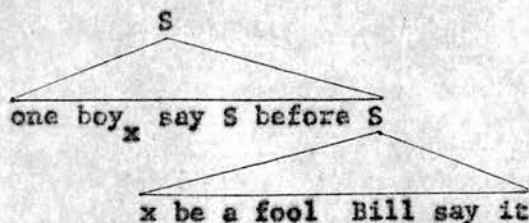
We, thus, correctly predict that it has only a sloppy interpretation.

Rather different again is (35).

(35) One boy said he was a fool before Bill said it.

(35) is ambiguous. The sentential pronoun can have a sloppy or a strict reading. Again, this is predicted. (35) will derive from something like (36).

(36)



The complement of say can clearly be substituted for it. When it is substituted, the variable is still within the scope of a boy. Obviously, then, it can still be bound by a boy. This accounts for

the strict reading of it. To account for the sloppy reading, we need only allow the variable to be bound by Bill as well.

Inferences like those considered here are discussed in Fodor (1976), in connection with his contention that equi deletes the element self, and not a bound variable. He considers the following argument.

- (37)a. The cat wanted to eat the cheese.
 b. The mouse got what the cat wanted.
 c. The mouse got to eat the cheese.

In the present framework, the infinitive in the first premiss will derive from the open sentence x eat the cheese, where the variable is bound by the cat. The inference will involve the substitution of this open sentence for the anaphoric expression what the cat wanted, and the binding of the variable by the mouse. Fodor argues that this rebinding is not allowed in standard conceptions of variable binding. He suggests, then, that self is an element that is bound by the NP that syntactically commands it. For him, then, the infinitive in the first premiss will derive from something like self eat the cheese, where self is bound by the cat. When this is substituted for what the cat wanted, self will be bound by the mouse. Fodor may be right that rebinding is not allowed in standard conceptions of variable binding. But there is nothing sacrosanct about standard conceptions. There is no reason at all why variables should not have the properties that Fodor takes self to have. I conclude, then, that inferences like that in (37) provide no support for Fodor's views on self.

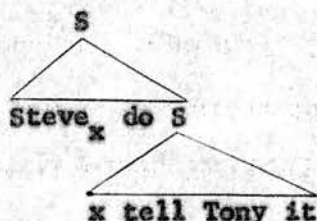
Returning to the main theme, one might suppose that, when an open sentence is substituted for a pronoun, the variable can be

bound by any binding element that asymmetrically commands it. This is not the case, however. That it is not is shown by sentences like (38).

(38) Jim told Sam he was drunk, and Steve told Tony.

I assume that the second clause of (38) derives from something like (39), with the pronoun being deleted during the course of the derivation.

(39)



The pronoun in the first clause may be a pronoun of laziness referring to either Jim or Sam. It may also represent a bound variable bound by either Jim or Sam. In this case, the complement is an open sentence. One might suppose that, when this open sentence is substituted for the pronoun in (39), the variable can be bound by either Steve or Tony. Notice, however, that, while (38) can be interpreted as (40) or (41), it cannot be interpreted as either (42) or (43).

(40) Jim told Sam that he - Jim - was drunk, and Steve told Tony that he - Steve - was drunk.

(41) Jim told Sam that he - Sam - was drunk, and Steve told Tony that he - Tony - was drunk.

(42) Jim told Sam that he - Jim - was drunk, and Steve told Tony that he - Tony - was drunk.

(43) Jim told Sam that he - Sam - was drunk, and Steve told Tony that he - Steve - was drunk.

Apparently, if the variable is bound by Jim in the first clause, it

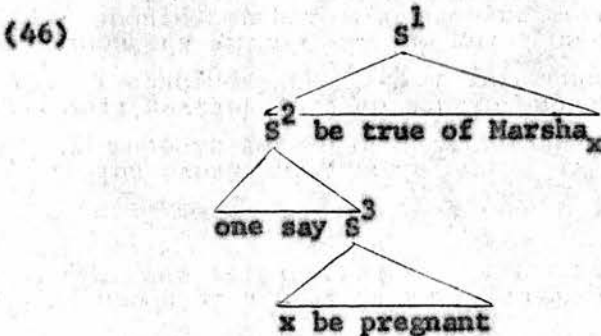
can only be bound by Steve in the second clause, while, if the variable is bound by Sam in the first clause, it can only be bound by Tony in the second clause. It appears, then, that, when an open sentence is substituted for a pronoun, if the variable cannot be bound by the same binding element as the original variable, it must be bound by a binding element in a structurally parallel position.

I want now to consider some cases where sentential pronouns lack clear antecedents in underlying structure. These cases might seem to present a problem. I will suggest, however, that they do not. Consider firstly (44).

(44) Marsha is said to be pregnant, but I don't believe it. Lakoff (1968) takes such sentences to be evidence that the process that produces sentential pronouns must be precyclic. He assumes that the underlying structure of (44) contains two complements of the following form.

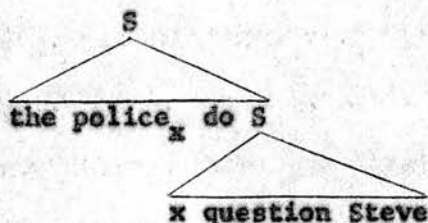
(45) [_S Marsha be pregnant]_S

In the first clause, Marsha is extracted from the complement by raising. After raising, the two complements are no longer identical. Therefore, the rule that produces sentential pronouns must apply before raising. It can only do this, if it is precyclic. In the present framework, (44) will have a rather different analysis. Given (4.1.69), the natural source for the first clause of (44) is something like (46).



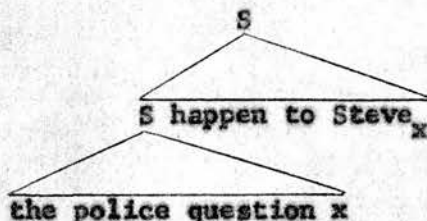
Leaving aside the adverbial, the obvious source for the first clause of (50) is (51).

(51)



it in the second clause of (50) refers to the same propositional function as the open sentence in (51). But it in the third clause of (50) does not refer to this function. Rather, it refers to the function the police question x. This is no real problem, however, because (51) is equivalent to (52).

(52)



Thus, the crucial function can be inferred in a straightforward way.

I must now add a note of qualification. I have suggested that it can refer to propositions and propositional functions. There appear, however, to be contexts where it cannot readily refer to a propositional function. Bach, Bresnan, and Wasow (1975) suggest that it cannot have a sloppy interpretation in (53).

(53) Jack believes that he is allergic to maple syrup, but

I don't believe it.

(53), they suggest, can only mean that I don't believe that Jack is allergic to maple syrup, not that I don't believe that I am allergic to maple syrup. It seems to me that the sentence can, in fact, have the latter reading, but the former is certainly more natural. In the present framework, this means that it here cannot

readily refer to a propositional function. The same seems true of it in (54), to which Postal (1974b, fn. 58) draws attention.

(54) ? Each one of us believes that he is sane, but Arthur doesn't believe it.

We know that the complement in the first clause of (54) can only derive from an open sentence, and, therefore, that it must refer to a propositional function. The oddness of (54) suggests, then, that it cannot readily refer to a propositional function. There are, however, many sentences where it refers to a propositional function without difficulty. (2) and (32) are clear examples. Clearly, then, it is only in certain contexts that it cannot readily refer to a propositional function. How exactly these contexts should be characterized, however, is rather unclear.

It is fairly clear, I think, that sentential pronouns can represent pronouns of laziness. I want now to ask whether they can also represent bound variables. I assume that complements are NP's. NP's, of course, can bind variables. It will be possible, then, in the absence of special restrictions, for complements to bind variables. If complements can bind variables, it will be possible for a sentential pronoun commanded by its antecedent, such as it in (35), to represent a bound variable. The question, then, is whether complements can bind variables.

Two kinds of fact, discussed by McCawley (1973), suggest that complements cannot bind variables. Firstly, recall that I have argued that the pronouns in Bach-Peters sentences represent bound variables. It follows that, if complements can bind variables, it should be possible to construct Bach-Peters sentences involving

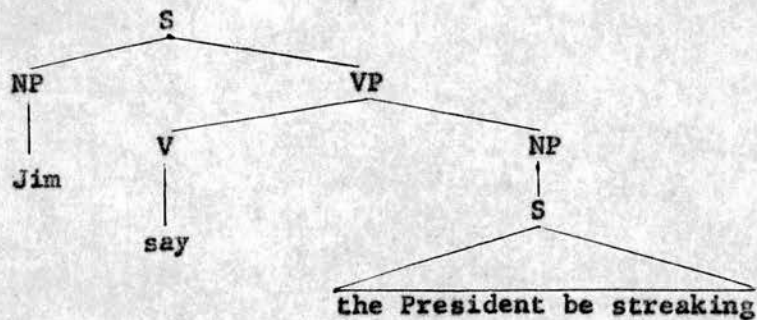
complements. It should, that is, be possible to construct sentences containing two complements each of which contains a pronoun with the other as its antecedent. This, however, is impossible. Notice that (55) cannot have the crucial interpretation.

(55) Everyone who thinks that Bill said it has claimed that Max denied it.

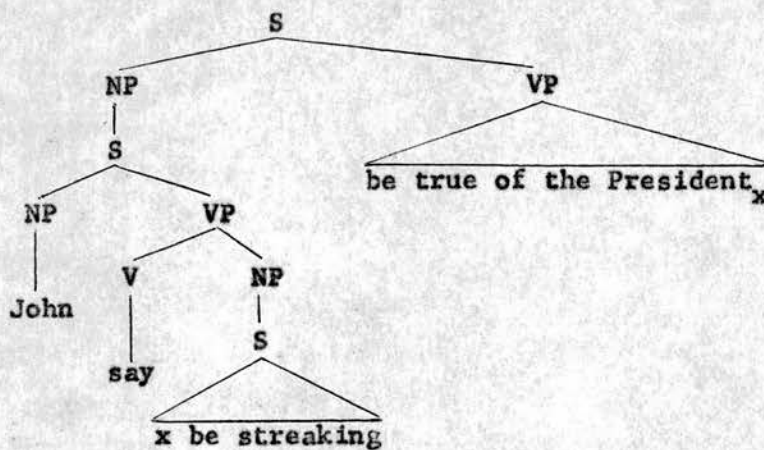
We will predict this, if we assume that complements cannot bind variables. Secondly, notice that (56) is ambiguous.

(56) Jim said that the President was streaking.
the President may be Jim's characterization of the individual Jim was talking about or the speaker's. In the first case, (56) will derive from something like (57), in the second case from something like (58).

(57)

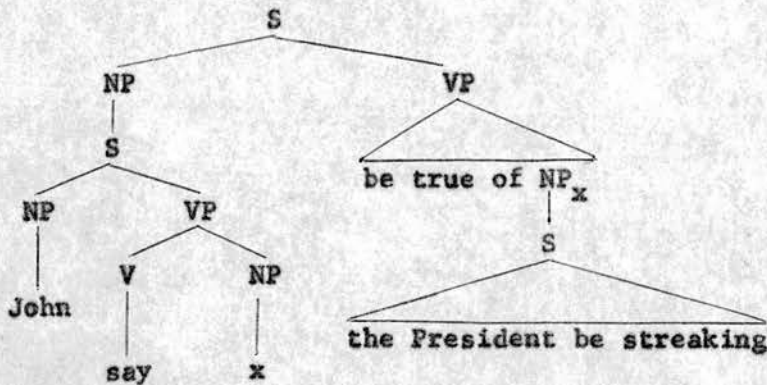


(58)



If complements can bind variables, it should be possible to derive (56) from something like (59) also.

(59)



Such a structure would be appropriate, if it were possible for the characterization of what John said to be provided by the speaker. It would be appropriate, for example, if it were possible for John to say Mad Harry is up to his tricks again and for the speaker to report what he said as The President is streaking. This seems to be impossible. Again, we will predict this, if we assume that complements cannot bind variables. Tentatively, then, I will assume that complements cannot bind variables, and, therefore, that sentential pronouns cannot represent bound variables.

Some further evidence for the assumption that complements cannot bind variables is presented in Bonney (1976). He points out that there are no left dislocation sentences involving complements. There are no sentences, that is, like (60).

(60) * That Max is honest, few people believe it.

I have suggested that left dislocation sentences involve a specialized lowering rule. Obviously, only NP's that bind variables can undergo this rule. Thus, the impossibility of sentences like (60) will be an automatic consequence, if complements cannot bind variables.

Bonney also points out that there are topicalization sentences

involving complements. (61) illustrates.

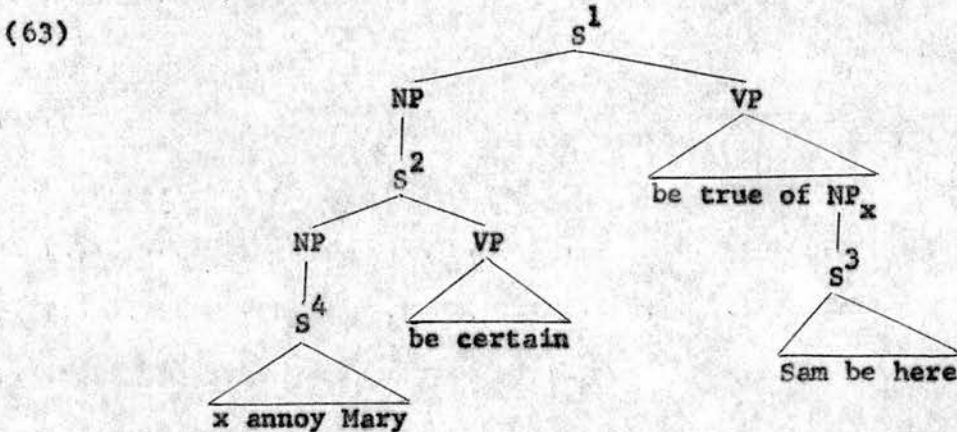
(61) That Max is honest, few people believe.

This suggests that topicalization sentences are derived through a traditional topicalization rule, and not through a specialized lowering rule.

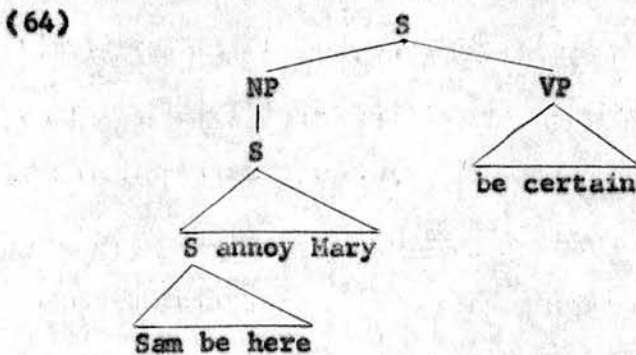
An important consequence of the assumption that complements cannot bind variables is that they will not be full NP's for the purposes of (4.1.69). To see this, consider the following sentence.

(62) That Sam is here is certain to annoy Mary.

If complements could bind variables, this could derive from something like (63).



Raising would apply on S^2 , followed by lowering on S^1 . However, if complements cannot bind variables, (62) cannot have such a source. Rather, it must derive from something like (64).



This derivation, however, will be blocked by (4.1.69), if complements are full NP's. It follows, then, that they cannot be full NP's.

8.2. Intensional Pronouns

I can turn now to intensional pronouns. Intensional pronouns are less easy to characterize than sentential pronouns. The best way to approach them is through an example. Notice, then, that the following sentence is ambiguous.

- (1) The President of the U.S. has more power today than he had twenty five years ago.

On the first reading, it contrasts the current power of the individual who is President with the power that individual had twenty five years ago. On the second reading, it contrasts the power currently exercised by the President with the power exercised by the President twenty five years ago. The first reading is quite straightforward. On this reading, the pronoun is either a pronoun of laziness or a bound variable. The second reading is more problematic. On this reading, the pronoun can be called an intensional pronoun.

What, then, are intensional pronouns? One linguist who has touched on this question is Dahl (1973). Discussing (1), he suggests that, on the first reading, he is 'coreferential' with its antecedent, while, on the second, it is 'cosignificant'. He also suggests that the ambiguity can 'be described as a possibility of referring back to either the intension or the extension (reference) of the antecedent'. These remarks seem to point in the right direction. They are rather vague, however. It is necessary, then, to consider how they might be made more precise.

I want firstly to consider a way of developing Dahl's remarks that treats intensional pronouns as ordinary pronouns of laziness. Specifically, I want to consider the possibility that the antecedent of an intensional pronoun has as reference its normal sense, and that the pronoun is a pronoun of laziness with the same reference. I start here from some remarks of Cresswell (1973). Cresswell suggests that definite descriptions might be understood in certain circumstances as referring to what is normally their sense. He raises this possibility in connection with sentences like (2).

(2) The Prime Minister of New Zealand will always be a British citizen.

(2) is clearly ambiguous. It can mean that the current Prime Minister of New Zealand will always be a British subject, or it can mean that whoever is Prime Minister of New Zealand will always be a British subject. One way of analyzing the second reading is to say that the definite description the Prime Minister of New Zealand has as its reference not an individual, but an 'intensional object', the latter being a function from possible worlds to individuals, which, for any possible world, gives the individual who is Prime Minister of New Zealand in that world. Returning now to (1), we might say that, on its second reading, the President of the U.S., refers to an intensional object, a function which, for any possible world, gives the individual that is President of the U.S. in that world. We could then say that he is a pronoun of laziness with the same reference. On this analysis, the pronoun in (1) will be coreferential with its antecedent on both readings of the sentence.

This way of developing Dahl's remarks is an attractive one, since it allows us to claim that intensional pronouns, like sentential

pronouns, are ordinary pronouns of laziness. It faces certain problems, however. For a start, it can be questioned whether sentences like (2) do necessitate the assumption that definite descriptions can refer to intensional objects. Cresswell, in fact, argues that they do not. He suggests that the ambiguity in (2) should be interpreted as a matter of scope, specifically as a matter of whether the Prime Minister of New Zealand is outside or inside the scope of always. When it is outside, the sentence means that the individual denoted by the definite description the Prime Minister of New Zealand will always be a British subject. When it is inside, it means that it will always be the case that the individual denoted by that description will be a British subject. An analysis in terms of scope is not always as obvious as it is with (2). Consider, for example, (3).

(3) The President of the U.S. is head of the armed forces. This can be a statement about the current President. It can also, however, be a statement about whoever is President. We could analyze this ambiguity as one of reference, and say that, on the first reading, the President of the U.S. refers to the current President, while, on the second, it refers to a function from possible worlds to individuals, which, for any possible world, gives the individual who is President of the U.S. in that world. The question is whether the ambiguity can also be analyzed in terms of scope. I think that it can. We can suggest that, on the second reading of (3), its underlying structure contains an adverb with the President of the U.S. in its scope, and a meaning similar to that of always. It looks, then, as if scope analyses may always be possible for these ambiguities. If so, there will be no independent motivation for the assumption that definite descriptions can refer to

intensional objects.

Even if there were independent evidence that definite descriptions can refer to intensional objects, the present approach would still be rather dubious. The approach claims that intensional pronouns refer to intensional objects. Surely, however, a pronoun that refers to an intensional object should be neuter. The fact, then, that intensional pronouns need not be neuter suggests quite strongly that they do not refer to intensional objects.

It seems, then, that we should look for an alternative way of developing Dahl's remarks. I want, therefore, to consider the possibility that the antecedent of an intensional pronoun has its normal sense and reference, and that the pronoun has the same sense but a different reference. Notice that this permits a simple account of (1). We have seen that the sense of the President of the U.S. is a function which, for any possible world, gives the individual who is President of the U.S. in that world. The value of this function, when it takes the current world as its argument, is the current President. If he has the same sense, but is inside the scope of twenty five years ago, it will have a different reference, namely the individual who was President twenty five years ago. This, then, seems a promising approach.

We must ask, of course, what exactly it means to say that a pronoun and its antecedent have the same sense. In the present framework, to say that two constituents have the same sense is to say that they have the same or equivalent representations in underlying structure. It seems reasonable, then, to suggest that intensional pronouns have the same representations in underlying structure as their antecedents.

This means, of course, that we need a rule converting definite descriptions into pronouns. This rule will be rather like pronominalization, except that it will not require identity of reference.

It seems, then, that, by assuming a pronominalization-like rule, we can eliminate the need to have definite descriptions referring to intensional objects, and avoid the problem of non-neuter pronouns referring to objects. I think, then, that this way of developing Dahl's remarks is a clear advance on the first way.

The circumstances in which our rule can apply are not at all clear. Wasow observes that intensional pronouns must follow their antecedents, noting such contrasts as that between (4) and (5).

(4) In 1960 the President was a Catholic, but now he's a Quaker.

(5) Although in 1960 he was a Catholic, now the President is a Quaker.

Apart from this generalization, the distribution of pronouns is rather obscure. Partee (1970) notes that, while it in (6) can be an intensional pronoun, her in (7) cannot be.

(6) The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.

(7) John was kissing his wife, and Bill was kissing her too.

Notice, however, that it seems possible for the pronouns in the following to be intensional pronouns.

(8) A Martian worships his wife. A Venusian neglects her.

(9) Martians worship their wives. Venusians neglect them.

Clearly, there are problems here. They are problems, however, for any approach to intensional pronouns, not just for the approach I am advocating. These problems, then, do not provide evidence against this approach.

CHAPTER 9

TWO NOTES

There are a variety of questions that I have touched on in passing in the preceding chapters. In this chapter, I want to look in some detail at just two of them. Firstly, I want to consider ambient it. Then, I want to look at the structure of noun phrases.

9.1. Ambient it

In chapter 4, I noted Bolinger's (1973) contention that it in sentences like the following is ambient, that it is a meaningful element referring to the general situation.

- (1) It's scary in the dark.
- (2) It's pleasant in California.
- (3) It's hard to do a job like that.

I went on to argue that there in sentences like (4) and (5) is the locative form of this it.

- (4) There was a Rumanian who sold his soul.
- (5) There was a spider in the bath.

Obviously, this analysis is only as plausible as Bolinger's analysis of it in (1) - (3). It is appropriate, then, to say something more about Bolinger's analysis.

Bolinger's claim is that it in sentences like (1) - (3) is 'a nominal with the greatest possible generality of meaning'. The most obvious evidence for this claim is the fact that other nominals are often possible in the same position. Parallel to (1) and (2), we have sentences like the following.

- (6) { Strange noises
Mice
Alsations } are scary in the dark.

- (7) $\left. \begin{array}{l} \text{The weather} \\ \text{Surfing} \\ \text{Hitch hiking} \end{array} \right\} \text{ is pleasant in California.}$

Notice also that we have the following, which are broadly similar in meaning to (1) and (2).

(8) Things are scary in the dark.

(9) Things are pleasant in California.

These facts suggest quite strongly that it in (1) and (2) is a kind of nominal. it in (3) cannot be replaced by other nominals. Notice, however, that we get sentences like the following from Morgan (1968).

(10) It was dark and snowing and hard to see the runway.

Such sentences show that we have the same it in sentences like (3) as in sentences like (1) and (2). Thus, evidence that it in (1) and (2) is a kind of nominal is also evidence that it in (3) is a kind of nominal.

The obvious alternative to Bolinger's analysis of (1) - (3) is one which takes the its to be inserted by extraposition rules. On this analysis, (1) - (3) would have the same source as (11) - (13).

(11) The dark is scary.

(12) California is pleasant.

(13) To do a job like that is hard.

Morgan (1968) assumes such an analysis for sentences like (1) - (3). Such an analysis has been quite widely assumed for sentences like (3). Taking sentences like (1) and (2) first, we notice that there are a variety of similar sentences for which an extraposition analysis is much less plausible. Consider the following.

(14) It's hot on the roof.

(15) It's hot under the roof.

(16) It's cold when the wind blows.

(17) It's cold without a coat on.

(18) It's cold if you leave the window open.

None of these sentences have equivalents with the constituents after the adjective in subject position. It is not plausible, then, to suggest that the its are left behind by extraposition. But, if these its are not the result of extraposition, there is little reason to suggest that those in (1) and (2) are. Turning now to (3), we find, as Bolinger notes, that a variety of constituents can appear in the position of the infinitive. Bolinger gives examples like the following.

(19) It's hard when you try to do a thing like that.

(20) It's hard if you try to do a thing like that.

There is no evidence that these constituents are extraposed. Again, then, it is not plausible to suggest that the its are the result of extraposition. Again, also, if these its are not the result of extraposition, it is doubtful whether it in (3) is. If these various its are not the result of extraposition, it is reasonable to assume that they are the underlying subjects of their sentences. I think, then, that Bolinger's analysis of (1) - (3) is a persuasive one.

I want now to look at some constructions which Bolinger does not consider. Firstly, I want to suggest that it in sentences like (21) is ambient.

(21) It seems that Sadie is angry.

This it cannot be replaced by other nominals. Thus, the first kind of evidence that we look for is lacking. There is good evidence, however, that this it is not the result of extraposition. As Bresnan (1972) notes, there are no sentences like (22).

(22) * That Sadie is angry seems.

This suggests that the complement of seem must originate in its surface position, and thus that it must be an underlying subject.

Further evidence for this view of seem is provided by sentences like (23).

(23) It seems as if Sadie is angry.

Here, it is even less plausible than with (21) to claim that the complement is extraposed. While certain predicates take that clauses as subjects, no predicates take as if clauses as subjects. Again, then, we can say that the complement must originate in its surface position, and that it must be an underlying subject. Notice also that it in sentences like (23) can be replaced by other nominals. Thus, we have sentences like (24).

(24) Sadie seems as if she is angry.

One might suggest that (24) derives from the structure underlying (23) through an extended version of raising. Notice, however, that we also get sentences like the following.¹

(25) Sadie seems as if something has frightened her.

(26) Sadie seems as if her problems have vanished.

Given such sentences, the suggestion has little plausibility. Thus, sentences like (24) - (26) reinforce the view that we have ambient it in (21) and (23).

Reviewing these observations, we can suggest that seem can take either ambient it or an ordinary nominal as subject, and either a that

- - - - -

1. It should be noted, however, that some speakers find such sentences rather dubious.

clause or an as if clause in post-verbal position. When the subject is ambient it, either a that clause or an as if clause is possible in post-verbal position. When the subject is an ordinary nominal, only an as if clause is possible.

I must now say something about sentences like (27).

(27) Sadie seems to be angry.

(27) is superficially similar to (24). There is evidence, however, that such sentences involve raising. The assumption accounts for the possibility of sentences with there as subject such as (28).

(28) There seems to be an aardvark under the bed.

It also accounts for the possibility of sentences with idiomatic subjects such as (29)

(29) Little heed seems to have been taken of Sam's warning.

Further evidence is presented in Postal (1974, 2.2).

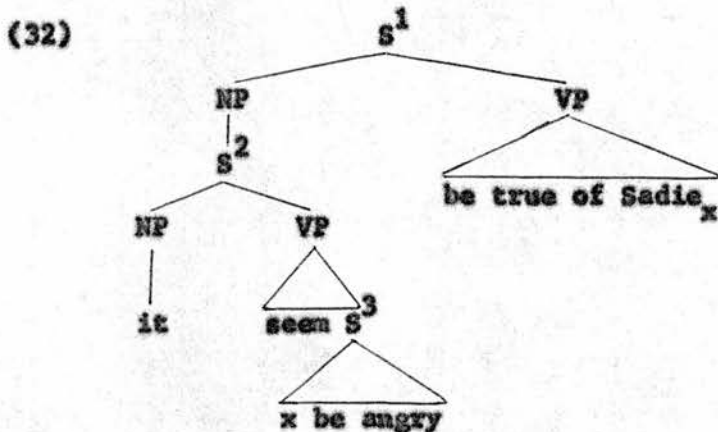
It seems, then, that there is a major difference between (27) and the superficially similar (24). This difference is reflected, I would suggest, in sentences like the following.

(30) ? Sam seems as if he has gone away.

(31) Sam seems to have gone away.

(30) is not completely ungrammatical, but it is certainly less acceptable than (31). We can explain this, if we assume that part of the meaning of seem is an assumption that the speaker has perceptual experience of the referent of the underlying subject. In (30), this is Sam. There is an assumption, then, that the speaker has perceptual experience of Sam. But the content of the as if clause conflicts with this assumption. Hence the marginal character of (30). In (31), Sam is not the underlying subject of seem. Thus, there is no assumption of perceptual experience. (31), therefore, is quite acceptable.

I would suggest that (27) derives from something like (32).



The derivation will involve the substitution of x for it on S^2 , and the substitution of Sadie for x on S^1 . Rather similar analyses are assumed by Bresnan (1972), Schwartz (1972), and Rosenbaum (1967), though all assume that it is the surface subject and not a variable that is substituted for it. Rosenbaum also assumes that the complement reaches its post-verbal position through extraposition.

Before I leave seem, I should note that there is evidence that it governs a second raising rule. Many speakers accept sentences like the following.

(33) There seems as if there has been some trouble.

Such sentences seem to require a rule replacing it by a copy of there. It appears that only there should be copied by this rule. If variables could be copied, we would expect sentences like (24) to be possible without any assumption of perceptual experience. As (30) indicates, such sentences are not possible. It seems rather odd to have a rule that applies to a single item. I can see no obvious alternative, however.²

- - - - -

2. Essentially the same rule is proposed in Rogers (1974) in connection with sentences like (1).

(1) There looks like there's gonna be a riot.

He proposes a transderivational constraint to prevent it applying when the result is derivable from some other structure.

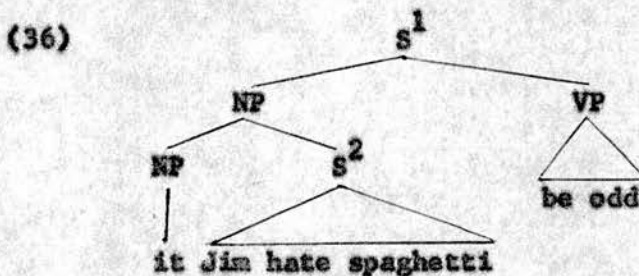
I want now to look at sentences like (34).

(34) It's odd that Jim hates spaghetti.

Unlike seem, odd can have a complement in subject position. (35) illustrates.

(35) That Jim hates spaghetti is odd.

It looks, then, as if (34) may be the result of extraposition. We might hesitate to make this assumption, if the complement in (34) could be replaced by other constituents not plausibly regarded as the result of extraposition. There seems, however, to be little possibility of this. I think, then, that it is reasonable to regard (34) as the result of extraposition. This does not mean, however, that it is not ambient. I want to suggest that (34) and (35) derive from something like (36).



In the derivation of (34), extraposition will adjoin S^2 to the end of S^1 , leaving it alone in subject position. it is not inserted in place of an extraposed complement, but is present in underlying structure as a sister of the complement. This is essentially the analysis assumed in Rosenbaum (1967). It allows us to claim that it in (34) is ambient. It also has the advantage of making sentential extraposition quite similar to other extraposition rules. Both extraposition from NP and extraposition of PP break up complex constituents, as the following illustrate.

(37) A man who looked like Healey entered the room.

(38) A man entered the room who looked like Healey.

(39) A book about the Assyrians has been published.

(40) A book has been published about the Assyrians.

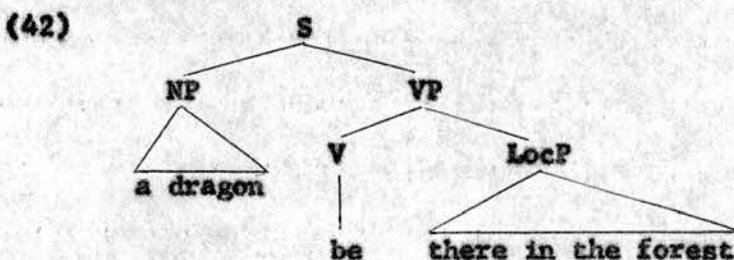
On the present analysis, sentential extraposition does the same.

When extraposition does not apply, it is deleted.

Digressing briefly, I want to suggest that an extraposition rule is involved in sentences like (41).

(41) There is a dragon in the forest.

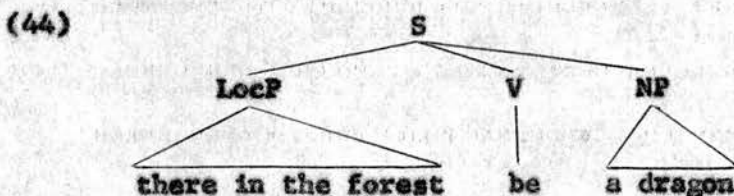
I suggested earlier that such sentences involve two locatives in apposition, ambient there and a more specific expression. (41), then, will derive from something like (42).



I suggested that sentences like (43) are derived through adverb preposing and subject-verb inversion.

(43) There was an Austrian who liked cricket.

Applying these rules to (42), we will get something like (44).



To derive (41), we will need a rule moving in the forest to the end of the sentence. Obviously, this will be quite similar to the rules involved in the derivation of (34), (38) and (40).

Returning to the main theme, I want to take a further look at raising. One predicate that governs raising is certain. With certain, we have sentences like the following, which will presumably derive from a structure like (36).

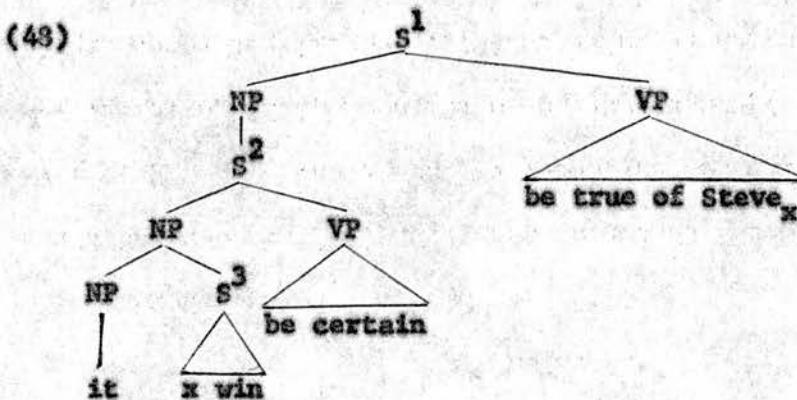
(45) It's certain that Steve will win.

(46) That Steve will win is certain.

We also, however, have sentences like (47).

(47) Steve is certain to win.

It seems reasonable to derive this from something like (48).



How is (47) derived? One possibility is that we have extraposition, and the raising rule involved in (27) on S^2 , and then lowering on S^1 . So far, then, the rules we have already invoked appear adequate.

Another predicate that governs raising is begin. With begin, we have sentences like the following.

(49) Jim began to sing.

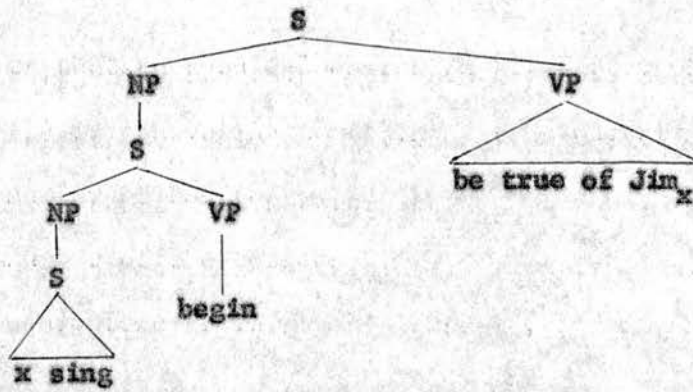
(50) Jim began singing.

Sentences like (51) from Perlmutter (1970) suggest that begin takes a subject complement.

(51) The doling out of emergency rations began.

I think, then, that it is reasonable to derive (49) and (50) from something like (52).

(52)



How are (49) and (50) derived? For (49), we might suggest a derivation like that suggested for (47) (although there is no it in (52)). (50), however, presents a problem. In general, gerunds do not undergo extraposition. It is not plausible, then, to suggest that (50) involves extraposition and raising. As Lakoff (1968) notes, sentences like (50) seem to necessitate a rule raising the subject of a subject complement, and adjoining the rest of the sentence to the end of the higher VP. Lakoff assumes that all subject-to-subject raising is accomplished by this rule. He assumes that seem takes a subject complement. We have seen, however, that there is no independent evidence for this view. In contrast, Bresnan (1972) assumes that all subject-to-subject raising is accomplished by the first raising rule. She assumes that begin, like seem, takes a post-verbal complement. Again, however, there is no independent evidence for this view. I think, then, that we must recognize two distinct rules of subject-to-subject raising, one applying to post-verbal complements, and one applying to subject complements.³

- - - - -

3. Notice that the first rule will be an exception to an important principle of relational grammar, the relational succession principle. As Johnson (1977) formulates it, this states that 'An NP promoted by an ascension rule assumes the grammatical relation borne by the host out of which it ascends'.

Turning to a different matter, we can relate the present discussion to the proposals of Hurford (1973). Hurford argues that every indicative sentence originates as a subject complement of the verb be. Part of the evidence for this analysis is provided by sentences like (53), which he takes to be the result of extraposition.

(53) It's not that Alfred doesn't like gorgonzola.

Hurford does not note that we also get sentences like (54).

(54) It's not as if Alfred doesn't like gorgonzola.

In the light of such sentences, it is not plausible to regard sentences like (53) as the result of extraposition. We might, then, suggest that every indicative sentence originates not in the structure S be, but in the structure it be S. On this analysis, an indicative sentence could be seen as asserting that the general situation is such that a certain proposition is true.

A final question that arises in the present context is whether all apparently empty its are in fact ambient. One it that probably is is the it that appears before certain factive object complements. This it is illustrated in sentences like the following.

(55) Sam resents it that he was criticized.

(56) Jim hates it that people laugh at him.

(57) Mary likes it that everyone asks her opinion.

More problematic is the it of cleft sentences like the following.

(58) It's Kevin who has all the answers.

(59) It was the Mona Lisa that we stole.

Almajian (1970) suggests that cleft sentences derive from pseudo clefts through a rule of cleft extraposition. On this analysis, (58) and (59) derive from (60) and (61).

(60) The one who has all the answers is Kevin.

(61) What we stole was the Mona Lisa.

If this analysis is valid, the it of cleft sentences will not be ambient. The analysis faces problems, however. There are certain constituents which can appear in focus position in clefts but not in pseudo clefts. The following illustrate.

(62) It was to Eve that I spoke.

(63) * What I spoke was to Eve.

In the light of these sentences, it is not at all clear how clefts should be analyzed. It is not clear, then, whether the it of cleft sentences is ambient.⁴

The discussion of this section is quite tentative. I think, however, that it gives added weight to Bolinger's views about ambient it. If one accepts these views, it is quite natural to suggest that there in sentences like (4) and (5) is a locative form of ambient it. I will take this approach a step further in chapter 15, when I suggest that, as well as ambient it and ambient there, we also have ambient so.

9.2. The Structure of NP's

I have said quite a lot in previous chapters about noun phrases, including a certain amount about their internal structure. The internal structure of noun phrases is not of crucial importance in the present context. I think, however, that it is worth discussing briefly.

- - - - -

4. For an important recent discussion of cleft sentences, see Pinkham and Hankamer (1975).

I will begin by reviewing the main assumptions that I have made in earlier chapters. Following e.g. Montague (1973), I assume that NP's typically consist of a determiner and a noun. The most obvious determiners are the definite and indefinite articles. A definite NP refers to the contextually unique member of the set denoted by its noun.⁵ An indefinite NP establishes the existence of a member of this set. I assume that a noun may be either simple or complex, the most obvious examples of complex nouns being nouns combined with restrictive relative clauses. I also assume, following Bartsch (1973), that a simple noun can be either singular or plural. A plural noun denotes the set of all subsets of the set denoted by the corresponding singular noun. The definite article can be combined with a singular or a plural noun. The indefinite article, however, can only combine with a singular noun.

I have also assumed that quantifiers like some and many are determiners. This, however, is a rather dubious assumption. One might perhaps suggest that some is a plural indefinite determiner. This suggestion is quite plausible semantically. Consider (1).

(1) some toffees

It is fairly clear that this phrase establishes the existence of a set of toffees. This is exactly what we expect if some is a plural indefinite determiner. The suggestion faces syntactic problems, however. Unlike a, some can be followed, not only by a noun, but also by a partitive phrase. Thus, we have the following contrast.

(2) * a of the toffees

(3) some of the toffees

- - - - -

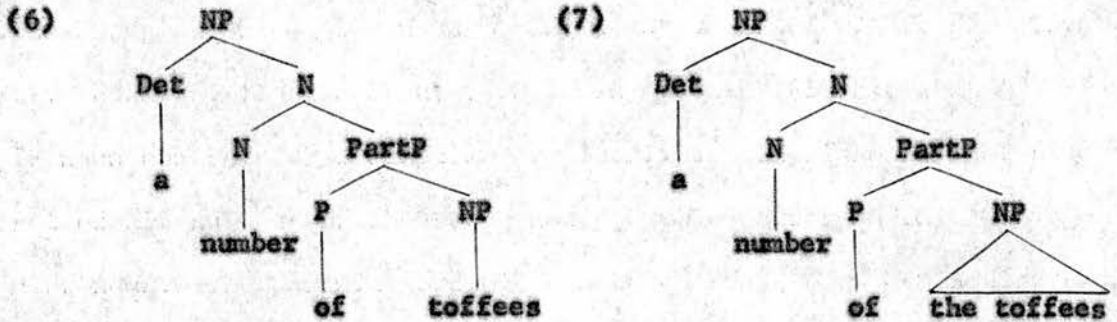
5. As before, I am ignoring definite descriptions containing mass nouns.

This suggests that we should look for an alternative analysis. Notice, then, that (1) is equivalent to (4), and (3) equivalent to (5).

(4) a number of toffees

(5) a number of the toffees

Given such equivalences, it seems plausible, as Anderson (1974a) and Hogg (1975) suggest, to derive some from a number. I want, then, to propose that (1) and (3) derive from structures like the following.



In (6), the NP in the partitive phrase is a generic NP referring to toffees in general. In (7), the partitive phrase contains an ordinary definite NP.

many is quite like some in its distribution. Like some, it can be followed either by a noun or by a partitive phrase. The following illustrate.

(8) many toffees

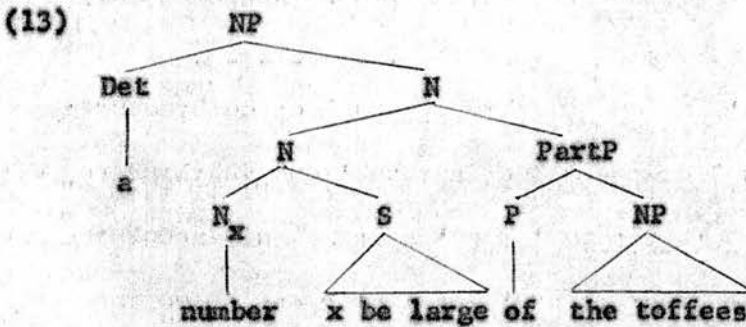
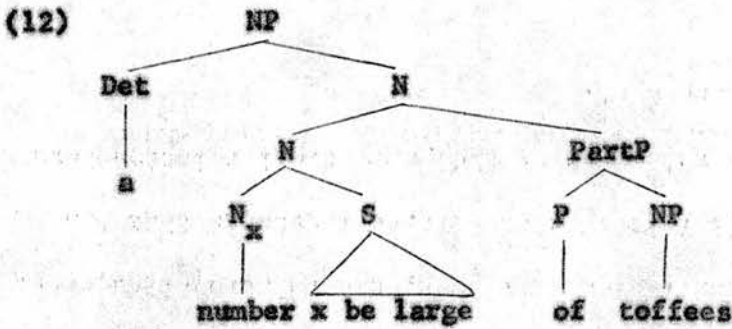
(9) many of the toffees

Notice now that (8) and (9) are equivalent to (10) and (11).

(10) a large number of toffees

(11) a large number of the toffees

As Anderson and Hogg note, such equivalences suggest that many should derive from a large number. I would suggest, then, that (8) and (9) derive from structures like the following.



These, of course, are very similar to (6) and (7).⁶

One might perhaps suggest that partitive phrases are reduced relatives. There is, however, good evidence that this is not the case. Ross (1967) observes that reduced relatives, like full relatives, are islands. The following illustrate.

(14) * Who did Sam interview a man who was wanted by?

(15) * Who did Sam interview a man wanted by?

(16) * What did Jim talk to a man who was reading?

(17) * What did Jim talk to a man reading?

Partitive phrases, however, are not islands. Thus, the following are quite acceptable.

(18) What have we got a lot of?

(19) What did Jim drink a bottle of?

It seems reasonable, then, to conclude that partitive phrases are not reduced relatives, and, thus, that they are sisters of nouns in both

- - - - -

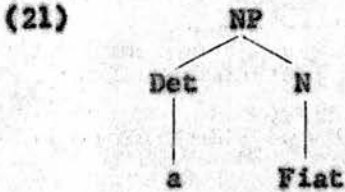
6. I will note some independent evidence for this analysis in chapter 11.

surface and underlying structure.

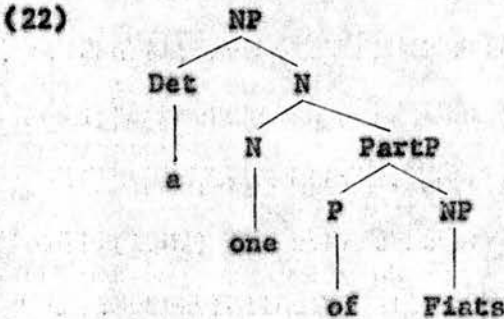
There is evidence that partitive structures are quite common. Consider firstly the following sentence, to which Ritchie (1971) draws attention.

(20) Max wants to buy a Fiat before they get too expensive.

If a Fiat here derives from (21), they will have no clear antecedent.



Suppose, however, that a Fiat derives from something like (22).

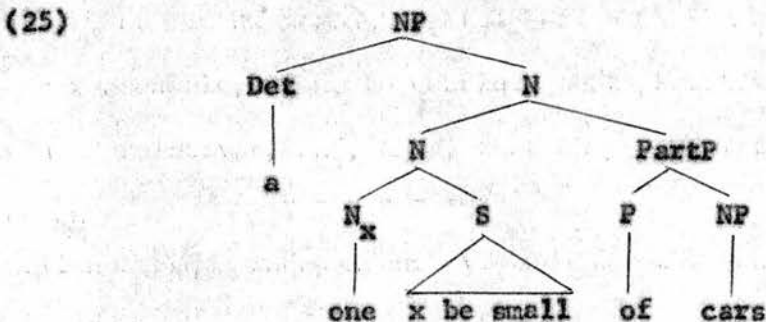


Given such a source, they will have a clear antecedent in underlying structure. As Ritchie notes, partitive structures are also motivated by sentences like the following.

(23) Sam owns a big car and a small one.

(24) Tony brought the new books and the old ones.

We can derive the NP a small one in (23) from something like (25) through a rule of partitive phrase deletion.



Partitive phrase deletion is independently motivated by sentences like (26).

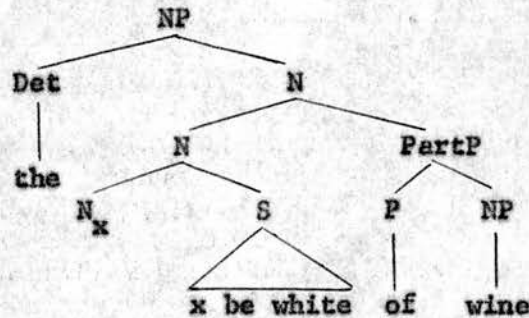
(26) Jim bought a bottle of beer and a can.

If it applies in (23), the NP a big car must derive from a structure like (25), but with big instead of small. Jackendoff (1968) points out that English has no pronoun for indefinite mass nouns. Thus, we have sentences like the following.

(27) Eve drank the red wine and the white.

I would suggest that the second NP here derives from something like (28), where the head noun is empty.

(28)



The first NP will have a similar source.

Ritchie apparently assumes that all NP's involve underlying partitive structures. I will not make this assumption. If one assumes that an unambiguous expression can have more than one source, there is no need to make it. In any event, it is not at all clear how one could require every NP to involve an underlying partitive structure. One cannot say that every noun must originate in a partitive phrase because various nouns can be the heads of partitive structures. I will assume, then, that any simple NP can involve an underlying partitive structure, but that none need do, except where the context requires it.

I must now say something about the derivational processes involved in these analyses. For (1) and (3), I would propose a rule adjoining the noun number to the preceding determiner. The complex determiner that results will be realized as some. We will also need a rule deleting of in the following context.

(29) Det of N

This will ensure that of does not surface in (1). In (3), of is followed by a determiner. Thus, it is not deleted. (8) and (9) will have similar derivations to (1) and (3), except here it is the complex noun large number that is adjoined to the preceding determiner. Following Ritchie, I would suggest that the derivation of a Fiat from (22) involves a rule that substitutes the noun in a partitive phrase for the head noun. The same rule will apply in the derivation of a big car in (23) and the red wine in (27).

If some and many are derived determiners, it is possible that the universal quantifiers all, each, and every are also. I have no proposals to offer, however. A central problem here is that semantically each and every are similar and contrast with all, whereas syntactically each and all are similar and contrast with every. I noted earlier that each and every function as distributive operators. Thus, while (30) can be understood distributively or collectively, (31) and (32) can only be understood distributively.

(30) The boys lifted the rock.

(31) Each of the boys lifted the rock.

(32) Every boy lifted the rock.

all does not function as a distributive operator. (33), like (30) can be understood distributively or collectively.

(33) All the boys lifted the rock.

Syntactically, each and all are similar in two important respects. Firstly, both can be followed by partitive phrases. every cannot. Thus, we have the following contrast.

(34) each of the boys

(35) all of the boys

(36) * every of the boys

Secondly, both can be postposed. Again, every cannot. The following illustrate.

(37) The boys each won a prize.

(38) The boys all won prizes.

(39) * The boys every won a prize.

There is, however, one important respect in which all and every are similar. Both can be preceded by not. each cannot.

(40) Not all Italians like garlic.

(41) Not every Italian likes garlic.

(42) * Not each Italian likes garlic.

These complexities suggest fairly strongly that the universal quantifiers are derived determiners. What they derive from, however, is something of a mystery.

I want now to consider the underlying structure of referential pronouns. I have argued that referential pronouns are a kind of definite description. Like ordinary definite descriptions, they refer to the contextually unique member of certain sets. he, for example, refers to the contextually unique member of the set of males. An ordinary definite description consists of the definite article and a noun. It is possible, then, that referential pronouns should have a similar source. Before I consider this possibility, I want to look at demonstrative pronouns.

There is quite good evidence that demonstrative pronouns have

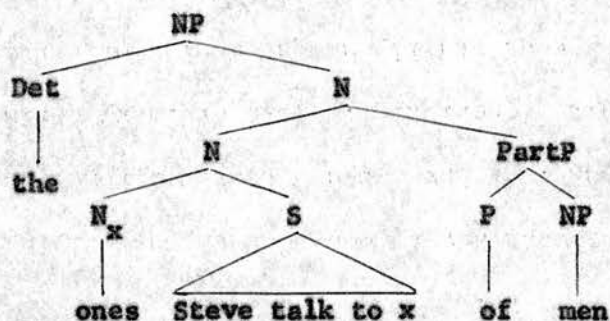
the + N sources. Consider the following sentences.

(43) The men Eve talked to had more ideas than the ones Steve talked to.

(44) The men Eve talked to had more ideas than those Steve talked to.

The obvious source for the ones Steve talked to in (43) is something like (45).

(45)



those Steve talked to is clearly equivalent to the ones Steve talked to.

This in itself does not mean that it should have the same source. If it does not, however, we will need to revise our account of relative clauses. I have suggested that a restrictive relative clause limits the extension of the noun with which it is combined. If those Steve talked to does not derive from something like (45), the relative clause will not be combined with a noun. This suggests quite strongly, then, that those Steve talked to should derive from something like (45). All this analysis requires is a rule adjoining one or ones to the preceding determiner. This will be rather like the rule involved in the derivation of some and many.

Returning to ordinary referential pronouns, one notices immediately that they cannot be followed by relative clauses. The following illustrate.

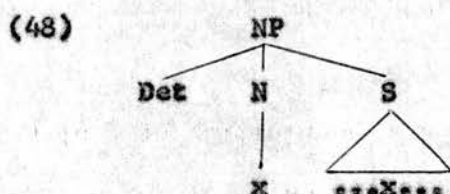
(46) * The man Eve talked to had more ideas than he Steve talked to.

(47) * The men Eve talked to had more ideas than they Steve talked to.

Thus, while the semantics of referential pronouns will be simplified if they have the + N sources, the obvious evidence for such a source is lacking. There seem to be two possible conclusions. Either referential pronouns are present as such in underlying structure, in which case the impossibility of (46) and (47) is an automatic consequence, or they have the + N sources and pronoun formation is blocked, if the noun is followed by a relative clause (or any other modifier). Which is the correct conclusion is unclear to me.

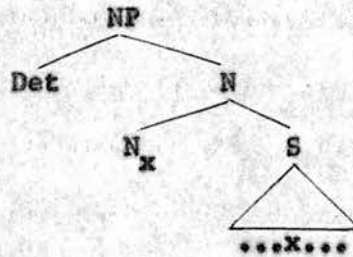
An important proposal about the internal structure of noun phrases is Bach's (1968) claim that nouns originate as predicates. The claim has been accepted quite widely. I assume that nouns originate as nouns. Thus, I reject the claim. Clearly, I should say something about the claim and my reasons for rejecting it.

An initial problem with Bach's claim is that it is not at all clear what sort of structures it implies for noun phrases. Bach himself does not sketch any structures. Carden and Dieterich (1976) assume structures of the following form.



There are two problems with such structures. Firstly, it is not at all clear how Det, N and S are supposed to be related semantically. Secondly, it is not clear how the variables are to be understood. On the face of it, (48) contains two unbound variables. More promising than (48), I think, would be something like (49).

(49)



We could interpret the empty N here as denoting everything that there is. The higher N, then, would denote a certain subset of everything, the subset of which the propositional function expressed by the relative clause is true. I think, then, that Bach's proposal could be made to work. It cannot, however, eliminate the need for an N node in underlying structure.

Bach develops five main arguments for his proposal. They are subjected to detailed criticism in Schachter (1973b). I think, however, that two of them survive Schachter's criticisms. One is an argument that is taken up and elaborated by Carden and Dieterich. I will discuss this argument at some length.

Bach points out that the following sentence could be used in two different situations.

(50) The idiot called me up yesterday.

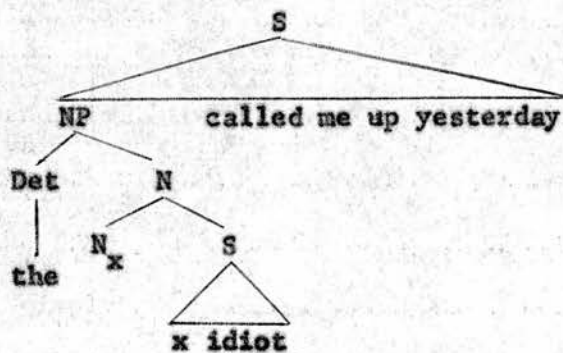
On the one hand, Smith could say it to Jones when both know only one idiot. On the other hand, Smith could say it when Jones has said something like Have you heard from Algernon lately? In the first case, the idiot is simply a way of referring to a certain person. It can be paraphrased as 'the one who is an idiot'. In the second case, the idiot both refers to Algernon and expresses an opinion about him. In this case, it can be paraphrased as 'he, who is an idiot'. Much the same situation arises with Carden and Dieterich's example (51).

(51) John Smith spoke at the Faculty Club last night. The writer was given a standing ovation at the end of the lecture.

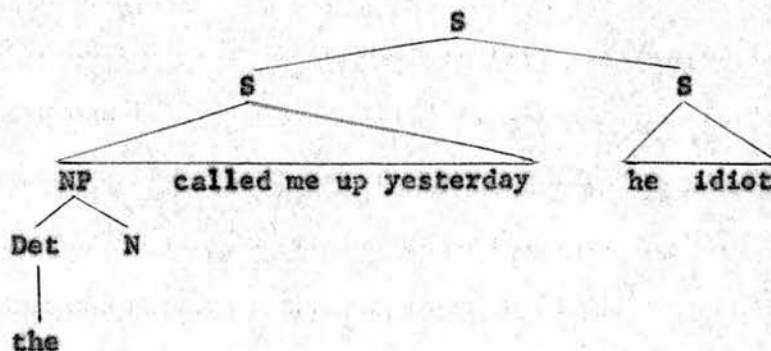
Like (50), this can be used in two situations. It can be used when the addressee knows that John Smith is a writer, and when he does not know this. In the first case, the writer is simply a way of referring to John Smith and can be paraphrased as 'the one who is a writer'. In the second case, it refers to John Smith and gives new information about him. In this case, it can be paraphrased as 'he, who is a writer'.

It seems, then, that definite descriptions can often be used in two different ways. They can be used simply to refer, or they can be used both to refer and to express an opinion or give new information. In the former case, they are paraphrased by 'the one' and a restrictive relative clause. In the latter, they are paraphrased by a pronoun and a non-restrictive relative. In a Bach-type framework, we can handle this phenomenon quite simply by deriving the noun from a restrictive relative in the former case, and from a non-restrictive relative in the latter. We might, then, derive (50) from (52) and (53).

(52)



(53)



It seems, then, that the dual function of definite descriptions provides significant support for Bach's proposal.

Carden and Dieterich develop this argument further by comparing nouns with attributive adjectives. They note firstly that attributive adjectives can often be paraphrased by either restrictive or non-restrictive relatives. Thus, (54) can be paraphrased by either (55) or (56).

(54) The industrious Chinese will prosper.

(55) The Chinese who are industrious will prosper.

(56) The Chinese, who are industrious, will prosper.

They then note that there are situations in which an attributive adjective can only be paraphrased by a restrictive relative. This is the case firstly when the adjective is contrastively stressed. (57) can only be paraphrased by (55).

(57) The **INDUSTRIOUS** Chinese will prosper.

It is also the case when the noun is followed by a restrictive relative. (58), like (57), can only be paraphrased with a restrictive relative.

(58) The industrious Chinese that I met all admired Chairman Mao.

Carden and Dieterich go on to show that in these situations nouns also can only be paraphrased by restrictive relatives, and cannot be understood as expressing an opinion or giving new information.

Consider firstly (59).

(59) John Smith spoke at the Faculty Club last night. **THE WRITER** seemed to enjoy the evening, the rest of us did not.

Here, the writer cannot be paraphrased as 'he, who is a writer', and cannot be understood as giving new information about John Smith. Thus, unless we know that John Smith is a writer, the writer must be understood as referring to someone else. Consider also (60).

(60) Yesterday, I interviewed two men, one rich and one poor.

The banker that was rich said that...

Here, the banker that was rich cannot be paraphrased as 'the one that was rich, who was a banker'. It cannot be understood as giving new information about the rich man. Thus, unless we know that both men are bankers, this is not a coherent discourse. These facts seem to strengthen Bach's argument considerably. It is natural to account for the interpretation of attributive adjectives by deriving them from both restrictive and non-restrictive relatives. These facts suggest that we should account for the interpretation of nouns in the same way.

It looks, then, as if the dual function of definite descriptions provides strong support for Bach's proposal. I think, however, that this impression is misleading. I want to suggest that the phenomenon can be explained in pragmatic terms. We can begin with (50). I have suggested that a definite description of the form the + N is used when there is just one member of the set denoted by N that the hearer will understand the speaker as referring to. In the first situation, this condition is met in a quite straightforward way. Smith and Jones both know just one idiot. It is this idiot that Jones understands Smith as referring to. In the second situation, things are more complex. Here, presumably, Jones does not think of Algernon as an idiot. the idiot, therefore, is not a straightforward way of referring to him. Jones, however, can assume that Smith is abiding by the co-operative principle (Grice, 1975). He knows that Algernon is the only person under discussion. He can assume, then, that it is Algernon that Smith is referring to. He can also ask himself why Smith has used the expression the idiot to refer to Algernon and not a more straightforward

expression. The obvious answer to this question is that Smith wishes to express the opinion that Algernon is an idiot.

We can propose a similar account for (51). In the first situation, the hearer knows that John Smith is a writer. the writer, therefore, is a straightforward way of referring to him. In the second situation, the hearer does not know that John Smith is a writer. Here, then, the writer is not a straightforward way of referring to him. John Smith, however, is the only person under discussion. The hearer can assume, then, that the speaker is referring to John Smith and providing the information that he is a writer.

I am suggesting, then, that the use of definite descriptions simply to refer is their basic use, and that their use to both refer and express an opinion or give new information is a derived one. A definite description has the basic use if the hearer knows that the individual being referred to is a member of the set denoted by the noun in the description. If the hearer does not know this, the description may have the derived use. This is possible if there is just one individual that the speaker could be referring to. If this is the case, the hearer can assume that the speaker is referring to this individual and that he is using the description in question to convey the information that the individual is a member of the set denoted by the noun in the description.

I must now consider the facts to which Garden and Dieterich draw attention. Firstly contrastive stress. As the name suggests, contrastive stress requires a contrast. Consider (61).

(61) SAM broke the ladder.

This is only appropriate if there are others who might have broken the ladder. It might be paraphrased as (62).

(62) It was Sam and not one of the others who broke the ladder. Such paraphrases are generally possible for sentences involving contrastive stress. We have seen that for a definite description to have the derived use there must be just one individual that the speaker could be referring to. Thus, a definite description can have the derived use only if there is no question of contrast. Naturally, then, contrastive stress is impossible when a definite description has the derived use. The restrictions on restrictive relatives are more puzzling. The problem is to explain why the banker that was rich in (60) cannot be used to refer to the rich man and give the information that he is a banker. The most likely explanation, I think, is that this stems from the fact that the expression suggests that there is another banker under discussion who is not rich. If this is the correct explanation, one would expect it to be equally impossible for the rich banker to have this use. It seems to me that this is the case. Carden and Dieterich claim, however, that it can have this use. Presumably, there is individual variation here. Why some people should understand the banker that was rich and the rich banker differently is unclear to me. I think, however, that it is reasonable to suppose that this can be explained in pragmatic terms.

I think, then, that the data to which Bach and Carden and Dieterich draw attention can be explained without assuming two different sources for definite descriptions. I do not think, then, that it provides any support for the view that nouns originate as predicates.⁷

7. There are, of course, other distinctions to be drawn in connection with the use of definite descriptions. In particular, there is Donnellan's (1966) distinction between referential and attributive uses. How this distinction should be handled is far from clear. See, however, Cole (1975) for an interesting proposal.

The other argument of Bach's that survives Schachter's criticisms is one based on certain adjectives. Bach considers NP's like the following.

(63) the former president

(64) a real dope

He notes that these adjectives cannot be paraphrased with relative clauses. (65) and (66) are not paraphrases of (63) and (64).

(65) the president who was former

(66) a dope who was real

It follows that these adjectives cannot have the kind of source that is generally assumed for attributive adjectives. Notice now that (63) and (64) can be paraphrased as (67) and (68).

(67) the one who was formerly president

(68) the one who is really a dope

It seems plausible to derive (63) and (64) from (67) and (68). It looks, then, as if we have evidence that some nouns originate as predicate nominals.

This argument seems quite plausible. It is not clear, however, that it shows that nouns derive from predicates. It only shows this if predicate nominals are predicates. The question, then, is whether predicate nominals are predicates. It seems to me that this is unlikely. While it is quite plausible to analyze predicate adjectives as predicates, such an analysis is not very plausible for predicate nominals. Notice firstly that predicate nominals are not all of one kind. Some make assertions of identity. Others make assertions of set membership. In (67), the predicate nominal is of the first kind. In (68), it is of the second kind. In the first case, the predicate nominal seems to be an ordinary NP. In the second case, it is

probably not. This does not mean that it is a predicate, however. Notice that such predicate nominals have the same internal structure as ordinary NP's.

(69) Jim is a man of substance.

(70) Mary is a member of the I.M.G.

(71) Tony is a man who will do anything for money.

In this, they are quite unlike verbs and adjectives. This suggests, then, that it is unlikely that they are predicates. If they are not predicates, what are they? A plausible suggestion, advanced by Anderson (1971) is that they are reduced locative expressions. On this suggestion, (69) would derive from something like (72).

(72) Jim is in the class of men of substance.

I think, then, that it is likely that predicate nominals are either ordinary NP's or reduced locative expressions.

I think, then, that it is very unlikely that predicate nominals are predicates. Thus, while (63) and (64) suggest that some nouns derive from predicate nominals, they do not provide any support for the view that nouns originate as predicates. We can add that, if the first argument were valid, it would only require the derivation of nouns from predicate nominals. It would not require the derivation of nouns from predicates. I think, then, that nouns originate as nouns. It seems likely, however, that some nouns originate not in their surface position, but in predicate nominals.

CHAPTER 10
TAKING STOCK

I have now presented the main body of my proposals about pronouns. I want, therefore, to summarize the main conclusions, and indicate some further lines of inquiry that these proposals suggest.

The main conclusions that I outlined in chapter 7 remain valid. There are two main kinds of pronouns: bound variables and referential pronouns. The former are much like bound variables in standard logic. The latter are a kind of definite description. Where they are used anaphorically, they can be termed pronouns of laziness. In chapter 8 I suggested that sentential pronouns are pronouns of laziness. I suggested, however, that intensional pronouns cannot be pronouns of laziness. They appear to be a further kind of pronoun.

As I suggested in chapter 7, my theory can be seen as a synthesis of the bound variable theory and the theory sketched in Lasnik (1976). Both theories contain important insights, which I have tried to develop. Both, however, make the mistake of thinking that pronouns are all of the same kind. A number of writers have recognized that there is more than one kind of pronoun, notably Geach, Witten, Partee, and Cresswell. I think, however, that their accounts contain various inadequacies which mine avoids.

I think, then, that my account of pronouns is an attractive one. This does not mean, however, that it does not have weaknesses, or that it does not face problems. One possible weakness is the fact that the account assigns a number of different sources to a simple, unambiguous sentence. As I have said, quite standard arguments lead to this

position. Furthermore, there are a number of precedents for it, although it has probably not been assumed so extensively before. I am not at all sure, then, that this is a weakness. It should be clear, however, that this is not a central feature of my proposals. I am, therefore, not too concerned about it.

Much more clearly a weakness is the command constraint. This constraint, taken from Witten (1972), accounts for a variety of phenomena. I am unable, however, to offer any real explanation for it. Some instances of the command constraint can be attributed to the interaction of lowering and island constraints. Others, however, cannot. Moreover, there are two classes of exceptions to the constraint. Particularly problematic is the fact that these exceptions involve violations of the complex NP constraint. I have no real explanation for these exceptions, beyond the suggestion that they may have something to do with analogy. It is possible that the nature of the constraint and its exceptions will become clearer when island constraints are better understood. For the moment, however, the situation is far from satisfactory.

Another area of weakness that I want to consider briefly is highlighted by sentences like (1), from Partee (1975b).

(1) Every man who loves a woman loses her.

Partee cites this sentence as evidence against Montague's account of pronouns. We could have cited it as evidence against the bound variable theory. On the most obvious reading, a is within the scope of every. On this reading, a woman will originate inside the relative clause. Clearly, then, the pronoun cannot represent a bound variable. Rather similar is (2), from Geach (1972).

- (2) Almost every person who borrowed a book from Snead eventually returned it.

Again, a is within the scope of every. Again, then, the pronoun cannot represent a bound variable. Since these pronouns cannot be bound variables, they must be pronouns of laziness. Here, however, we seem to have a problem. As pronouns of laziness, her refers to the contextually unique female, and it to the contextually unique thing. In (1), however, there is no contextually unique female, and in (2), there is no contextually unique thing. One might think that these sentences show that my account of pronouns of laziness is inadequate. This is not the correct conclusion, however. Notice that we can replace the pronouns in (1) and (2) by definite descriptions.

- (3) Every man who loves a woman loses the woman.

- (4) Almost every person who borrowed a book from Snead eventually returned the book.

On my account of definite descriptions, the woman refers to the contextually unique woman, and the book to the contextually unique book. In (3), however, there is no contextually unique woman, and, in (4), there is no contextually unique book. It seems, then, that it is my account of definite descriptions that is inadequate, not my account of pronouns of laziness. How this inadequacy should be rectified, however, is not at all clear.

An insightful account of any range of phenomena is likely to raise questions, as well as answer them. I want, then, to outline some of the questions that my theory of pronouns raises. Perhaps the most obvious question is: how far does the theory apply to languages other than English? Obviously, this question can only be answered through detailed investigation. I think, however, that it is very likely that

all languages will involve a distinction between bound variables and referential pronouns. I also think that they will probably have much the same distribution in all languages. Their distribution is to a large extent a function of semantic factors. There are good semantic reasons why the pronouns in (5) and (6) can only represent bound variables.

(5) An Italian thought he was Gramsci.

(6) Every American thinks he is a genius.

I would expect, then, that the equivalents of these sentences in other languages will involve bound variables. There are, however, aspects of the distribution of the two pronoun types which are not due to semantic factors. The fact that the pronoun in (7) can only be a pronoun of laziness is a result of the command constraint, not of some semantic factor.

(7) Steve tried an hors d'oeuvre, and he liked it.

It is also the command constraint, and not some semantic factor, that accounts for the ungrammaticality of (8).

(8) * Steve tried every hors d'oeuvre, and he liked it.

Given the problematic nature of the command constraint, I would not like to predict whether the equivalents of (7) in other languages will only involve pronouns of laziness, or whether the equivalents of (8) will be ungrammatical. Another fact for which there is no semantic basis is the fact that an object pronoun in English must represent a bound variable, if it is a clause mate of its antecedent. This is because such a pronoun must be reflexive, and reflexives can only represent bound variables. There are languages where such a pronoun is not a reflexive. Keenan (1975a) cites Fering (a North Frisian dialect), Maori, and Gilbertese. I would expect that such a

pronoun can be either a bound variable or a pronoun of laziness in such languages. There are also languages where reflexives have a wider distribution than in English. Keenan notes that reflexives are possible in complement subject position in Japanese and Korean. It would be interesting to know whether such reflexives must be analyzed as bound variables.

It is clear, then, that my proposals raise questions about other languages. They also raise questions about earlier stages of English. It would clearly be useful to investigate how far my analysis applies to Old English and Middle English. I suspect that the central elements will be applicable. Some of the more peripheral aspects, however, may not be.

My proposals also raise questions for psycholinguistics. It would, I think, be quite valuable to investigate the ways in which the distinctions I have proposed figure in linguistic performance and the ways in which they are acquired. It is quite likely, I think, that an investigation of these matters would show referential pronouns to be psychologically more basic than bound variables. More generally, I suspect that it would show that referring expressions are more basic than bound variables and indefinite NP's, which do not refer. Some relevant discussion is provided by Strawson (1961). He suggests that 'Definite singular terms are singular terms in the primary sense; indefinite singular terms are singular only in a secondary or derivative sense'. He also argues that 'our theoretical grasp of canonical notation [i.e. logical symbolism] rests upon our theoretical grasp of the identificatory function of singular terms'. I think that these remarks are like to be true psychologically, as well as philosophically.

Central to my account of definite descriptions, and thus to my account of pronouns of laziness, is the notion of contextual uniqueness. Clearly, this is an important notion. I think, then, that it would be valuable to investigate the ways in which contextual uniqueness is established, and the ways in which the relevant mechanisms are acquired. Matters here are not at all simple. Consider firstly (9).

(9) * Eve talked to Brian and Ron. He was angry.

This is clearly incoherent. The problem is that it is impossible to know who he refers to. There is, then, no contextually unique male. Consider now (10).

(10) Brian talked to Ron. He was angry.

Out of context, this is ambiguous. In context, however, it will normally be clear who he refers to. In context, then, there will be a contextually unique male. Consider finally (11).

(11) Brian talked to Ron. He criticized him.

This is unambiguous. The first pronoun refers to Brian, and the second to Ron. Thus, there is one contextually unique male when the first pronoun appears, and another when the second appears. Clearly, we have some interesting problems here. I think, then, that a psycholinguistic investigation of them would be very valuable.

It is clear, then, that my theory of pronouns raises a number of questions for further research. I will not pursue these questions, however. Instead, in the rest of this thesis, I will look at some of the ways in which constituents other than NP's enter into anaphoric relations. We will see that definite descriptions again play an important role. Thus, their importance for anaphora will be reinforced.

CHAPTER 11

SOME ASPECTS OF ADJECTIVES AND ADVERBS

In this chapter, I want to look at various aspects of the grammar of adjectives and adverbs. This will provide a basis for a consideration of adjectival and adverbial anaphora. I will be particularly concerned with the analysis of equative and comparative constructions. Before I discuss this, however, I want to consider some more general questions about adjectives and adverbs.

11.1. Preliminary Remarks

I want to begin by taking a look at what might be terms^{ed} the classical transformational analysis of adjectives. This analysis assumes that all adjectives, whether predicative or attributive on the surface, originate as predicatives. Surface attributives are assumed to derive from predicatives in relative clauses. the tall man, for example, is assumed to derive through whiz-deletion and adjective shift from the man who is tall. Such an analysis seems quite plausible for many attributive adjectives. It has been clear, however, at least since Bolinger (1967), that not all attributive adjectives can be derived in this way. The following illustrate.

- (1) a rural policeman
- (2) a chemical engineer
- (3) a criminal lawyer
- (4) a constitutional amendment
- (5) an utter fool
- (6) a former employee

Beginning with (1) and (2), notice that neither rural nor chemical can appear in predicative position with the same nouns. Neither the policeman is rural nor the engineer is chemical are grammatical. It is fairly clear, then, that they cannot derive from predicative adjectives. criminal and constitutional can appear in predicate position, but not with the sense they have in (3) and (4). Again, then, it is fairly clear that they should not derive from predicatives. Finally, utter and former cannot appear in predicative positions at all. Clearly, then, they also should not originate as predicatives. Levi (1975) discusses such 'non-predicating' adjectives at length, and develops some quite persuasive analyses. Roughly, she proposes that they derive from either NP's or adverbs. It looks, then, as if we might suggest that attributive adjectives fall into two categories: those that derive from predicatives in relative clauses, and those that have analyses of the kind developed by Levi.

Doubts are cast on this suggestion by some remarks of Cresswell (1973). In sharp contrast to the classical transformational analysis, he assumes that all adjectives, whether predicative or attributive on the surface, derive from attributives. His reason for assuming that surface attributives are also underlying attributives is that their meanings are often bound up with the meanings of the nouns they qualify. He notes the following example from Lyons (1968).

(7) A small elephant is a large animal.

Clearly, the meanings of small and large are bound up with the meanings of the nouns they qualify. His reason for assuming that surface predicatives are underlying attributives is provided by sentences like (8).

(8) Arabella is large.

It is fairly clear that a noun is implicit in (8). If Arabella is a child, (8) may mean that she is a large child. If she is a woman, it may mean that she is a large woman. Cresswell's suggestion, then, is that a predicative adjective like large in (8) derives from a predicate nominal with an empty noun whose value is determined by the context.

Both Cresswell's analysis and the classical transformational analysis assume that adjectives have a single source. Even if we exclude non-predicating adjectives, this assumption is open to question. Interesting evidence against it is presented in Siegel (1976). She notes that Russian adjectives have a short and a long form. Both can appear in predicative position, but only the latter can appear in attributive position. Siegel argues that short form adjectives originate as predicates and long form adjectives as noun modifiers. Part of her evidence is a semantic contrast between the two when they appear in predicative position. In this position, the short form has an absolute meaning, whereas the long form has a relative meaning. The following illustrate.

(9) Studentka umna

'(The) student (is) intelligent'

(10) Studentka umnaja

'(The) student (is) intelligent'

(9) means that the student is intelligent in general, absolute terms. (10) means that she is intelligent compared with other students. If short form adjectives represent predicates and long forms noun modifiers, this is quite natural. umna will originate as a predicate, while umnaja will derive from a predicate nominal in much the same way as Cresswell suggests large in (8) does. The contrast between (9) and (10) suggests quite strongly, then, that Russian adjectives at least have

more than one source, even when non-predicating adjectives are excluded.

If Russian adjectives can represent both predicates and noun-modifiers, it is possible that English adjectives can too. If one makes this assumption, one need not necessarily assume that the two types have the same distribution as they appear to have in Russian. In particular, one need not assume that surface attributives can only represent noun modifiers. Jackendoff (1972) suggests that attributive adjectives should be generated in their surface position. He suggests, however, that prenominal participles derive through whiz-deletion and adjective shift. If prenominal participles are derived in this way, it is at least possible that ordinary attributive adjectives should be also. This is particularly plausible for attributive adjectives whose meanings, unlike those of large and small, are not bound up with the meanings of the nouns they qualify. I think, then, that it is likely that attributive adjectives can represent noun modifiers. I think, however, that it is also likely that many can represent predicates. In what follows, I will assume that they all can, apart from non-predicating adjectives. This assumption is not crucial, however. My proposals will not require any major recasting, if it turns out to be untenable.

I want now to say something about adverbs, in particular about manner adverbs. Following Dik (1974), I take manner adverbs to have three main characteristics. Firstly, they characterize the manner in which an activity is carried out or a process goes on. Secondly, they are questioned with how. Finally, they can be paraphrased with expressions of the form in a ... manner. A typical manner adverb is carefully in (11).

(11) Jim drove carefully.

A number of analyses seem plausible for such adverbs. One might suggest that they originate in subordinate clauses, so that (11) derives from something like John drove in a manner which was careful. Such an analysis is considered but rejected in Kuroda (1970). Alternatively, one might suggest, as Kuroda does, that they originate in higher clauses, so that (11) derives from something like The manner in which Jim drove was careful. Finally, one might suggest, with Dik, that they originate in conjoined sentences. On this proposal, (11) would derive from something like Jim drove and the manner of his driving was careful. All three analyses assume that manner adverbs originate as adjectives. This assumption is by no means necessary, however. In part, perhaps, its acceptance stems from the view that the categories of underlying structure should be essentially those of standard predicate logic. The work of Cresswell and Montague shows that this view need not be accepted. It is arguable that their work involves an unjustifiable proliferation of categories.¹ I think, however, that it shows that it is quite reasonable to suppose that the categories of underlying structure need not be restricted to those of standard predicate logic. We have seen that it is quite likely that we should recognize a class of noun modifiers. It is possible that we should also recognize a class of predicate modifiers, and that manner adverbs are members of this class.

- - - - -

1. As Dowty (1976:229) puts it, Montague grammar 'allows us to multiply syntactic categories at will. ...whereas generative semantics has historically been quite parsimonious in the grammatical categories it admits, Montague grammar seems destined to postulate a plethora of them'. The same is true of Cresswell's framework.

If we do assume that manner adverbs are predicate modifiers, we can still assume more abstract sources for other -ly adverbs. Following Schreiber (1971), for example, we might suggest that a modal adverb like possibly originates in a structure like (12), and a factive adverb like unfortunately in a structure like (13).

(12) S be possible

(13) S and S be unfortunate

Following Dik, we might suggest that an adverb like willingly originates in a structure of the following form.

(14) S and NP be willing S

Finally, with Anderson (1975), we might suggest that carefully in sentences like (15), where it does not have a manner reading, originates in a structure like (16).

(15) Sam carefully changed his position.

(16) S and S be careful of NP

As Lakoff (1973b) points out, deriving non-manner adverbs from structures involving complements holds out the prospect of a natural account of the ambiguities of scope and opacity associated with them. If manner adverbs are predicate modifiers, there should be no such ambiguities associated with them. I have not looked at the matter at all closely, but it seems to me that this may well be the case.

There may well be a second class of predicate modifiers. Notice that we have expressions like the following.

(17) extremely dangerous

(18) exceptionally talented

(19) highly controversial

Whereas manner adverbs can be paraphrased with expressions of the form

in a ...manner, the adverbs here can be paraphrased with expressions of the form to a ...extent. Thus, (17) can be paraphrased as dangerous to an extreme extent. We might, then, call them extent adverbs. If manner adverbs are predicate modifiers, it seems reasonable to suggest that extent adverbs are also. A possible problem arises from the fact that extent adverbs can modify attributive adjectives as well as predicatives. If some attributive adjectives can only represent noun modifiers, we will have to say that extent adverbs are noun modifier (modifiers) as well as predicate modifiers. Perhaps this is a reason for thinking that all attributive adjectives, except non-predicating adjectives, can represent predicates.

While there are problems about details, I think it is quite plausible to suggest that both manner adverbs and extent adverbs are predicate modifiers. This proposal is not crucial, however. What follows is compatible with various alternatives. It is not necessary, then, to discuss it any further.

11.2. Equatives and Comparatives

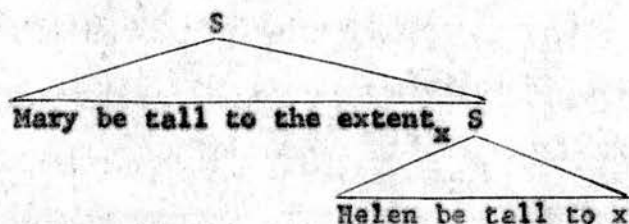
Having considered a number of general questions about the grammar of adjectives, I will now develop an analysis of equatives and comparatives. As will become apparent in the next chapter, the former are particularly important for the analysis of adjectival and adverbial anaphora.

We can begin with simple predicative equatives like that in (1).

(1) Mary is as tall as Helen.

I think it is plausible to derive this from something like (2).

(2)

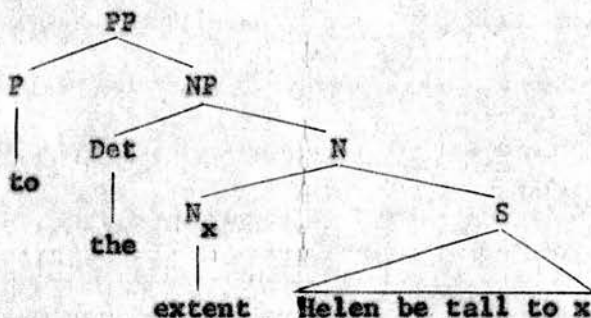


An alternative realization of (2) is (3).

(3) Mary is tall to the extent that Helen is.

This is presumably the result of relative deletion and VP-deletion. (1) obviously involves additional rules. A natural suggestion is that it involves the preposing of to the extent and its realization as as. Notice, however, that to the extent is not a constituent. The crucial structure is something like (4).

(4)



If we assume with Schwartz (1972) that only constituents can be moved, to the extent cannot be fronted. The most plausible solution, I think, is to assume that the whole of (4) is preposed and the relative clause subsequently extraposed. I will call the preposing rule 'extent phrase fronting'. I assume that it is also involved in the derivation of (5) and (6).

(5) Mary is nine foot tall.

(6) How tall is Mary?

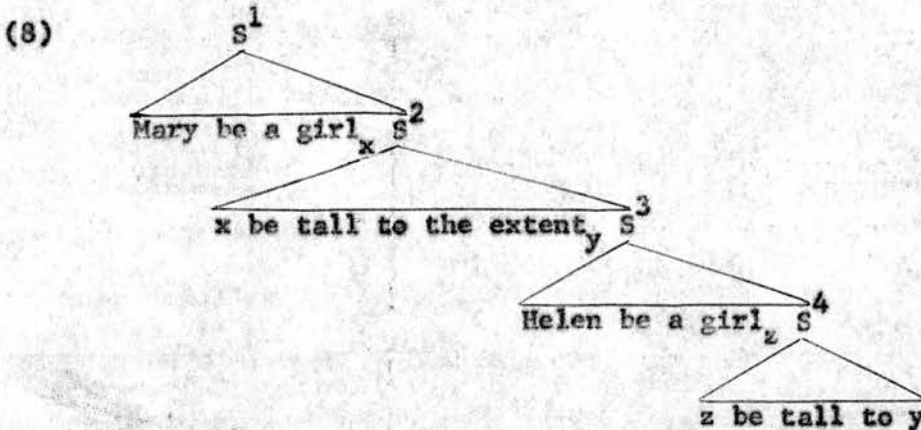
In these cases, there is no subsequent extraposition. Two further rules are needed for the derivation of (1). One will introduce the complementizer as into the relative clause. The other will delete

the be in the relative clause. The latter, of course, is optional.

Equatives also appear in attributive position, of course, as (7) illustrates.

(7) Mary is as tall a girl as Helen.

If attributive adjectives can represent predicates, (7) might derive from something like (8).

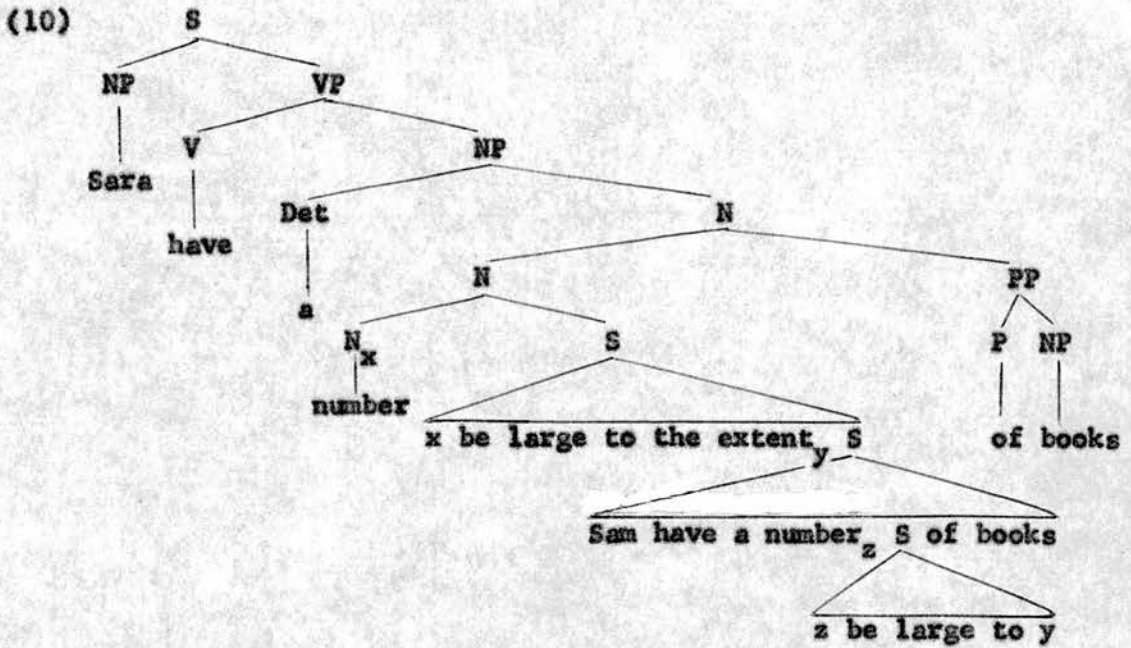


The derivation will naturally be quite complex. Whiz deletion and adjective shift will apply on S^3 . On S^2 , extent phrase fronting will apply with subsequent extraposition of S^3 . Then, on S^1 , whiz deletion and adjective shift will apply again. On the most obvious formulation of adjective shift, S^3 will be fronted along with as tall. Presumably, the extraposition rule that we have proposed will move it back to its original position. Once it has applied, another fronting rule will position as tall in front of the indefinite determiner. The derivation of (7) also involves considerable deletion. All the material after Helen is deleted. As before, of course, the deletion of be is optional.

We can now turn to sentences like (9).

(9) Sara has as many books as Sam.

I think it is plausible to derive this from something like (10).



From this, (11) will derive in a fairly straightforward way.

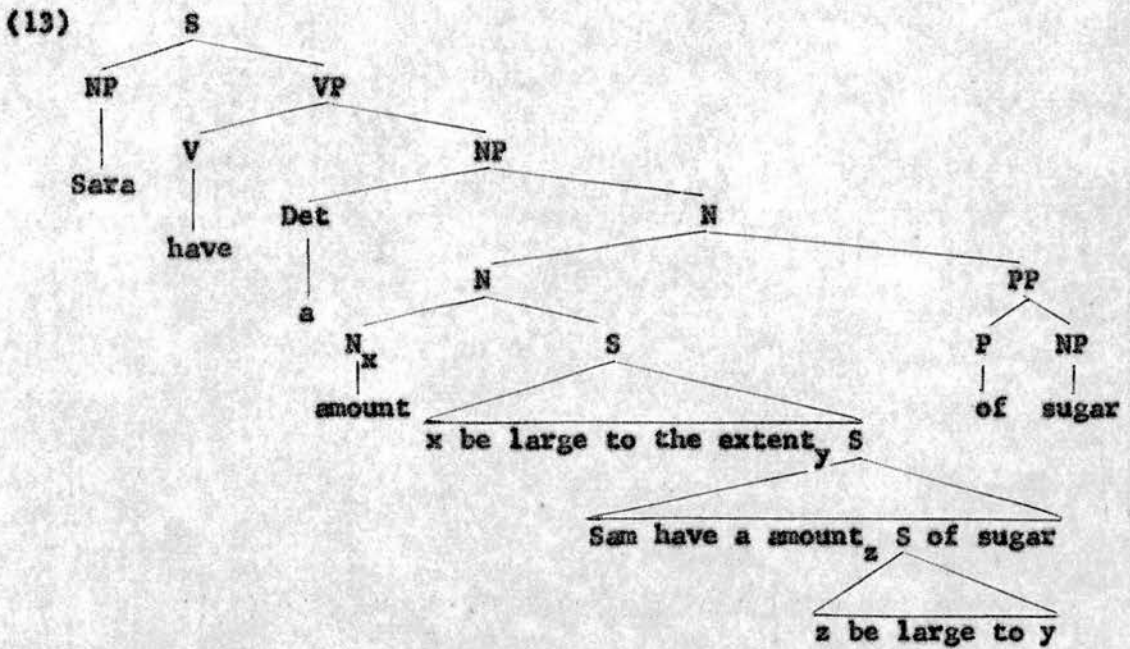
(11) Sara has as large a number of books as Sam.

We suggested earlier that many derives from a large number. We can account for the appearance of many in (9), if we assume that equative fronting is accomplished by two rules; one fronting as, the other fronting the adjective. Once the first rule has applied to (11), we will have as a large number. This can be realized as as many.

Broadly similar to (9) is (12).

(12) Sara has as much sugar as Sam.

We can derive this from something like (13).



A fairly straightforward realization of (13) is (14).

(14) Sara has as large an amount of sugar as Sam.

It seems quite likely that much in a sentence like (15) should derive from a large amount.

(15) Much beer was drunk.

If equatives are fronted in two stages, it can have the same source in (12).

Also quite like (9) is (16).²

(16) Sara likes honey as much as Sam.

We can derive this from something like (17).

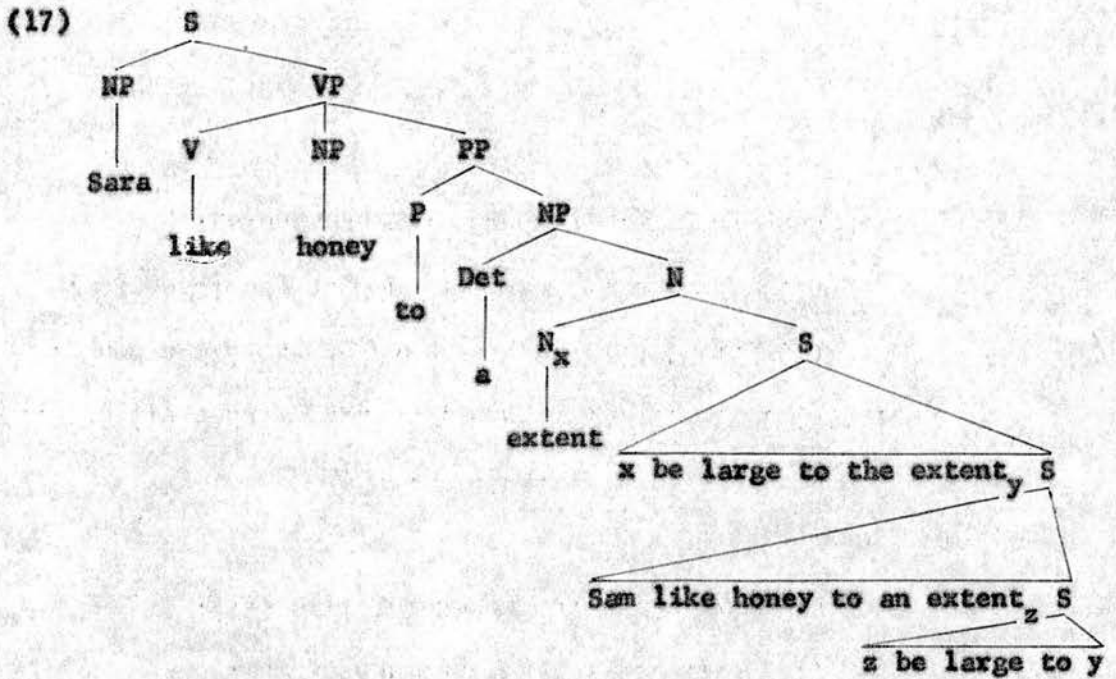
- - - - -

2. (16) is in fact ambiguous, meaning either (i) or (ii).

(i) Sara likes honey as much as Sam likes honey.

(ii) Sara likes honey as much as she likes Sam.

I am concerned here with the former meaning.



A straightforward realization of (17) is the rather unnatural (18).

(18) Sara likes honey to as large an extent as Sam.

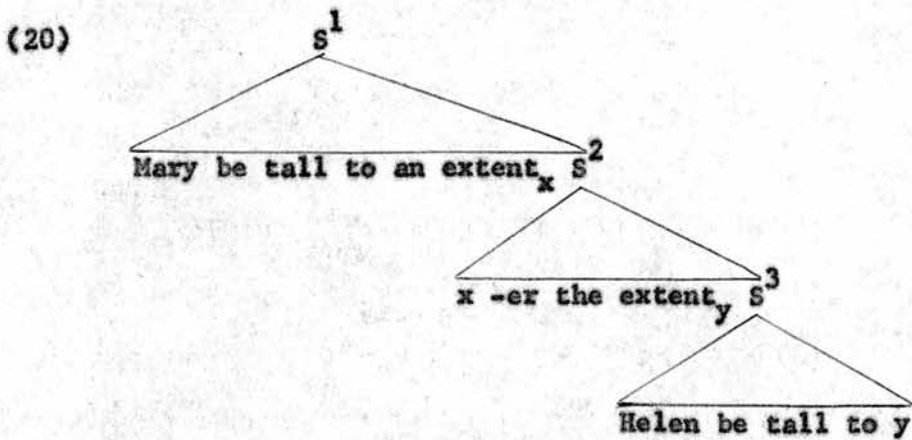
If we assume that much can derive from a large extent as well as from a large amount, the derivation of (16) will be quite straightforward.

I think that this approach to equatives is quite promising. What I want to show now is that it can be extended in a quite natural way to cover comparatives. We need just two additional rules to handle comparatives. We will see in the next section that one of them is needed independently.

We can begin with simple predicative comparatives like that in (19).

(19) Mary is taller than Helen.

I want to suggest that this derives from something like (20).



-er here is a predicate meaning 'exceeds' or 'is greater than'. I am representing it this way because I am primarily interested in its role as the source of the comparative suffix. If we assume that it can also be realized as exceeds, (21) will be an alternative realization of (20).

(21) Mary is tall to an extent which exceeds the extent to which Helen is tall.

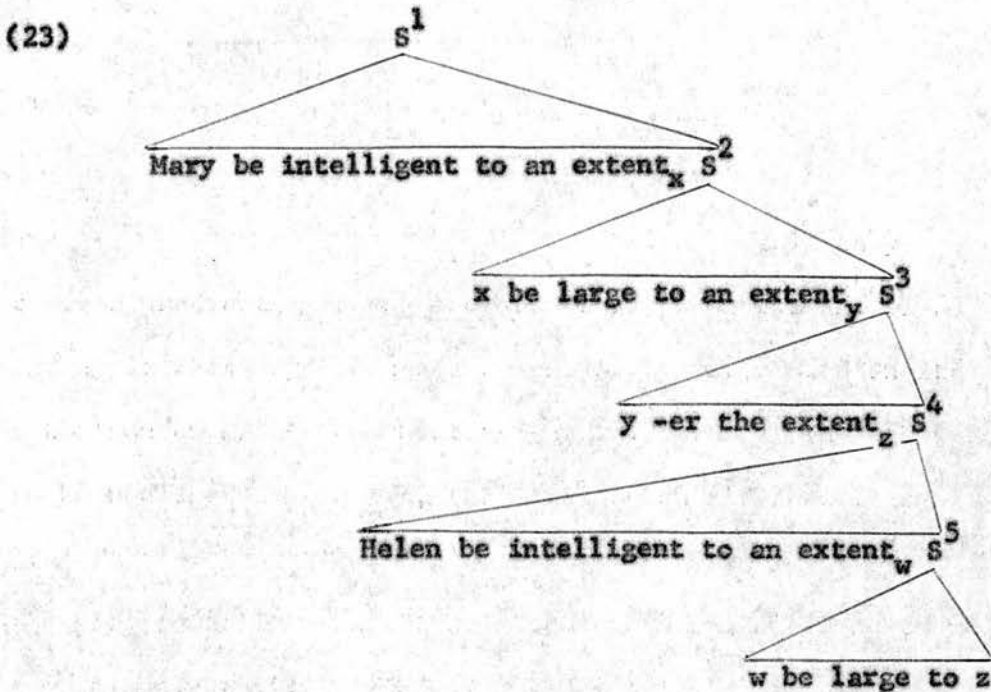
This will have a quite simple derivation. The derivation of (19) will be more complex. I would suggest that there is a rule that deletes the extent on S^2 . When this has applied, whiz deletion and adjective shift can apply on S^1 to produce the phrase to an -er extent. I would suggest, then, that this is realized as the comparative suffix. The rule that effects this is our second new rule.

As well as simple comparatives like taller, we have complex comparatives formed with more. (22) illustrates.

(22) Mary is more intelligent than Helen.

One might suggest that this derives from a structure just like (20) but with intelligent in place of tall. To derive it from such a structure, one would have to assume that an -er extent can be preposed by extent phrase fronting and realized as more. This is not obviously

unreasonable. I want to propose, however, that (22) derives from a more complex structure than (20). Specifically, I want to propose that it derives from (23).



I assume that the extent is deleted on S^3 , and that whiz deletion, adjective shift and comparative formation apply on S^2 to produce larger. Then, on S^1 , whiz deletion and adjective shift can apply to produce the phrase to a larger extent. I suggest that it is this phrase that is preposed by extent phrase fronting and realized as more. The reason for assuming such a derivation is that it allows us to claim that more, like many and much, always reflects an underlying predicate of quantity. I assume that a structure like (20) but with intelligent in place of tall is perfectly well-formed. Its natural realization is (24).

(24) * Mary is intelligenter than Helen.

I assume that this is ruled out by an output condition.

Comparatives also appear in attributive position, of course.

Parallel to (19) and (22), we have (25) and (26).

(25) Mary is a taller girl than Helen.

(26) Mary is a more intelligent girl than Helen.

These will derive from structures that are related to (20) and (23) in just the same way as (8) is related to (2). Notice that attributive comparatives, unlike attributive equatives, follow the determiner, like simple attributive adjectives.

Notice now that parallel to (9), (12) and (16) we have the following.

(27) Sara has more books than Sam.

(28) Sara has more sugar than Sam.

(29) Sara likes honey more than Sam.

We can derive these from structures like (10), (13), and (17), but containing the comparative predicate -er. In all three cases, more will reflect an underlying large. This suggests quite strongly that it should in (22). Alternative realizations of the structures underlying (27) - (29) will be the following.

(30) Sara has a larger number of books than Sam.

(31) Sara has a larger amount of sugar than Sam.

(32) Sara likes honey to a larger extent than Sam.

(32), like (18), is rather unnatural.

I think it is fairly clear that we can provide a quite natural account of comparatives. I want now to take a brief look at some equatives and comparatives that are not often discussed.

Notice firstly that parallel to (9) we have (33).

(33) Sara has as few books as Sam.

It is natural to derive this from a structure just like (10), but with small in place of large. (34) will derive from the same structure.

(34) Sara has as small a number of books as Sam.

It seems quite likely that a few in a sentence like (35) should derive from a small number.

(35) A few books were read.

It is not surprising, then, that few shows up in (33).³ Notice now that parallel to (27) we have (36).

(36) Sara has less books than Sam.

We can derive this from a structure like that underlying (27), but with small in place of large. (37) will derive from the same structure.

(37) Sara has a smaller number of books than Sam.

Notice next that parallel to (12) and (28) we have (38) and (39).

(38) Sara has as little sugar as Sam.

(39) Sara has less sugar than Sam.

We can derive these from structures just like those underlying (12) and (28). (40) and (41) will derive from the same structures.

(40) Sara has as small an amount of sugar as Sam.

(41) Sara has a smaller amount of sugar than Sam.

It is natural to suggest that a little in a sentence like (42) derives from a small amount.

(42) A little beer was drunk.

It is not too surprising, then, that little appears in (38). Just as (38) and (39) parallel (12) and (28), so (43) and (44) parallel (16) and (29).

- - - - -

3. The situation, however, is more complex than with many and as many, because we have a few not few. few means 'not many'. It is possible that as few should have as a few as its immediate source. Similar remarks apply to a little and as little.

(43) Sara likes honey as little as Sam.

(44) Sara likes honey less than Sam.

Clearly, we can derive these from structures like those underlying (16) and (29). Notice finally that parallel to (22) we have (45).

(45) Mary is less intelligent than Helen.

Obviously, we can derive this from a structure just like (23). It seems, then, that we can handle these constructions quite naturally. I think, then, that they provide significant support for the analysis I am developing.

I want now to compare sentences like (7) with sentences like (46).

(46) Mary is a girl as tall as Helen.

An important fact about (7) is that it implies that Helen is a girl. This is shown by the deviance that results if Helen is replaced by a man's name. Consider, for example, (47).

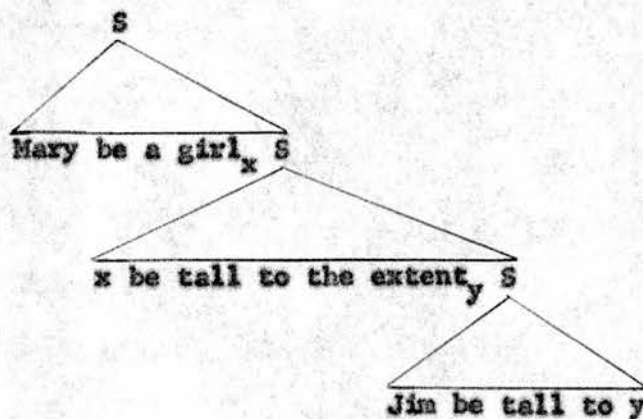
(47) * Mary is as tall a girl as Jim.

The source I have proposed for (7), i.e. (8), captures this implication quite naturally. Notice now that (46) does not imply that Helen is a girl. (48) is quite acceptable.

(48) Mary is a girl as tall as Jim.

Clearly, then, (46) must have a different source from (7). Something like (49) seems appropriate.

(49)



Clearly, this does not imply that Jim is a girl. We will need some kind of global constraint to ensure that (7) can only derive from (8) and not from (49). We might suggest a constraint on adjective shift. I will not pursue this matter, however. I simply want to note that comparatives are just like equatives here. (50) differs from (25) in just the same way as (46) differs from (7).

(50) Mary is a girl taller than Helen.

While (51) is deviant, (52) is quite acceptable.

(51) * Mary is a taller girl than Jim.

(52) Mary is a girl taller than Jim.

Thus, while (25) derives from a structure like (8), (50) will derive from a structure like (49).

I have now sketched the main components of an analysis of equatives and comparatives. Shortly, I will compare this analysis with the main alternatives. First, however, I want to say something about the grammar of the same.

11.3. A Note on the same

The grammar of the same has received little attention. In particular, it has generally been ignored in accounts of equatives and comparatives. There are, however, important similarities between the same and equatives and comparatives. It is important, then, to say something about it.

In some ways, the same is like similar and different. All three may be either transitive or intransitive in surface structure. In the latter case, the subject must be semantically plural. It must, that is, be either a conjoined NP or a simple plural. The possibilities are illustrated in (1), (2), and (3).

(1) Alaric is { the same as
similar to
different from } Theodoric.

(2) Alaric and Theodoric are { the same
similar
different }

(3) The Goths are all { the same
similar
different }

One might assume, with Lakoff and Peters (1969), that sentences like (2) and (3) are basic, and that sentences like (1) derive from sentences like (2) through a rule of conjunct movement. Such a treatment runs into a number of problems, however. (See, for example, Anderson, 1973b.) It is more plausible, then, to assume that sentences like (1) are basic, and that sentences like (2) and (3) derive from the reciprocal sentences in (4) and (5).

(4) Alaric and Theodoric are { the same as
similar to
different from } each other.

(5) The Goths are all { the same as
similar to
different from } each other.

In other ways, the same differs from similar and different. It differs obviously in the presence of the. It differs also in that it can be followed not only by nouns but also by various other constituents. The following illustrate.

(6) Alaric is { the same as
* similar to
* different from } Theodoric is.

(7) The weather is { the same as
* similar to
* different from } it was last year.

(8) The situation is { the same as
* similar to
* different from } we expected.

Here, the same is like equatives and comparatives, as the following illustrate.

(9) Alaric is { as tall as
taller than } Theodoric is.

(10) The weather is { as good as
better than } it was last year.

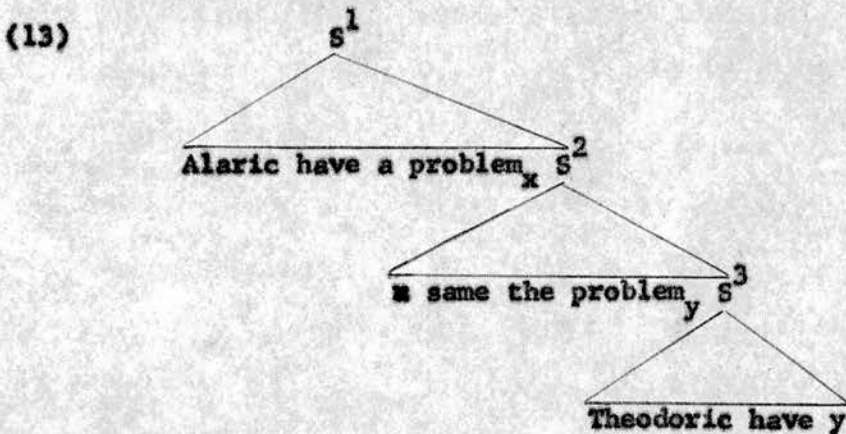
(11) The situation is { as bad as
worse than } we expected.

It seems, then, that the same has quite peculiar properties.

How are we to account for these properties? I want to begin by looking at sentences like (12).

(12) Alaric has the same problem as Theodoric.

Here, we have an ordinary NP, so the presence of the is no problem. I want to suggest that (12) derives from something like (13), where same is a predicate of identity.



The derivation will be quite simple. On S^2 , relative deletion will apply and the problem will be deleted by the rule that deletes the extent in the derivation of comparatives. Then, on S^1 , whiz deletion and adjective shift will apply to give the same problem. At some point, of course, the second have must be deleted. a must also be changed to the. It seems, then, that we can account for sentences like (12) quite simply. What now of sentences like (14)?

(14) Alaric is the same as Theodoric.

One way to account for the presence of the here is to claim that the same is an NP. This is what I want to claim. More precisely, I want

to claim that the same derives from the same thing.⁴ Since (15) is rather doubtful, this might seem rather ad hoc.

(15) ? Alaric is the same thing as Theodoric.

Notice, however, that both (16) and (17) are quite acceptable.

(16) Alaric did the same as Theodoric.

(17) Alaric did the same thing as Theodoric.

I think, then, that it is quite natural to assume that the same derives from the same thing.

It seems, then, that our account of equatives and comparatives provides the basis of a quite natural account of the grammar of the same. I think that this provides further support for it.

11.4. Some Comparisons

I want now to consider the main alternatives to the analysis I have developed here. I will consider the approaches of Postal (1974b), Seuren (1973), and Bresnan (1973). I will argue that none of them is as promising as the present approach.

Postal sketches an analysis of equatives and comparatives in the course of an investigation of ambiguities like those in (1) and (2).

(1) Jim believes he is taller than he is.

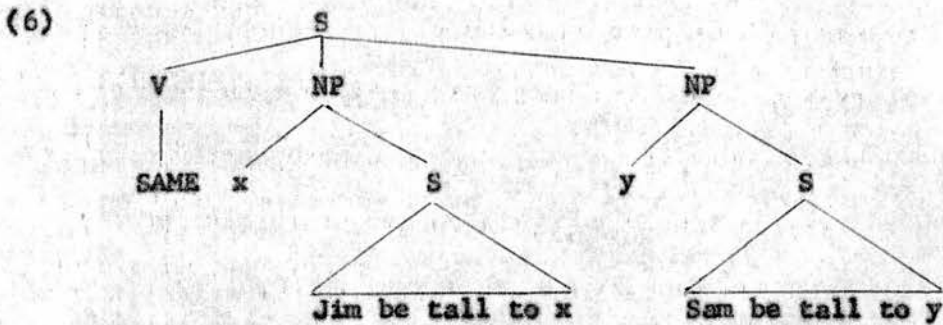
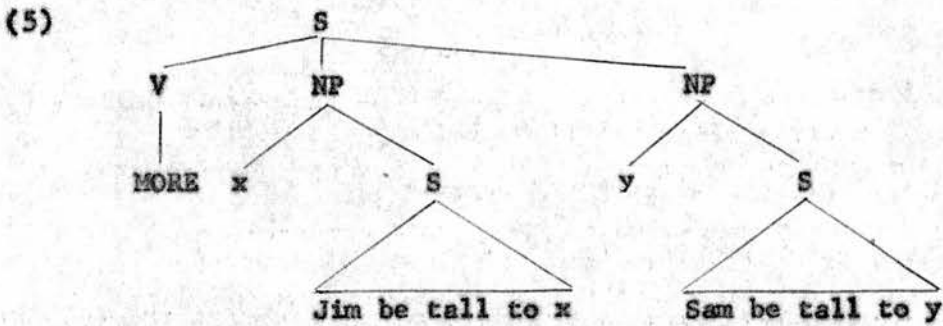
(2) Jim doesn't believe he is as tall as he is.

(1) can mean that Jim believes a contradiction or that he believes he is taller than he in fact is. (2) can mean that Jim doesn't believe a tautology or that he doesn't believe he is as tall as he actually is. Postal develops an analysis in which (3) and (4) will derive from something like (5) and (6).

(3) Jim is taller than Sam.

(4) Jim is as tall as Sam.

4. An alternative, as James Thorne has pointed out to me, is to assume that the same is an NP with an empty head noun.



MORE here is a predicate of comparison, SAME is a predicate of identity, and the variables are understood to range over extents.⁵ Postal's approach differs from mine in three obvious ways. Firstly, he assumes that equatives involve a predicate of identity. Secondly, he assumes that the predicate of identity and the predicate of comparison are

5. Somewhat similar to Postal's approach is the approach of Cresswell (1976). In his categorial grammar framework, the predicates of comparison and identity are members of the category $\langle 0, \langle 0, 1 \rangle, \langle 0, 1 \rangle \rangle$, the category of symbols that take two one place predicates to form a sentence. (3), for him, would derive from something like (1).

(1) $\langle \langle \lambda x \langle \text{Jim tall}, \Delta \rangle x \rangle \rangle$ or than $\langle \lambda x \langle \text{Sam tall}, \Delta \rangle x \rangle \rangle$

This formula incorporates his view that predicative adjectives are underlyingly attributive. Also somewhat similar, it seems to me, is the approach of Bartsch and Venneman (1972). For them, (3) would derive from something like (ii).

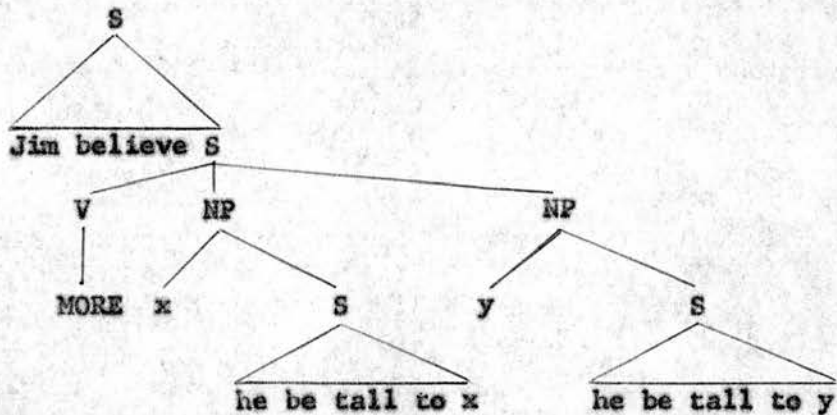
(ii) $F_T^M(\text{Jim}) > F_T^M(\text{Sam})$

F_T^M is a measure function for tallness, and $>$ means 'is greater than'.

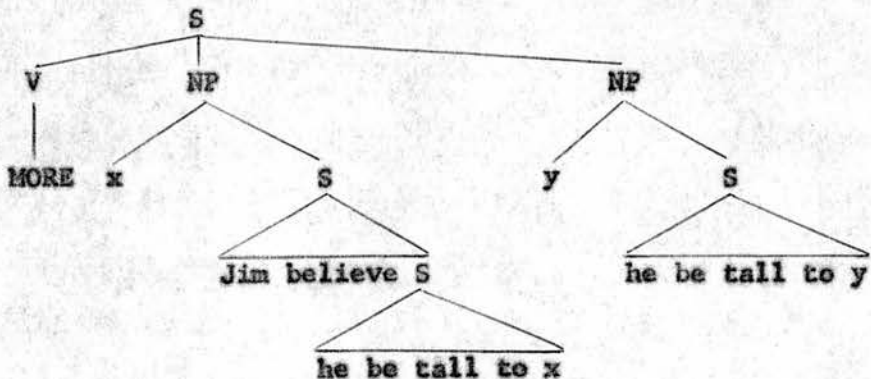
main predicates. Thirdly, he assumes predicate first order. The third point is not an essential feature of Postal's analysis, but the other two are. I will argue in the next chapter against the view that equatives involve a predicate of identity. However, even if they do involve such a predicate, there are arguments against the view that it and the predicate of comparison are main predicates.

The main reason for rejecting this view is that it involves unnecessarily abstract underlying structures and otherwise unnecessary lowering rules. Postal, in fact, postulates two lowering rules. The assumption that MORE and SAME are main predicates is central to Postal's account of ambiguities like those in (1) and (2). In Postal's system, (1) can derive from either (7) or (8).

(7)

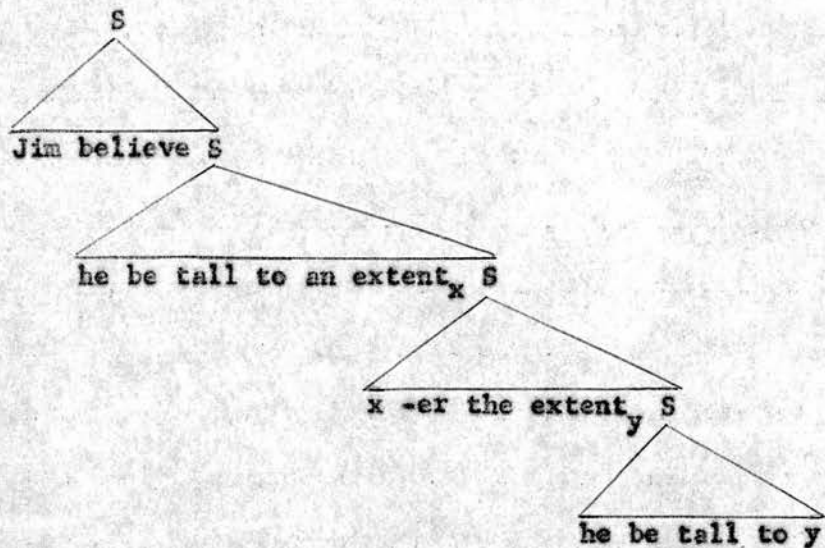


(8)

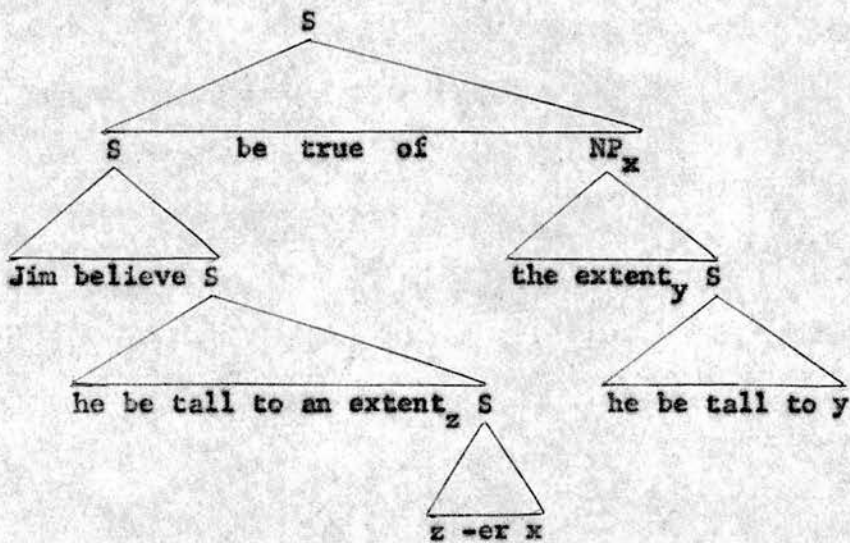


These capture the two readings of (1) quite adequately. So, however, do the following, which are natural sources for (1) in the analysis I have developed.

(9)



(10)



It seems, then, that we can account for the crucial ambiguities without assuming that MORE and SAME are main predicates.⁶

- - - - -

6. There is a problem, however, in the derivation of (1) from (10). I have suggested that the extent is deleted on the -er cycle in the derivation of comparatives. However, if NP-lowering is cyclic, the extent will not be present on this cycle in the derivation of (1) from (10). This could mean that NP-lowering is precyclic or that deletion of the extent is postcyclic.

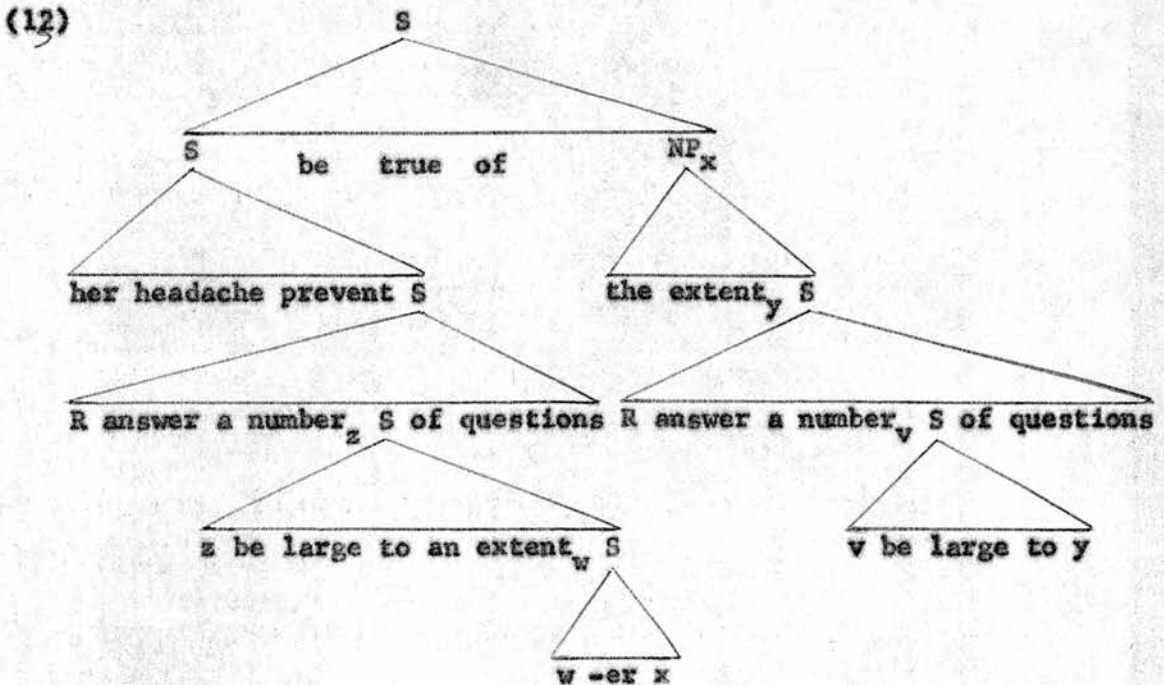
Interesting evidence against Postal's analysis is presented in Reinhart (1974). She notes that there are ambiguities which his system cannot handle adequately. She considers, for example, (11).

(11) Her headache prevented Rosa from answering more questions than she did.

In Postal's system, the obvious source for the natural reading of (11) is something like (12).

(12) MORE x (her headache prevent (R answer x questions)) y (R answer y questions)

This means, however, that the number of questions that her headache prevented Rosa from answering exceeded the number that she answered. This is not the natural reading of (11). Notice now that in the analysis I have developed (11) can derive from something like (13).



Here, the predicate of comparison is within the scope of prevent. A little reflection suggests, I think, that this captures the natural meaning of (11) quite adequately. It seems, then, that the analysis

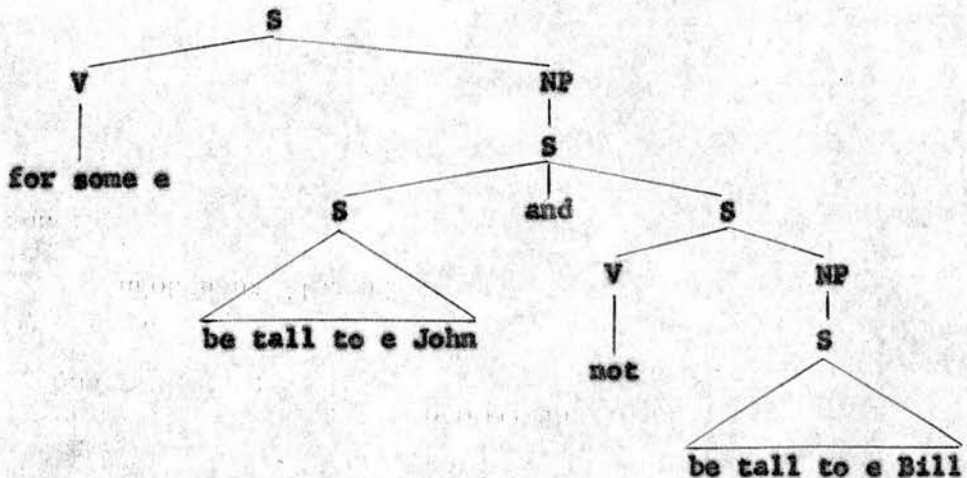
I have developed can handle the crucial ambiguities rather better than Postal's.

I can turn now to Seuren's analysis. Like Postal, Seuren assumes considerably more abstract structures than those I have proposed. I will argue that this abstractness has no advantages.

Seuren only considers comparatives. His analysis, however, can be extended in a quite natural way to cover equatives. He suggests, as a first approximation, that a comparative like (13) derives from something like (14).⁷

(13) John is taller than Bill.

(14)



e here is a variable ranging over extents. Given such a source for (13), the natural source for an equative like (15) is something like (16).

- - - - -

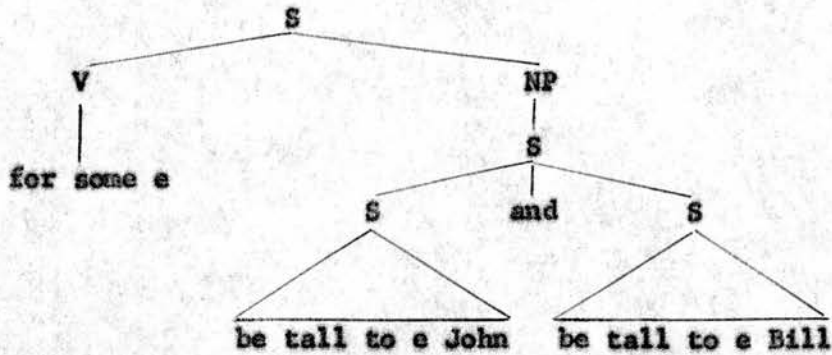
7. Seuren subsequently proposes a more complex analysis according to which (13) will derive from something like (i).

(i) $\exists e(\text{the } f(f \text{ is an extent \& John is tall to } f) \text{ is great to } e \&$
 $\text{not (the } g(g \text{ is an extent \& Bill is tall to } g) \text{ is great to } e))$

My remarks apply equally to this analysis.

(15) John is as tall as Bill.

(16)



The central feature of Seuren's analysis is that he assumes, following Ross (1969a), that comparatives involve an underlying negative. He suggests that this explains the fact that than clauses constitute a negative environment. There are two ways in which than clauses constitute a negative environment. On the one hand, they prohibit elements that cannot occur in negative contexts. On the other hand, they allow elements that can only occur in negative contexts. A number of items that are impossible in negative contexts are illustrated in the following.

(17) * I haven't already eaten too much.

(18) * I wouldn't rather be at home.

(19) * He didn't do pretty well in the exam.

(20) * John doesn't still play golf.

All these items are impossible in than clauses, as the following show.

(21) * He has got more support than you already have.

(22) * He carries more than I would rather do.

(23) * Bill runs slower than I would pretty much like to.

(24) * John can afford less books than he still wants to buy.

A number of items that can only occur in negative contexts are illustrated in (25) - (28). All the items can occur in than clauses, as (29) - (32) show.

(25) Bob { * will
won't } bother leaving a number.

(26) I { * care
don't care } to go.

(27) You { * need
needn't } leave.

(28) I { * can
can't } bear the sound of her voice.

(29) That's more than he will bother thinking of.

(30) The fifth glass was more than I cared to drink.

(31) John runs faster than he need run.

(32) The sound of her voice was more than I could bear.

Given such data, Seuren's analysis seems quite plausible. Notice, however, that as clauses seem to constitute a negative environment in just the same way as than clauses. The following illustrate.

(33) * He has got as much support as you already have.

(34) * He carries as much as I would rather do.

(35) * Bill runs as slow as I would pretty much like to.

(36) * John can afford as few books as he still wants to buy.

(37) That's as much as he will bother thinking of.

(38) The fifth glass was as much as I cared to drink.

(39) John runs as fast as he need run.

(40) The sound of her voice was as much as I could bear.

Clearly, the negative character of as clauses is not the result of an underlying negative. There is no reason, then, to assume that the negative character of than clauses is.

A second advantage that Seuren claims for his analysis is an ability to account for an ambiguity in sentences like (41).

(41) Planes are safer now than thirty years ago.

He suggests that this is ambiguous between (42) and (43).

(42) For every plane there is an extent to which it is safe now,
but was not thirty years ago.

(43) There is an extent such that every plane is safe to that
extent now but thirty years ago every plane was not safe
to that extent.

In Seuren's system, these two readings can be represented as (44) and
(45).

(44) $\forall x \exists e$ (now x is safe to e & not thirty years ago x was safe
to e)

(45) $\exists e$ (now $\forall x$ (x is safe to e) & not thirty years ago $\forall y$ (y
was safe to e))

Seuren is mistaken, however, in thinking that (43) is a possible
reading of (41). (41) cannot imply that there is a single extent such
that every plane is safe to that extent. It cannot imply that all
planes are equally safe. But this is exactly what (43) implies. I
would suggest that the ambiguity in (41) is a matter of the inter-
pretation of the subject NP. It can be interpreted distributively
or collectively. In the former case, (41) means (46). In the latter,
it means (47).

(46) Every plane is safer now than it was thirty years ago.

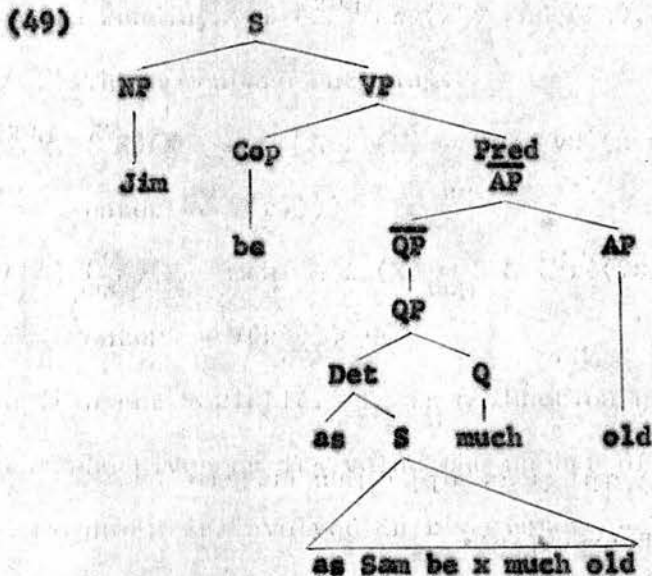
(47) Planes as a class are safer now than they were thirty
years ago.

I suggested how the distributive collective ambiguity should be
handled in chapter 4. My proposal may or may not be correct. I think
it is clear, however, that (41) provides no support for Seuren's
analysis.

I can now consider Bresnan's proposals. Bresnan provides a wide-ranging discussion, considering not only equatives and comparatives, but also the grammar of too and enough. I have been influenced quite considerably by this discussion in developing the proposals of this chapter and the next. Bresnan's analysis has a number of arbitrary features. I think that, if these features were eliminated, the result would be an analysis quite like mine.

For Bresnan, an equative sentence like (48) will derive from something like (49).

(48) Jim is as old as Sam.



The corresponding comparative sentence (50) will derive from something like (51).

(50) Jim is older than Sam.

are the exception, however, not the rule. It is much more plausible, then, to generate attributive adjectives as left sisters of nouns or to derive them from relative clauses. I suggested earlier that they may well have both sources.

A second rather arbitrary feature of Bresnan's analysis is her treatment of as and -er as determiners of quantifier phrases. To treat them in this way is to claim that their role in a quantifier phrase is like that of the articles in an NP. There is some truth to this claim where as is concerned. While its semantic role is quite different from that of the articles, its position is parallel to theirs. There is no truth to the claim, however, where -er is concerned. Neither in its semantic role nor in its surface position is it like the articles. Thus, while there is some basis for calling as a determiner, it is quite arbitrary to label -er this way. If one accepts this, one will look for an alternative analysis of -er. The obvious alternative is to treat -er as the reflection of an underlying predicate of comparison. If one does, of course, one will have to revise Bresnan's conception of a quantifier phrase. The result is likely to be an analysis of comparatives quite like that I have advanced.

I think, then, that the analysis I have developed is preferable to the three main alternatives. Bresnan's analysis is the most interesting of these alternatives. Unlike Postal and Seuren, she considers some of the phenomena with which I will be concerned in the next chapter. I will be referring to her proposals again, therefore.

CHAPTER 12

ADJECTIVES AND ADVERBS IN ANAPHORA

I can now consider adjectival and adverbial anaphora. My main concern will be with so and such. I will also consider the expression like that, and then and there. The relevance of the discussion of the last chapter will soon become apparent.

12.1. so

so has a variety of uses, a number of which will be considered in this thesis. Here, I am primarily concerned with the use that is exemplified in sentences like the following.

(1) Eve is irritable, and she has been so for weeks.

(2) Steve filled in the form carefully, and he'd do it so again.

In (1), we can say that so is a pro-adjective, and that irritable is its antecedent. In (2), we can say that it is a pro-adverb with carefully as its antecedent.

We should note at the outset that this use is subject to a variety of restrictions. In the present context, they are not too important. It is necessary, however, to say something about them. A general observation made by Bolinger (1972) is that pro-adjective and pro-adverb so are most acceptable in 'indefinite' contexts. He notes, however, that 'the condition of indefiniteness takes subtle forms that are extremely difficult to define'. One thing the condition means is that so is acceptable with abstract antecedents, but unacceptable with concrete ones. The following illustrate.

(3) I thought it acceptable, but he didn't think it so.

- (4) If you thought the questions could be answered courteously,
why didn't you answer them so?
- (5) * I thought it solid, but he didn't think it so.
- (6) * If you thought the questions could be answered mechanically,
why didn't you answer them so?

The condition also means that so is better with an adverb of result than with a simple manner adverb, as the following show.

- (7) I was asked to draw them clearly, and I did my best to draw them so.
- (8) * I was asked to draw them manually, and I did my best to draw them so.

Notice also that so is better with an abstract verb like consider than with a concrete one like represent.

- (9) Were the tools sharp? He { considered
* represented } them so.

Another restriction noted by Bolinger is that so is better following a pronoun than following a noun. The following illustrate.

- (10) If you thought that everything should be handled carefully,
why didn't you handle { it
* the cargo } so?
- (11) When your boss wants things orderly, it is a good idea
to keep { them
* your desk } so.

One further restriction is that so is unacceptable in simple sentences with contrasting subjects. (12) illustrates.

- (12) * Eve is irritable, and Steve is so too.

I have no doubt that there are other restrictions besides these. In the present context, however, they are not of crucial importance. What is important is the source of this so.

What, then, is the source of this so? One proposal that might

be advanced is that it is introduced by a rule that substitutes it for the second occurrence of a suitable adjective or adverb. This rule would, of course, be like pronominalization. Just as the existence of non-anaphoric pronouns argues against pronominalization, so the fact that this so has a non-anaphoric use argues against such a rule. The non-anaphoric use is seen in sentences like (13).

(13) You tie the ends together so.

It is also, I think, seen in sentences like (14).

(14) It so reflects the light that the rays are gathered to one point.

Clearly, these sos cannot be introduced by the proposed rule. A proponent of the rule must claim, then, that there is a basic difference between the anaphoric and non-anaphoric uses of so. Intuitively, however, there is no such difference. Another problem with this approach is that it does not explain why so is both a pro-adjective and a pro-adverb. It simply treats this as a brute fact. As we will see, it is not at all a brute fact.

I think it is clear that this approach is untenable. What I want to suggest, then, is that so derives from in that way. The most obvious evidence for this suggestion is that so can generally be replaced by in that way or that way. Further support comes from comparisons with how. how is a question word for both adjectives and adverbs, as the following illustrate.

(15) How was Paris? Paris was boring.

(16) How did Henry play? Henry played badly.

It is natural to derive how from in what way. This suggests quite strongly, then, that so should also involve an underlying way. One point that should be noted is that a number of unacceptable sentences

considered earlier become acceptable if so is replaced by that way. This suggests then, that so is a realization of in that way in a restricted range of contexts.

The obvious question about this proposal is: how exactly is that way interpreted? I want to suggest that its interpretation involves the inferring of an antecedent, rather like the interpretation of certain sentential pronouns. Manner adverbs can generally be paraphrased with a way phrase. In (2), carefully can be paraphrased as in a careful way. This is not so often possible with adjectives. In (1), in an irritable way is not a very natural paraphrase for irritable. This need not be a problem, however. We can suggest that the underlying element way has a broader meaning than the English lexical item, and that it is realized not only as way, but also as manner, state, and mood. We can then assume that, for any underlying structure of the form in (17), there will be an equivalent underlying structure of the form in (18).

(17) X Adj Y

(18) X in a way_x (S_x be Adj)_S Y

I think, then, that it is quite reasonable to suggest that the antecedent of that way is inferred.

It is perhaps worth noting that a variety of anaphoric definite descriptions seem to involve inferred antecedents. Consider, for example, the following.

(19) Platypuses lay eggs, and spiny anteaters have that property too.

(20) Harry is wanted by the police, and Mary is in that position too.

Neither that property nor that position have antecedents in the preceding

clause. We can, however, infer (21) and (22) from the initial clauses of (19) and (20).

(21) Platypuses have the property that they lay eggs.

(22) Harry is in the position of being wanted by the police.

Here, we have antecedents for that property and that position. Consider also the following.

(23) Steve thinks the earth is flat, and Sam suffers from that delusion too.

(24) Steve bowled a full toss, and Sam made that mistake too.

Neither that delusion nor that mistake have antecedents in the preceding clause. Clearly, however, extralinguistic facts allow us to infer (25) and (26) from the initial clauses of (23) and (24).

(25) Steve suffers from the delusion of thinking that the earth is flat.

(26) Steve made the mistake of bowling a full toss.

Here, we have antecedents for that delusion and that mistake. I think, then, that sentences like (19), (20), (23) and (24) provide some additional support for my account of that way.¹

I have argued, then, that so can derive from in that way. I want now to suggest that it can also derive from a simple extent phrase.

* * * * *

1. Since people often disagree about the facts, sentences involving this kind of inference will often be acceptable for some people, but not for others. (1) is acceptable for me, but not, I assume, for others.

(1) Steve thinks Callaghan is a socialist, and Sam suffers from that delusion too.

No doubt, there are also those for whom (23) is unacceptable.

The clearest evidence comes from sentences like (27).

(27) Jim is so tall.

With an appropriate gesture, (27) specifies John's height. It can be paraphrased as (28).

(28) Jim is tall to this extent.

It is natural, then, to suggest that it derives from something like (28). It can be derived from such a source through the rule of extent phrase fronting, proposed in the last chapter. We should note that this so is fairly restricted. It appears that it cannot be used anaphorically. To me at least, (29) is unacceptable.

(29) * Jim is six foot tall, and Steve is so tall too.

It becomes acceptable if so is replaced by that. In (27), it should be noted, so can be replaced by this. Recall now that we have questions like (30).

(30) How tall is Jim?

The obvious source for how in such sentences is to what extent. It seems, then, that both so and how can involve an underlying way or an underlying extent.

I think it is reasonable to suggest that so also derives from a simple extent phrase in sentences like the following.

(31) He was hurrying so.

(32) It so reflects on his honour that he is unable to continue
in office.

There is a complication here, however. These sentences do not so much specify an extent as indicate that a certain extent was remarkable. In Bolinger's terms, they are 'intensifying' rather than 'identifying'. How this should be accounted for is not at all clear. It is possible that it is a matter of conversational implicature, in the sense of

Grice (1975), but this is by no means certain. We should also note that these sentences lack corresponding how questions. In the following how can only mean in what way.

(33) How does it reflect on his honour?

(34) How was he hurrying?

In spite of these points, I think it is reasonable to suggest that so derives from to the extent or to that extent in sentences like (31) and (32).

It should be clear that the analysis I have proposed for (27) relates it in a quite natural way to equative sentences like (35).

(35) Jim is as tall as Steve.

While so in (27) derives from a simple extent phrase, as...as Steve in (35) derives from a complex extent phrase. One might think that so always derives from a simple extent phrase. This is not the case, however. Notice that we have sentences like (36).

(36) Jim is not so tall as Steve.

Here, the equative follows a negative. It seems that both as and so are possible in this context. It seems, then, that so can derive from both a simple and a complex extent phrase. One might think that this is also true of as, in view of sentences like (37).

(37) Jim is six foot, and Steve is as tall.

I think, however, that as tall derives from as tall as Jim. Notice that too is impossible here.

(38) * Jim is six foot, and Steve is as tall too.

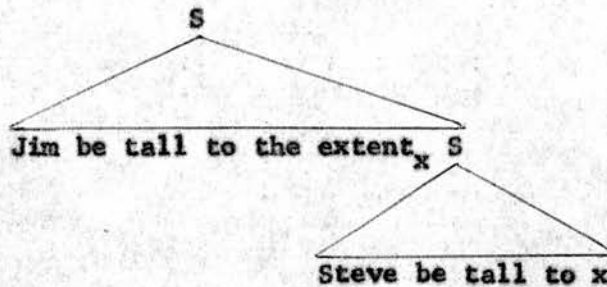
It is possible, however, in (39), where that derives from a simple extent phrase.

(39) Jim is six foot, and Steve is that tall too.

I conclude, then, that as can only derive from a complex extent phrase.

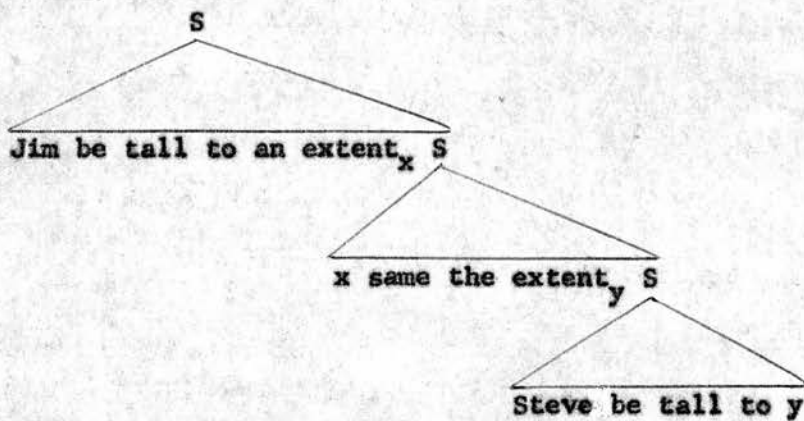
I want now to argue against a quite plausible alternative to the analysis of equatives that I developed in the last chapter. On this analysis, (35) will derive from something like (40).

(40)



Notice, however, that (41), where same represents a predicate of identity is just as plausible semantically.

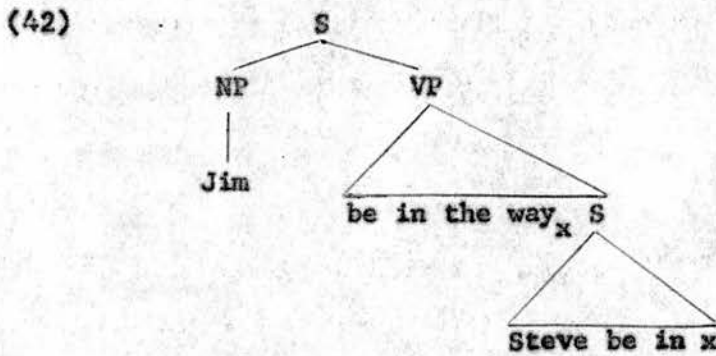
(41)



I assume that the derivation of (35) involves extent phrase fronting followed by the extraposition of the relative clause in the extent phrase. After these rules have applied to (40), tall is preceded by to the extent. On my analysis, then, it is this phrase that is realized as as. After these rules have applied to (41), tall will be preceded by to the same extent. On the alternative analysis, then, it is this that is realized as as. If we assume that so in (36) has the same source as as in (35), it will derive from the to the extent on my analysis, and from to the same extent on the alternative analysis. I have

suggested that so derives from to this extent in (27) and from to the extent or to that extent in (31) and (32). Given such an analysis, it is clearly preferable to derive it from to the extent in (36). For this reason, then, I think my analysis of equatives is preferable to one involving a predicate of identity.

We have seen now that simple way phrases and extent phrases can be realized as so. We have also seen that complex extent phrases can be realized as equatives. It is natural to ask what happens to complex way phrases. Consider, then, the following structure.



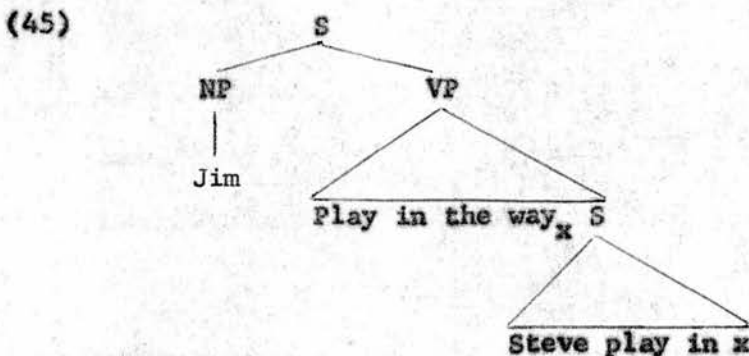
One realization of this, derived through relative deletion and the deletion of the two ins is (43).

(43) Jim is the way Steve is.

Another realization, I would suggest, is (44).

(44) Jim is as Steve is.

In addition to the rules involved in (43), this will involve the deletion of the way and the insertion of as. If (43) and (44) derive from (42), (46) and (47) will derive from (45).



(46) Jim played the way Steve played.

(47) Jim played as Steve played.

A similar proposal is made in Ross (1967).

I am suggesting, then, that adjectival and adverbial as clauses derive from complex way phrases just as equative as clauses derive from complex extent phrases. If this is so, one would expect the former to have the same form as the latter. This seems to be the case. The following illustrate.

(48) Jim is as angry { as his father used to be.
as Mary said.
as we predicted.
as we expected him to be. }

(49) Jim is { as his father used to be.
as Mary said.
as was predicted.
as we expected him to be. }

(50) Jim played { as his father used to play.
as Mary said.
as was predicted.
as we expected him to play. }

One would also expect them to be subject to the same restrictions. An important restriction on equative as clauses (and comparative than clauses) is that they cannot contain negatives or factive verbs. The following illustrate.

(51) * Jim was as angry as Steve wasn't.

(52) * Jim was as irritable as we regretted.

Adjectival and adverbial as clauses are also subject to this restriction, as the following show.

(53) * Jim was as Steve wasn't.

(54) * Jim was as we regretted.

(55) * Jim played as Steve didn't play.

(56) * Jim played as we regretted.

These parallels are what the present proposal leads us to expect. I think, then, that they provide significant support for the proposal.

I have suggested that the derivation of adjectival and adverbial as clauses involves the deletion of the way and the insertion of as. It is likely that the rule that deletes the way deletes other constituents as well. Notice that we have pairs of sentences like the following.

(57)a. Eve was angry when I talked to her.

b. Eve was angry at the time when I talked to her.

(58)a. Steve was where he said he would be.

b. Steve was in the place where he said he would be.

It is natural to suggest that the a. sentences derive from the b. sentences. It is likely, then, that the rule that deletes the way also deletes the time and the place. One difference between way on the one hand and time and place on the other should be noted. This is that a relative clause associated with way can only be introduced by as if way is deleted, whereas relative clauses associated with time and place can be introduced by when and where whether the head nouns are deleted or not. This restriction on as seems to reflect a general restriction that as can only appear in relative clauses which are no longer adjacent to their heads either as a result of movement rules or as a result of deletion.² Equative as clauses are relatives that have become separated from their heads, while adjectival and adverbial as clauses are relatives whose heads have been deleted.

- - - - -

2. This is a necessary condition, but not a sufficient one. Ordinary extraposed relatives cannot contain as, as (i) illustrates.

(i) * A girl came in as was wearing a long red dress.

I will return to adjectival and adverbial as clauses shortly. First, however, I want to take a look at such.

12.2. such

Like so, such plays an important role in anaphora. This is illustrated in a sentence like (1).

- (1) Mary is looking for a fat Italian, but she won't find such an Italian here.

Roughly speaking, such here is a pro-adjective with fat as its antecedent. It is fairly clear that such is related to so. A natural suggestion is that it is an attributive form of so. I will argue that this suggestion is essentially correct.

One linguist who has discussed such is Postal (1969). He suggests that such is introduced by a rule that substitutes it for the second occurrence of a relative clause. On this proposal (1) will derive from (2).

- (2) Mary is looking for an Italian who is fat, but she won't find an Italian who is fat here.

The proposed rule will substitute such for the second relative clause. This will then be preposed, and whiz deletion and adjective preposing will apply in the first clause to give a fat Italian. A simpler example will be (3).

- (3) Mary is looking for a man who knows the meaning of life, but she won't find such a man here.

Here the first relative clause remains intact after such has been introduced.

The obvious argument against Postal's proposal comes from the fact that such has a non-anaphoric use. It can have this use in (4).

(4) I hate such ostentation.

Obviously, this could appear in a discourse that provided it with an antecedent. It could also, however, be used in isolation by one of a number of people looking at a certain piece of ostentation. Clearly, non-anaphoric such cannot be the result of Postal's rule. Therefore, an advocate of his proposal must claim that there is a basic difference between anaphoric and non-anaphoric such. There is, however, no such difference. I think, then, that Postal's proposal is untenable.

A second type of non-anaphoric such is seen in sentences like the following:

(5) With such men as Bradman, the Australians were invincible.

(6) We need such a philosopher as Russell was.

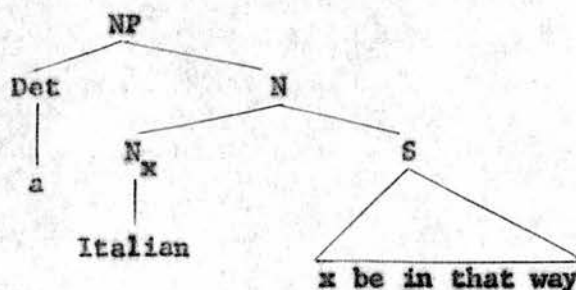
(7) Such a man as you describe was here yesterday.

Here, such is associated with an as phrase or an as clause. Obviously, Postal's proposal provides no account of such sentences. We will see shortly that we can provide a quite natural account of them.

As I have said earlier, I am going to argue that such is essentially an attributive form of so. I argued in the last section that so can derive from a simple way phrase and a simple or complex extent phrase. I am going to argue here that such can derive from a simple or complex way phrase and a simple or complex extent phrase. I will begin with cases where it derives from a way phrase.

We can consider firstly (1), (3) and (4). Here, we can derive such from a simple way phrase. In (1), for example, we can derive such an Italian from something like (8).

(8)



The derivation will be quite simple. Once whiz deletion has applied, in that way will be moved into prenominal position by adjective shift. A further rule will then move it into pre-determiner position. This may not be a new rule. Recall that I suggested earlier that the equative in an NP like (9) reaches pre-determiner position through two separate rules: one moving as, the other moving the adjective.

(9) as tall a girl as Helen

I think it is reasonable to assume that it is the first of these rules that moves in that way into pre-determiner position. It should be noted that this rule only applies when the determiner is a. The following illustrate.

(10) A number of philosophers have written books about

Wittgenstein. { One such
* Such one } philosopher is Anthony Kenny.

(11) Sam has bought a book about the Queen. { Many such
* Such many } books are on sale.

(12) There have been a number of reports of UFO sightings. { All such
* Such all } reports are being investigated.

In (1), then, such has a fairly simple derivation. It will have a similar derivation in (3) and (4).

In (1), we can infer an antecedent for that way in the same way as in the examples of the last section. (2) will presumably involve a different kind of inference. Here, we apparently need to assume that, for any underlying structure of the form in (13), there is an equivalent underlying structure of the form in (14).

(13) $X N_x (S \dots x \dots)_S Y$

(14) $X N_x (S^x \text{ be in the way } (S^{\dots x \dots})_S)_S Y$

In many cases, it is likely that the definite description underlying such should be regarded as non-anaphoric even though its interpretation depends on the preceding discourse. I suspect that this is the case in sentences like the following.

(15) Sam stole the Crown Jewels. Such audacity is amazing.

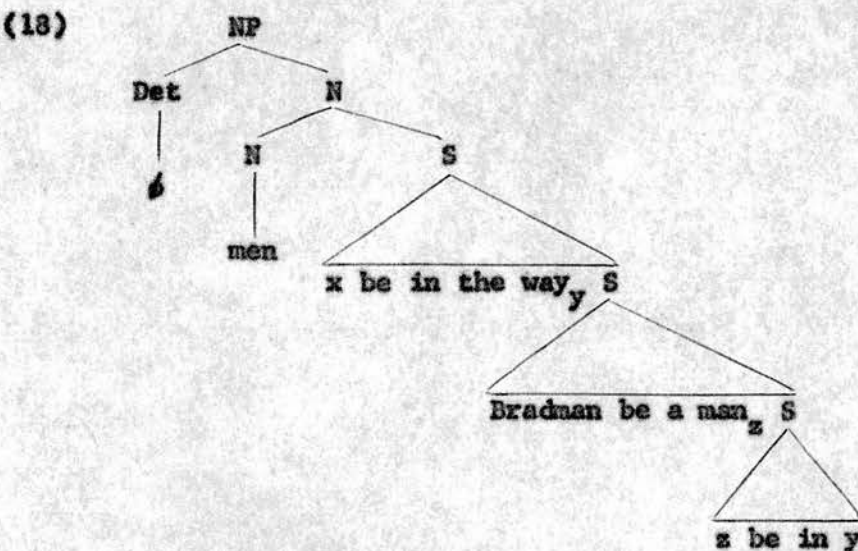
(16) Sam can't keep his mouth shut. Such men are dangerous.

These might be compared to sentences like (17).

(17) When Sam was in France, he met the President.

Here, the referent of the President is determined by the preceding discourse. There is, however, no NP in the preceding discourse acting as antecedent. Nor is there any obvious sense in which an antecedent is inferred. (15) and (16) show incidentally that the meaning of the underlying element way includes that of the lexical item class.

I turn now to (5) - (7). Here, we can derive such from a complex way phrase. In (5), for example, we can derive such men as Bradman from something like (18).



The derivation will be just like that of such an Italian, except that

after the way phrase has been proposed the relative clause will be extraposed to be realized after considerable deletion as as Bradman. such a philosopher as Russell was in (6) and such a man as you describe in (7) will have similar derivations.

In passing, we should note that as clauses associated with such cannot contain either negatives or factive verbs. The following illustrate.

(19) * Jim is such a painter as Picasso wasn't.

(20) * Jim is such a man as we regretted.

In this, they are just like the adjectival and adverbial as clauses considered in the last section. Since they have the same source, this is only to be expected. We should also note that these as clauses conform to the generalization suggested earlier about the appearance of as. I suggested that as can only appear in relative clauses that are no longer adjacent to their heads as a result of movement or deletion. These as clauses, like equative as clauses, are relatives that have become separated from their heads as a result of movement.

I want now to consider cases where such derives from an extent phrase. We can begin with (21).

(21) Sam is such a fool.

Like some of the sentences considered in the last section, this is intensifying rather than identifying. We can compare it with (22), which is also intensifying.

(22) Sam is so foolish.

I have suggested that so derives from to the extent or to that extent in intensifying sentences. (22), then, will derive from something like (23).

(23) Sam is a fool to the extent.

To derive (21) from (24), we simply need to allow extent phrase fronting to move an extent phrase around a predicate nominal as well as around a predicate adjective. This seems a quite reasonable extension of the rule. It seems, then, that such can derive from a simple extent phrase. Notice now that we have sentences like (25).

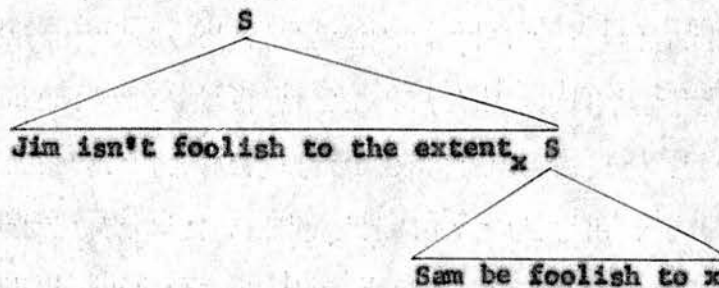
(25) Jim isn't such a fool as Sam.

Just as (21) compares with (22), (25) compares with (26).

(26) Jim isn't so foolish as Sam.

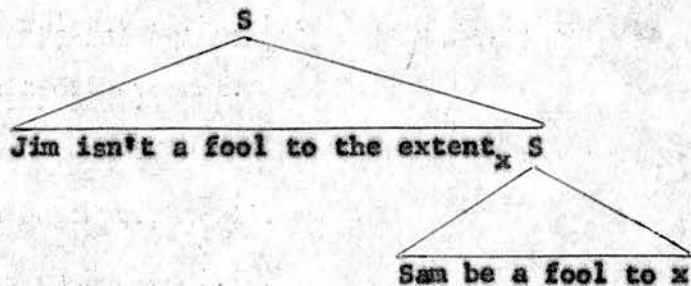
(26) will derive from something like (27).

(27)



It is natural, then, to derive (25) from something like (28).

(28)

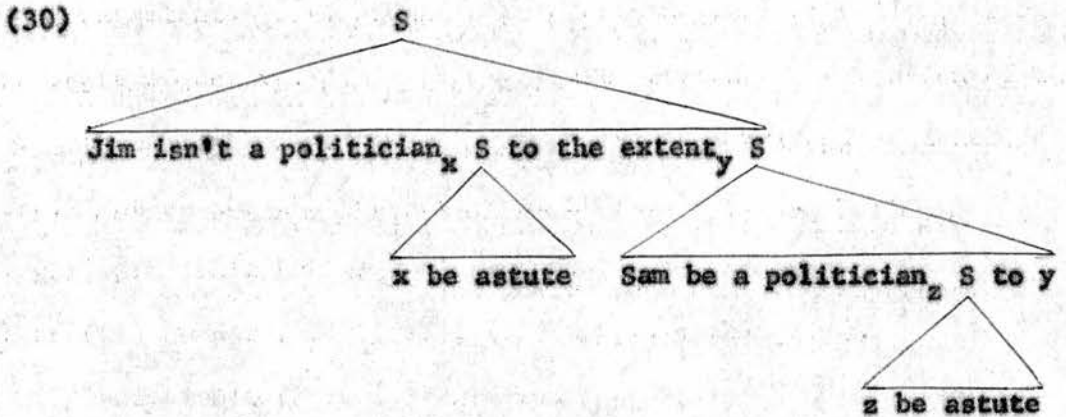


The two sentences will have parallel derivations, involving crucially extent phrase fronting and extraposition of the relative clause. It seems, then, that such can derive from both a simple and a complex extent phrase.

In (21) and (25), we have an extent phrase associated with a simple predicate nominal. Extent phrases can also be associated with complex predicate nominals. Consider, for example, (29).

(29) Jim isn't such an astute politician as Sam.

We can derive this from something like (30).



The derivation will be just like that of (25).

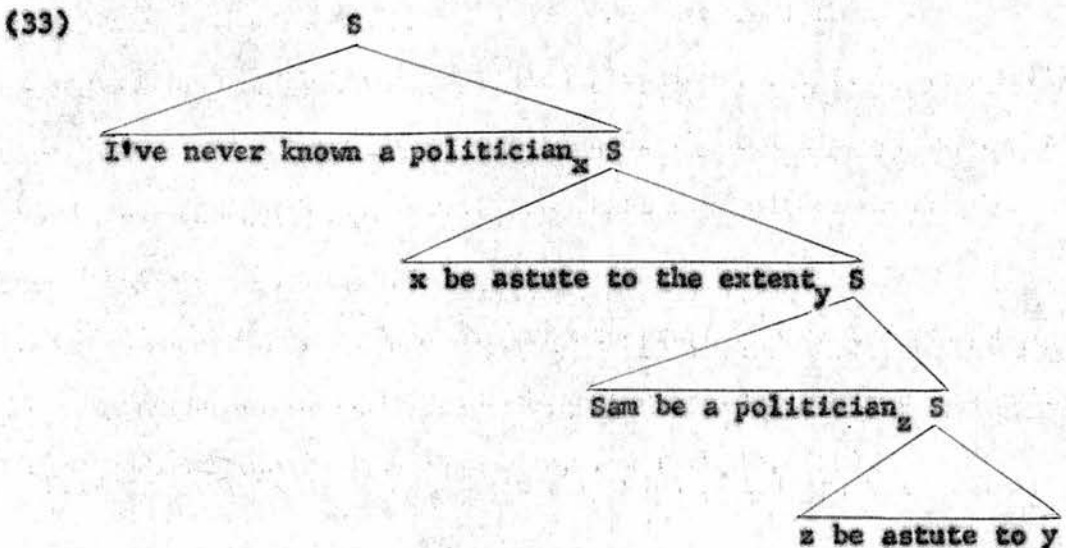
Notice now that we have sentences like (31).

(31) I've never known such an astute politician as Sam.

Here, we have not a predicate nominal, but an object NP. Semantically, (31) is quite different from (29). (29) is concerned with the extent to which Jim is an astute politician. (31), however, is not concerned with the extent to which I've known an astute politician. Rather, (31) is equivalent to (32).

(32) I've never known as astute a politician as Sam.

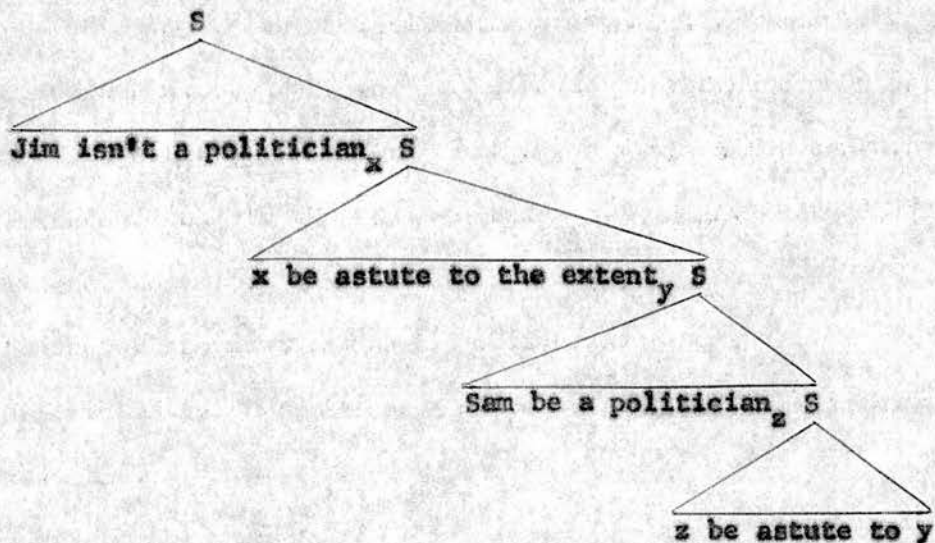
I want to suggest that it has the same source. (32) will derive from something like (33).



Central to the derivation of (32) is the shifting of as astute from post-determiner to pre-determiner position. I have suggested that this is accomplished by two rules: one moving as, the other moving the adjective. I want to suggest now that as is still to the extent when the first of these rules applies. Given such a formalization, we have two alternatives once the rule has applied. We can move the adjective after it, in which case to the extent is realized quite regularly as as, or we can leave the adjective where it is, in which case it is realized, again quite regularly, as such. I think, then, that we have a quite natural derivation for (31).

We should note now that, if (31) derives from (33), (29) will derive not only from (30), but also from (34).

(34)



(34) is the obvious source for (35).

(35) Jim isn't as astute a politician as Sam.

It is possible, however, that this will also derive from (30). Once extent phrase fronting and subsequent extraposition have applied to (30), we will have the following substring.

(36) to the extent a astute politician

As things stand, there is nothing to prevent the adjective being

'attracted' to to the extent. If it is, (36) will be realized as (37).

(37) as astute a politician

It seems, then, that both (29) and (35) may have two distinct derivations.

Just as (31) contrasts with (29), so (38) contrasts with (25).

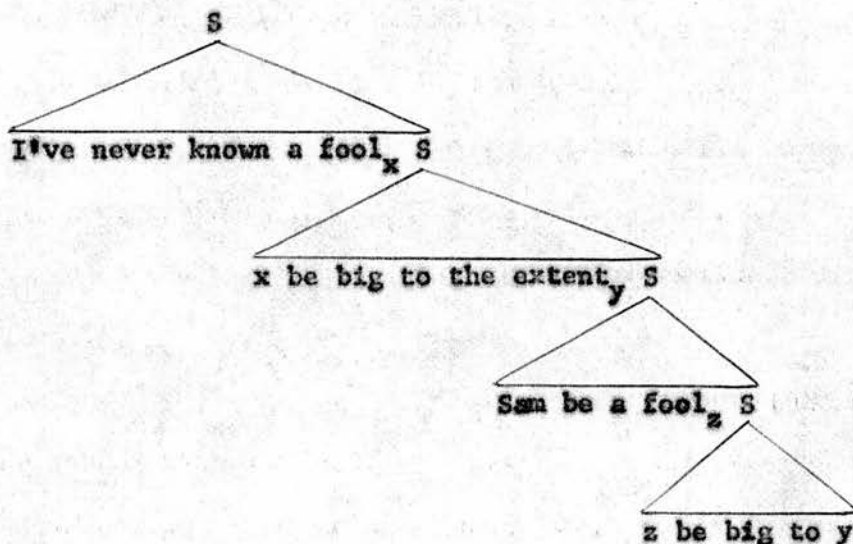
(38) I've never known such a fool as Sam.

Here, such a fool as Sam is an object NP, not a predicate nominal. It follows, then, that it cannot have the same source as in (25). It seems, though, that it cannot have the kind of source that I have suggested for such an astute politician as Sam in (31), because it contains no adjective. Notice, however, that (38) is roughly equivalent to (39).

(39) I've never known as big a fool as Sam.

A natural suggestion, then, is that (38) has the same source as (39), i.e. (40).

(40)



The two derivations will be the same up to the point when to the extent is moved into pre-determiner position. Then, while in (39) big is attracted to to the extent, in (38) it will be deleted. It seems, then, that we can suggest a fairly plausible derivation for (38).

While certain details might be questioned, I think it is fairly

clear that such can derive from a simple or complex way phrase and a simple or complex extent phrase. such is apparently the form taken by constituents that are otherwise realized as so, when they appear before an NP or an N. In this sense, then, it is an attributive form of so. A number of sentences appear to pose a problem for this generalization. Consider, for example, the following.

(41) With men such as Bradman, the Australians are invincible.

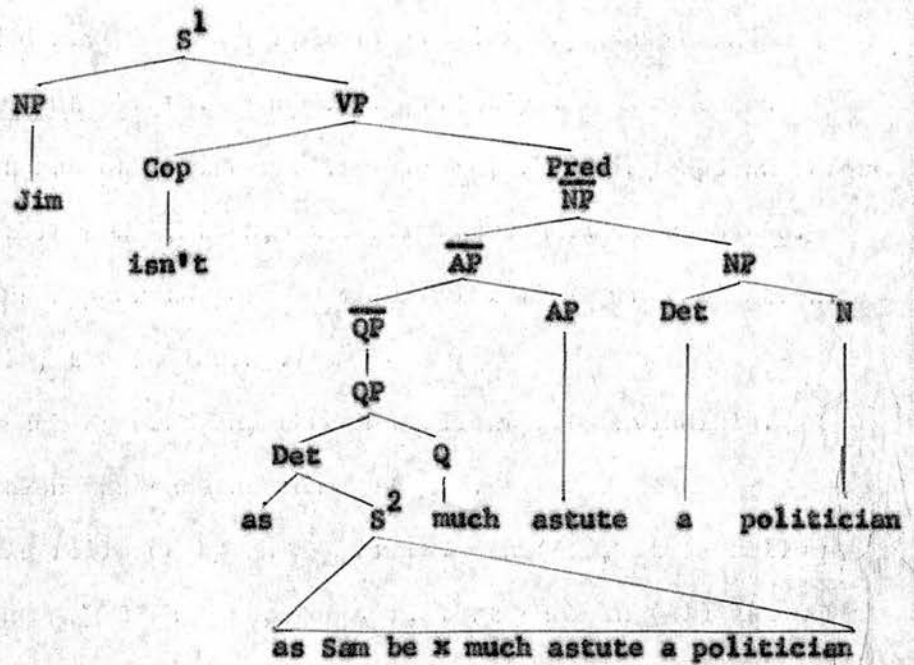
(42) The situation was such as you describe.

In (41), such is followed by an as phrase. In (42), it is followed by an as clause. One might suggest, however, that such in (41) is postposed from pre-NP position, and that such as you describe derives from such a one as you describe. I think it is likely, then, that the generalization can be maintained. If, however, a more complex characterization of the distribution of so and such proves necessary, this will not affect the rest of the analysis.

I want now to look at the analysis of such sketched in Bresnan (1973). As we have seen, Bresnan is primarily concerned with comparatives and equatives. This is reflected in her analysis of such. The analysis has some plausibility where such has an extent reading, but it is completely ad hoc where such has a way reading.

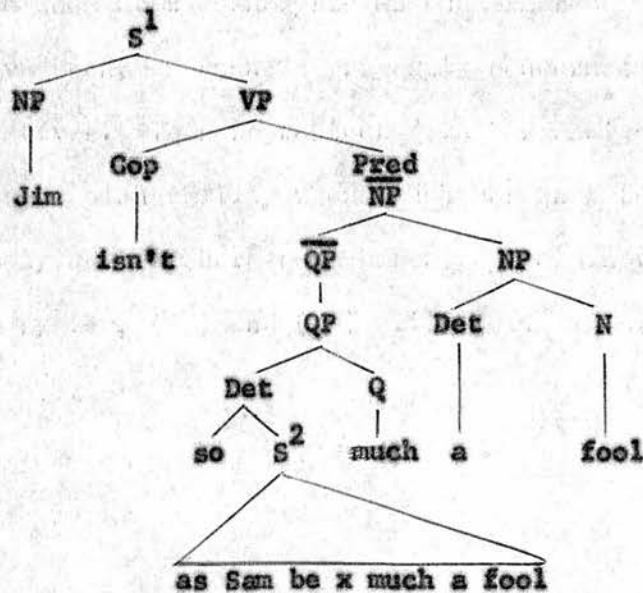
In Bresnan's system, (29) and (35) will derive from something like
(43)

(43)



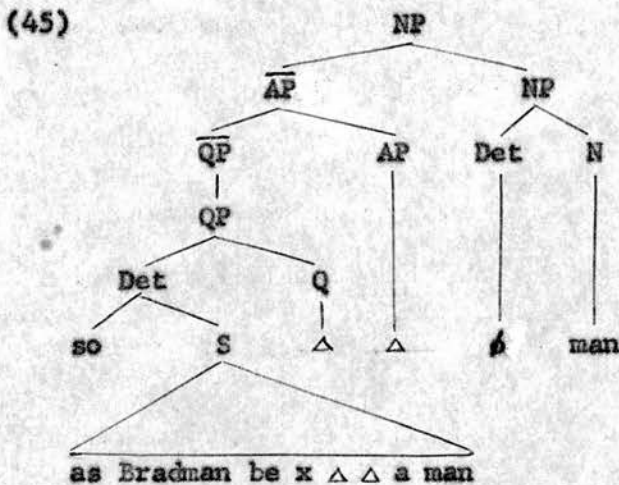
In both derivations, S^2 is extraposed and reduced, and in both much is deleted. These are the only rules of importance in the derivation of (35). In the derivation of (29), as is converted to so, astute is moved into post-determiner position, and so is realized as such. (25) will derive from something like (44) in Bresnan's system.

(44)



The derivation will simply involve the extraposition and reduction of S^2 , the deletion of much, and the realization of so as such. So far, then, Bresnan's analysis is fairly plausible.

We can now consider way such. Bresnan recognizes that it should be related to extent such, but she can only do this by allowing empty nodes that have no syntactic or semantic function. She would apparently derive such men as Bradman from something like (45).

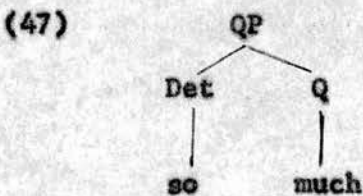


This analysis is quite ad hoc. The empty nodes have no independent motivation. Their only function is to relate the two such's. The fact that they can only be related in this way is a serious weakness.

It is perhaps worth noting that the same situation arises with so. In (46), we have extent so.

(46) He was hurrying so.

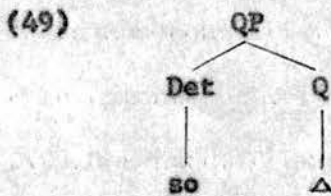
Bresnan would presumably derive this so from (47).



In (48) we have way so.

(48) You tie the ends together so.

The only way Bresnan can relate this so to extent so is by deriving it from (49).



Again, I think this is a serious weakness.

One important difference between such and so is that such has no corresponding question form in the way that so has how. The nearest thing to a question form of such is what kind of in questions like (50).

(50) What kind of girl is Eve?

what kind of is in fact the question form of that kind of. The latter, however, can often be substituted for such. (51), for example, is the result of replacing such by that kind of in (1).

(51) Mary is looking for a fat Italian, but she won't find that kind of Italian here.

For this reason, what kind of is rather like a question form of such.

Since that kind of is similar to such, it is worth taking a brief look at it. One might think that kind is similar to such nouns as group and number. Notice, however, that kind can be followed by a singular noun, whereas group and number can only be followed by plurals.

(52) that kind of Italian

(53) a group of { Italians }
 { * Italian }

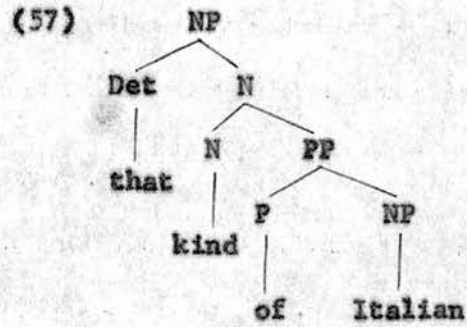
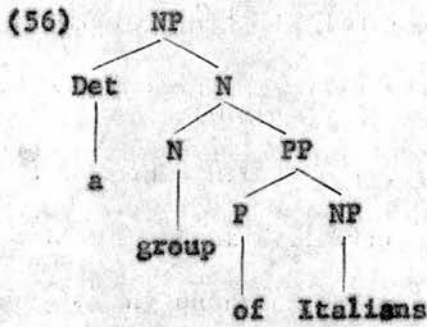
(54) a number of { Italians }
 { * Italian }

The noun following kind can be preceded by an indefinite article, as (55) illustrates.

(55) that kind of an Italian

It seems, then, that it is an ordinary singular noun. This suggests that, while a group of Italians might derive from (56), that kind of

Italian should not derive from (57).

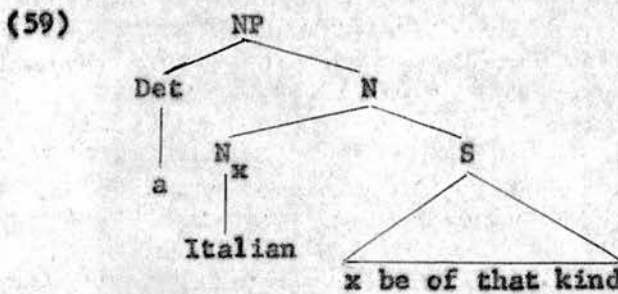


It seems, then, that we should look for an alternative source.

It is not too difficult to suggest an alternative source. Notice that that kind of Italian can be paraphrased as (58).

(58) an Italian of that kind

The obvious source for (58) is something like (59), which is similar to the source I proposed for such an Italian.



I think it is plausible to suggest that this is also the source of that kind of Italian. The derivation will be quite simple. Once whiz deletion has applied, adjective shift can move of that kind into post-determiner position. It can then be moved into pre-determiner position by the rule that moves to the extent and in that way into this position. All we need to give the correct surface form is a rule deleting the initial of, a rule inserting of after kind, and a rule optionally deleting a. This derivation relates that kind of and such in a natural way. I think, then, that this is a quite plausible proposal.

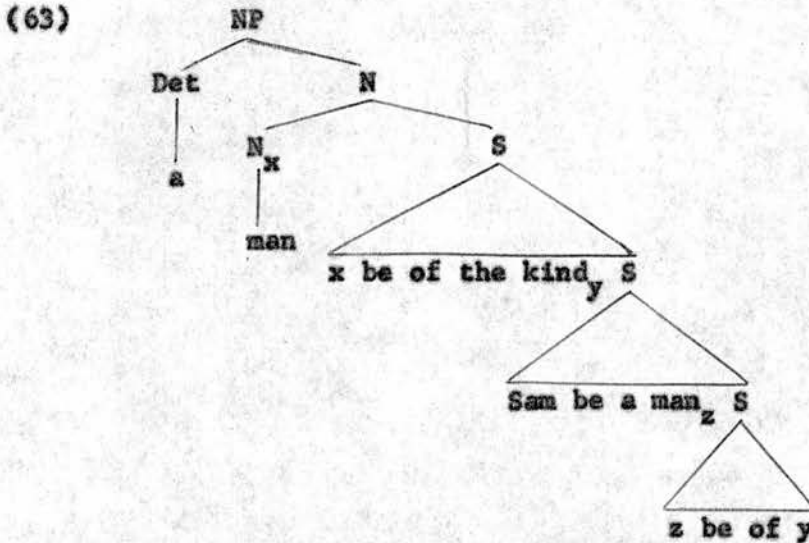
Further support for this proposal comes from sentences like the following.

(60) Steve isn't the kind of man that Sam was.

(61) This is the kind of animal that killed Uncle Arthur.

(62) The kind of animal that you describe will eat anything.

We can derive the kind of man that Sam was from something like (63).



The derivation will be just like that of that kind of Italian, except that, after the kind phrase has been preposed, the relative clause will be extraposed. It will thus be just like that proposed earlier for such men as Bradman. We can propose similar derivations for the kind of animal that killed Uncle Arthur and the kind of animal that you describe. I think, then, that this approach is quite promising.

There are a number of words that are similar to kind. Consider, for example, sort and type.

(64) that {sort
type} of Italian

(65) an Italian of that {sort
type}

(66) the {sort
type} of man that Sam was

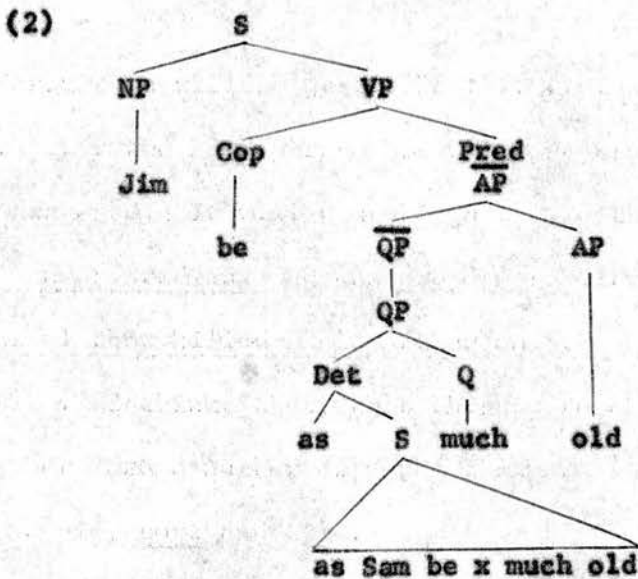
It seems, then, that a simple extension of the mechanisms required for such can account for the behaviour of a number of lexical items. This would seem to provide additional support for these mechanisms.

12.3. More on as Clauses

I want now to return to adjectival and adverbial as clauses. Firstly, I want to show that adjectival and adverbial as clauses present a further problem for the proposals of Bresnan (1973).

We have seen that the only way Bresnan can relate the two uses of such and so is through unmotivated empty nodes. We can now show that this is the only way she can relate adjectival and adverbial as clauses to equative as clauses. In Bresnan's system, as we have seen, a sentence like (1) will derive from something like (2).

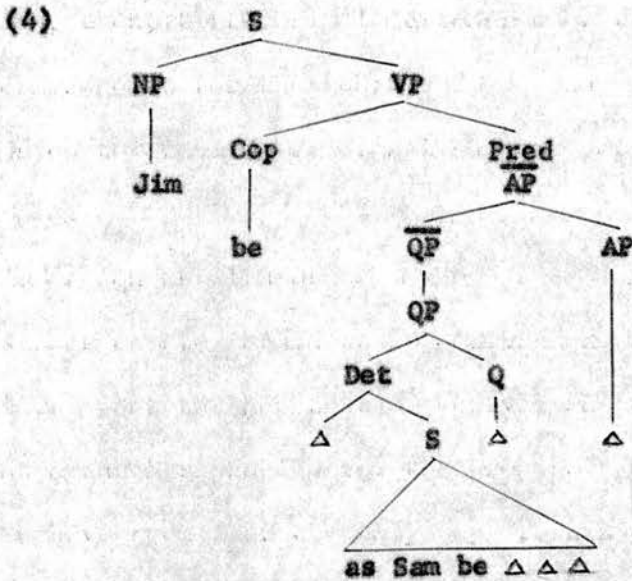
(1) Jim is as old as Sam.



What now of sentences like (3)?

(3) Jim is as Sam is.

Bresnan would have to derive this from something like (4).



Again, then, we have empty nodes without independent motivation. This is a further weakness in Bresnan's proposals.

I want now to note a difference between adjectival and adverbial as clauses on the one hand and equative as clauses and as clauses associated with such on the other. We know that the latter can be reduced to a single NP. This leads us to expect that the former can be also. It seems, however, that this is generally impossible with adjectival as clauses and only sometimes possible with adverbial as clauses. Neither (5) nor (6) is acceptable.

(5) * Jim is as Steve.

(6) * Jim played as Steve.

Notice, however, that both (7) and (8) are acceptable.

(7) Jim is like Steve.

(8) Jim played like Steve.

It is natural, then, to suggest that an adjectival or adverbial as clause is normally realized as a like phrase if it is reduced to a single NP.³ Certain ambiguities support the derivation of adjectival

- - - - -

3. A similar proposal is made in Ross (1967).

and adverbial like phrases from clauses. Notice firstly that (9) is ambiguous.

(9) Joan talked to Sue like a child.

It can mean either (10) or (11).

(10) Joan talked to Sue as a child would have talked to her.

(11) Joan talked to Sue as she would have talked to a child.

This ambiguity will be explained quite naturally if (9) can derive from the structures underlying (10) and (11). Thus, it supports the derivation of adverbial like phrases from clauses. Comparable evidence for deriving adjectival like phrases from clauses is less easy to find. Consider, however, (12).

(12) Easter was like last year.

This seems to be ambiguous between (13) and (14).

(13) Easter was as last year was.

(14) Easter was as it was last year.

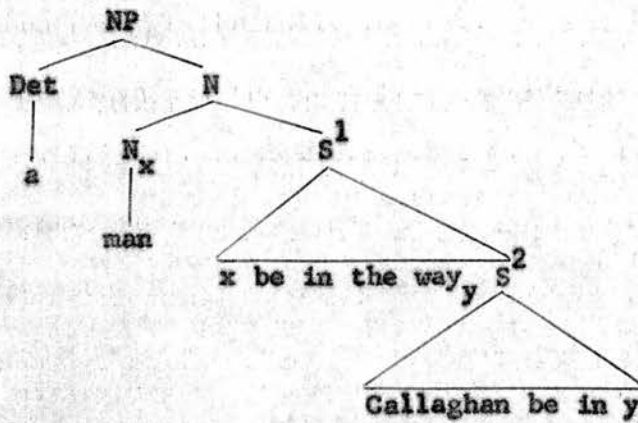
Clearly, we can explain this ambiguity by deriving (12) from the structures underlying (13) and (14). It seems, then, that it supports the derivation of adjectival like phrases from clauses. I think, then, that the derivation of adjectival and adverbial like phrases from clauses is quite plausible.

An important fact about like phrases is that they have an attributive use. We have NP's like (15).

(15) a man like Callaghan

Such NP's present no problems. We can derive (15) from something like (16).

(16)



The derivation will involve the deletion of the way, whiz deletion, and the reduction of S^2 to a single NP. S^2 must be reduced in this way. (17) is unacceptable.

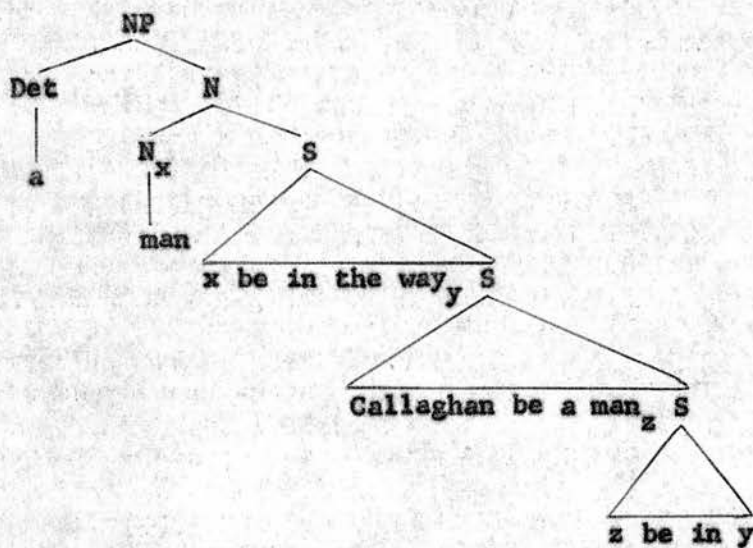
(17) * a man as Callaghan is

(15) is rather like (18).

(18) such a man as Callaghan

I assume, however, that this derives from something like (19).

(19)



(Compare the source suggested earlier for such men as Bradman.) (19), unlike (16), implies that Callaghan is a man. It is easy to show that this is correct. Notice that, while (20) is quite acceptable, (21) is deviant.

(20) a man like Thatcher

(21) * such a man as Thatcher

Thus, (15) and (18) differ in just the same way as NP's like (22) and (23).

(22) a man as tall as Sam

(23) as tall a man as Sam

Presumably, whatever constraint prevents the derivation of (23) from the structure underlying (22) will also prevent the derivation of (18) from (16).

I want to conclude this section by looking at a type of as clause that I have not yet considered. It is illustrated in sentences like the following.

(24) Carl is reading Dickens, as Jim thought.

(25) Wayne has escaped, as was reported.

(26) Marsha is a witch, as we suspected.

These as clauses say something about the sentences to which they are attached. One might think that they are non-restrictive relatives. I want to suggest, however, that they are ordinary adjectival as clauses.

Notice that (24) - (26) can be paraphrased by (27) - (29), where we clearly have ordinary adjectival as clauses.

(27) Carl is reading Dickens. It is as Jim thought.

(28) Wayne has escaped. It is as was reported.

(29) Marsha is a witch. It is as we suspected.

I want to suggest that (24) - (26) derive from the structures underlying (27) - (29). Their derivations will require no new rules. The rules that produce non-restrictive relatives will convert (27) - (29) into (30) - (32).

(30) Carl is reading Dickens, which is as Jim thought.

(31) Wayne has escaped, which is as was reported.

(32) Marsha is a witch, which is as we suspected.

Then, we need only apply whiz deletion to arrive at (24) - (26). Thus,

this is a quite simple proposal.

Apart from simplicity, this proposal has the advantage that it can explain the unacceptability of sentences like the following.

(33) * Joan is a martian, as we didn't suspect.

(34) * Sue has gone home, as is odd.

The unacceptability of (33) follows from the fact that negatives are impossible in adjectival as clauses, while the unacceptability of (34) follows from the fact that factive verbs are impossible in such clauses. Notice that neither negatives nor factives are impossible in non-restrictive relatives. The following are quite acceptable.

(35) Joan is a martian, which we didn't suspect.

(36) Sue has gone home, which is odd.

I think, then, that there are good reasons for regarding the as clauses in sentences like (24) - (26) as ordinary adjectival as clauses and not as non-restrictive relatives.

12.4. like that

I want now to consider the role of the phrase like that in adjectival and adverbial anaphora. It plays quite a considerable role, as the following illustrate.

(1) Eve is neurotic, and she's been like that for weeks.

(2) Sam polished the brass meticulously, and he'd do it like that again.

(3) Mary is looking for a man with a big bank account, but she won't find a man like that here.

In (1) and (2), like that can be replaced by so. In (3), it can be replaced by such. I want to suggest that it has the same source as

so and such. In other words, I want to suggest that it is an idiomatic realization of in that way.

The idiomatic character of like that is perhaps not immediately apparent. It is not an obvious idiom like kick the bucket or spill the beans. I think, however, that a little reflection on (1) - (3) reveals its idiomatic nature. Consider firstly (1). Does this really say that Eve is like something? The answer is surely no. Consider also (2). Does this say that Sam would polish the brass like something? Again, I think, the answer is no. Finally (3). Does this refer to a man who is like something? It is clear, I think, that it does not. Intuitively, then, it seems fairly clear that like that is an idiom.

I want now to show that like that has two of the characteristic properties of idioms. It is well known firstly that idiomatic expressions cannot be paraphrased in the same way as non-idiomatic expressions. Notice that, while (4) has both an idiomatic and a literal reading, (5) has only a literal reading.

(4) Steve kicked the bucket.

(5) Steve kicked the pail.

Thus, we cannot replace the bucket by the pail when it is part of the idiom kick the bucket. The situation is similar with like that. We know that ordinary like phrases can be paraphrased by an as clause. Thus, if like that in (1) - (3) were an ordinary like phrase, one would expect the following paraphrases to be possible.

(6) * Eve is neurotic, and she's been as that is for weeks.

(7) * Sam polished the brass meticulously, and he'd do it as that is again.

(8) * Mary is looking for a man with a big bank account, but she won't find a man who is as that is here.

As I have indicated, all three seem unacceptable to me. Here, then, like that is like more obvious idioms.

It is also well known that idioms have restricted transformational potential. kick the bucket, for example, cannot undergo tough movement or topicalization. Neither of the following has an idiomatic reading.

(9) The bucket is easy to kick.

(10) The bucket, Steve kicked.

like that is again similar. Neither tough movement nor topicalization can apply when it has an idiomatic reading. The following illustrate.

(11) * Eve is always confident. That's hard to be like.

(12) * Eve is always confident. That, Joe will never be like.

(13) * Sam pruned the roses carefully. That's hard to do it like.

(14) * Sam pruned the roses carefully. That, Joe will never do it like.

Both rules, however, give fairly acceptable results when like that has a literal reading.

(15) Eve is like an armadillo. That's hard to be like.

(16) Eve is like an armadillo. That, Joe will never be like.

(17) Sam walks like a gorilla. That's hard to walk like.

(18) Sam walks like a gorilla. That, Joe will never walk like.

Again, then, like that is like more obvious idioms.

I think it is fairly clear that like that is an idiom. It is not an obvious idiom, however. Its idiomatic meaning is quite similar to its literal meaning. Thus, there are situations where it does not much matter whether like that is understood idiomatically or literally. Consider, for example, the following, said by one of a number of people watching a particularly fine piece of batting in a cricket match.

(19) I wish I could bat like that.

It is fairly clear that we can replace like that by that way. It is fairly clear that we can replace like that by that way. It is clear, then, that it can be understood idiomatically. We can also, however, interpret like that as 'like the batting we're watching'. It seems, then, that it can be understood literally as well. Consider also (20), said in the same circumstances as (19).

(20) I admire batting like that.

If like that can derive from in that way in (19), it can presumably do so here. Again, however, we can interpret like that literally as 'like the batting we're watching'. In both (19) and (20), then, it seems not to matter whether like that is understood idiomatically or literally. It seems reasonable to suppose that the idiomatic use of like that owes its existence to sentences like these.

I have argued that like that is an idiomatic realization of in that way. I want now to suggest that what...like is an idiomatic realization of in what way. Consider the following question.

(21) What was Paris like?

One could answer this with a sentence like (22).

(22) Paris was like a lunatic asylum.

One could also, however, answer it with a sentence like (23).

(23) Paris was boring.

In the first case, the question has its literal meaning. In the second, it has the same meaning as (24).

(24) How was Paris?

In this case, then, what...like is an idiomatic realization of in what way.

Two important points must be made about the idiomatic use of what...like. Firstly, it seems that it is only possible in adjectival questions. Consider the following question.

(25) What did Sam talk like?

(26) would be an appropriate answer for this.

(26) Sam talked like a robot.

(27), however, would not be an appropriate answer.

(27) Sam talked pedantically.

This is an appropriate answer for (28).

(28) How did Sam talk?

It seems, then, that only how can be used to question an adverb. what...like cannot be used for this purpose.

The second point is that there are circumstances when only what...like can be used to question an adjective. Notice that, while (29) is quite acceptable, (30) is rather odd.

(29) What was Paris like in the 14th century?

(30) ? How was Paris in the 14th century?

The explanation, I think, is that an adjectival question involving how requires an answer based on personal experience. Thus, in the absence of time machines, (30) requires the impossible. what...like must be used in adjectival questions when there is no requirement of personal experience. There is a sense, then, in which what...like is the normal realization of in what way in adjectival questions. Unlike how, it involves no special presupposition. It is thus a rather unusual idiom.

correct; observe How did you find Paris? a - loving
b - caring.

12.5. then and there

We have seen that one can 'refer back' to an adjective or a manner adverb with so. I have argued that so is a realization of in that way. I have suggested that such is an attributive form of so. I have also suggested that a complex way phrase is realized as an as clause or as such plus an as clause or phrase. Finally, I have suggested that like that is an idiomatic realization of in that way. It is clear that so is involved in a complex web of relations. I want now to take a brief look at two words that are somewhat like so, but which do not involve the same complexities. These are then and there.

It is fairly clear that then and there allow us to refer back to adverbs of time and space, respectively. The following illustrate.

- (1) Alaric was born in 1950, and Clovis was born then too.
- (2) Sam escaped last night, and Mary escaped then too.
- (3) Joan is in Provence, and Jim is there too.
- (4) Dick went to Naples, and Herb went there too.

We can derive then and there from at that time and in that place in the same way as we have derived so from in that way.⁴ A number of differences should be noted, however. Notice firstly that that time and that place have straightforward antecedents. In (1) and (2), the antecedents of that time are 1950 and last night. In (3) and (4), the antecedents of that place are Provence and Naples. Here, then, there is no need to invoke processes of inference. Another difference is

- - - - -

4. The obvious alternative to this approach is one in which then and there derive from copies of their antecedents. I reject such an approach for the same reason as I reject the derivation of anaphoric so and such from copies of their antecedents.

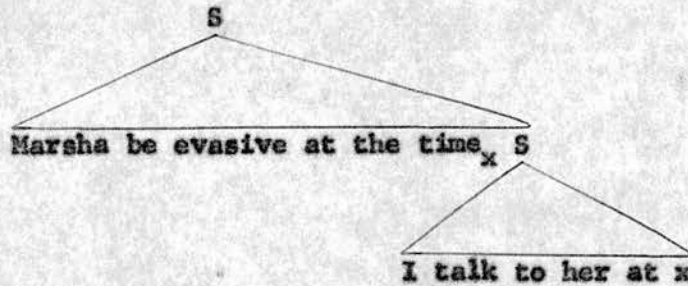
that then and there can appear wherever that time and that place can, whereas so is restricted to various kinds of indefinite context. A further, related difference is that then and there have no idiomatic equivalents in the way that so has like that. A final difference is that then and there have no attributive forms.

One way in which then and there are like so is that they have related constructions derived from complex definite descriptions. As we have seen, it is natural to suggest that when clauses and where clauses derive from complex time and place phrases in the same way as as clauses derive from complex way phrases. We can, for example, derive (5) and (6) from (7) and (8), respectively.

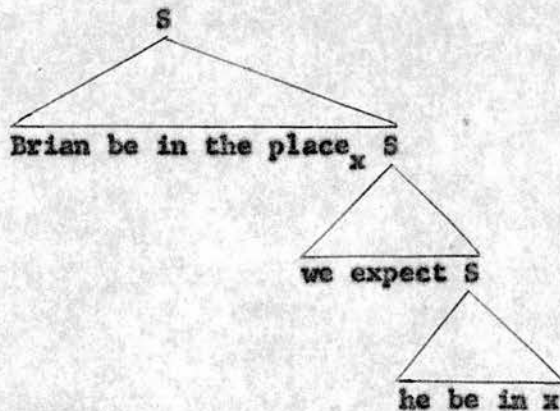
(5) Marsha was evasive when I talked to her.

(6) Brian was where we expected him to be.

(7)



(8)



The derivations will simply involve relative clause formation and the deletion of the time in (5) and the place in (6). Here, then, we have an important similarity between then and there and so.

It is fairly clear, I think, that then and there are rather less complex than so. There are, however, some basic similarities. I think that these are captured quite naturally in the present analysis.

12.6. An Idiosyncrasy

I want to conclude this chapter by drawing attention to a rather puzzling phenomenon. This phenomenon is associated with NP's containing equatives, like phrases, or such and an as phrase. I am concerned, then, with NP's like the following.

- (1) as dangerous a bowler as Lillee
- (2) a philosopher like Feuerbach
- (3) such men as Lenin
- (4) men such as Lenin

I will show that such NP's exhibit a surprising property. Unfortunately, I can offer no real explanation for this property.

The NP's that I am concerned with are indefinite NP's involving complex nouns which contain a definite NP. On the face of it, they are ordinary indefinite NP's. I will show, however, that they can be understood differently from ordinary indefinite NP's. I want to look first at cases where both the indefinite NP and the definite NP it contains are singular. We can begin, then, with (1). Notice firstly that the complex noun in (1) denotes the following set.

- (5) $\{x: x \text{ is a bowler} \wedge x \text{ is as dangerous as Lillee}\}$

Consider now the following sentence.

- (6) England needs as dangerous a bowler as Lillee.

This means that England needs a member of (5). Here, then, (1) is interpreted quite normally. Consider now (7).

- (7) With as dangerous a bowler as Lillee, the Australians take some beating.

This ought to mean that the Australians take some beating because they have a bowler who is as dangerous as Lillee. In fact, however, it means that they take some beating because they have Lillee himself. Here, then, (1) does not have its normal interpretation. Rather, it is an indirect way of referring to Lillee. (2) behaves in just the same way. The complex noun denotes the following set.

(8) $\{x: x \text{ is a philosopher} \wedge x \text{ is like Feuerbach}\}$

In (9), (2) is interpreted normally.

(9) The university needs a philosopher like Feuerbach.

This means that the university needs a member of (8). (10), however, is like (7).

(10) With a philosopher like Feuerbach, anything is possible.

On the most natural interpretation, this means that anything is possible with Feuerbach. Here, then, (2) does not have its normal interpretation. Instead, it is an indirect way of referring to Feuerbach. With NP's containing such and an as phrase, the situation is somewhat different. Here, an 'abnormal' interpretation seems to be generally preferred. For me, an abnormal interpretation is most natural in both (11) and (12).

(11) The university needs $\left\{ \begin{array}{l} \text{such a philosopher} \\ \text{a philosopher such} \end{array} \right\}$ as Feuerbach.

(12) With $\left\{ \begin{array}{l} \text{such a philosopher} \\ \text{a philosopher such} \end{array} \right\}$ as Feuerbach, anything is possible.

We can now consider cases where the indefinite NP is plural and the definite NP it contains singular. We can begin with (13).

(13) batsmen as brilliant as Richards

In (14), this has a normal interpretation.

(14) England needs batsmen as brilliant as Richards.

In (15), however, it has an abnormal interpretation.

- (15) With batsmen as brilliant as Richards, the West Indians take some beating.

This does not mean that the West Indians take some beating because they have certain batsmen who are as brilliant as Richards. It means that they take some beating because they have Richards and other similar batsmen. Here, then, (13) is an indirect way of referring to a set containing Richards. The situation is the same with like phrases. We can consider (16).

- (16) journalists like Levin

In (17), this has a normal interpretation.

- (17) Socialist Worker needs journalists like Levin.

In (18), however, it has an abnormal interpretation.

(18) With journalists like Levin, the Times is a laugh a minute. This means that the Times is a laugh a minute because of Levin and other similar journalists. Here, then, (16) is an indirect way of referring to a set containing Levin. Again, NP's containing such and an as phrase are somewhat different. For me, both (19) and (20) have abnormal interpretations.

- (19) We need $\left\{ \begin{array}{l} \text{such men} \\ \text{men such} \end{array} \right\}$ as Lenin.

- (20) With $\left\{ \begin{array}{l} \text{such men} \\ \text{men such} \end{array} \right\}$ as Lenin, anything is possible.

We can turn now to cases where both the indefinite NP and the definite NP it contains are plural. Consider firstly (21).

- (21) England needs backs as brilliant as Edwards and Bennett.

Here, the NP has a normal interpretation. In (22), however, it has an abnormal interpretation.

(22) With backs as brilliant as Edwards and Bennett, the Welsh take some beating.

This means that the Welsh take some beating because they have Edwards and Bennett and other similar backs. Here, then, the NP is an indirect way of referring to a set containing Edwards and Bennett. Again, the situation is the same with like phrases. Consider (23).

(23) We need batsmen like Richards and Greenidge.

Here, the NP has a normal interpretation. In (24), however, it has an abnormal interpretation.

(24) With batsmen like Richards and Greenidge, the West Indians take some beating.

This means that the West Indians take some beating because they have Richards and Greenidge and other similar batsmen. The NP is thus an indirect way of referring to a set containing Richards and Greenidge. Again, NP's containing such and an as phrase are different. Both (25) and (26) seem to have abnormal interpretations.

(25) We need { such batsmen } as Richards and Greenidge.
 { batsmen such }

(26) With { such batsmen } as Richards and Greenidge, the West
 { batsmen such } Indians take some beating.

I must now consider cases where the indefinite NP is singular and the definite NP it contains is plural. It seems that such NP's can only have a normal interpretation. It is because of this that the following are rather dubious.

(27) ? With a bowler as dangerous as Lillee and Thomson, the Australians take some beating.

(28) ? With a philosopher like Locke and Berkeley, anything is possible.

In both cases, we have an NP that can only have a normal interpretation in a context that favours an abnormal interpretation. It is not too surprising that these NP's cannot have an abnormal interpretation. Since they are singular NP's, it is fairly natural that they cannot be indirect ways of referring to sets.

I have shown that NP's like (1) - (4) have both a normal and an abnormal interpretation. On the abnormal interpretation, they function as indirect ways of referring either to the referent of the definite NP they contain or to a set containing the referent of the definite NP. I have no explanation for the abnormal interpretation of these NP's. One point is worth noting, however. This is that in all these NP's the referent of the definite NP is contained in the extension of the complex noun. There are three possibilities. Firstly, both the noun and the definite NP may be singular. In this case, the noun denotes a set and the definite NP refers to a member of the set. Secondly, the noun may be plural and the definite NP singular. In this case, the noun denotes a set of sets and the definite NP refers to a member of certain of these sets. Thirdly, both the noun and the definite NP may be plural. In this case, the noun denotes a set of sets and the definite NP refers to one of the sets. It looks, then, as if we can say that an indefinite NP involving a complex noun that contains a definite NP can have an abnormal interpretation if the referent of the definite NP is contained in the extension of the complex noun. It seems, however, that this is not a sufficient condition. (29) cannot have an abnormal interpretation.

(29) a philosopher similar to Feuerbach

The complex noun denotes the following set.

(30) $\{x: x \text{ is a philosopher} \wedge x \text{ is similar to Feuerbach}\}$

Obviously, Feuerbach is a member of this set. The condition, then, is only a necessary one.

CHAPTER 13
PROSENTENTIAL so

A number of linguists have noted that so functions as a prosentence in examples like the following.

(1) Is it raining? I believe so.

In this chapter, I will consider this use of so. An investigation of it will take us into some highly complex questions. I cannot claim to have resolved all these questions. I think, however, that the analysis I will outline contains some of the elements of a correct solution. In any event, it seems more promising than the main alternatives.

13.1. Preliminary Observations

Various linguists have assumed that prosentential so derives from a copy of its antecedent. Ross (1972), for example, assumes that it is introduced by the following rule.

$$(1) \quad X - S - Y - S - Z$$

$$\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \implies$$

$$1 \left\{ \begin{array}{c} 2 \\ so \end{array} \right\} 3 \left\{ \begin{array}{c} so \\ 4 \end{array} \right\} 5$$

If one assumes that other anaphors derive from copies of their antecedents, it is natural to assume that so does also. I have argued, however, that anaphors do not generally derive from copies of their antecedents. Of the anaphors I have considered, only intensional pronouns have such a source. This suggests that it is unlikely that so is introduced by a rule like (1). I have argued against the view that various anaphors derive from copies of their antecedents by showing that they have

non-anaphoric uses. It seems that pro-sentential so does not have a non-anaphoric use. Here, then, we cannot use the standard argument. Nevertheless, the fact that anaphors do not generally derive from copies of their antecedents suggests that it is unlikely that pro-sentential so does.

Quite apart from this question, an approach like Ross's faces problems with the distribution of pro-sentential so. As Hankamer and Sag (1976) point out, it cannot appear in subject position.

(2) * So is widely believed.

(3) * So is easy to believe.

As they also note, it is impossible as a raised object.

(4) * We thought so to be widely believed.

(5) * We thought so to be easy to believe.

A proponent of an approach like Ross's might suggest that there is a constraint preventing (1) from applying to a sentence that either is or has been a subject. Such a constraint will ensure the correct results. Thus, this approach can describe the distribution of pro-sentential so. It does not explain it, however. It simply treats it as a brute fact. Clearly, it is desirable to look for an explanation.

What an approach like Ross's misses is that pro-sentential so has the same distribution as an adverb. Adverbs can appear in three different positions. Most obviously, they can appear in VP-final position. (6) shows that pro-sentential so can appear in this position.

(6) I believe so.

They can also appear in sentence-initial and pre-verbal positions. so, too, can appear in these positions, although it is quite restricted in the latter. The following illustrate.

(7) So I believe.

(8) So saying, Sam rode off into the sunset.

In (2) - (5), so is not in the position of an adverb. Thus, these sentences are unacceptable. The obvious conclusion from these observations is that presentential so is an adverb.

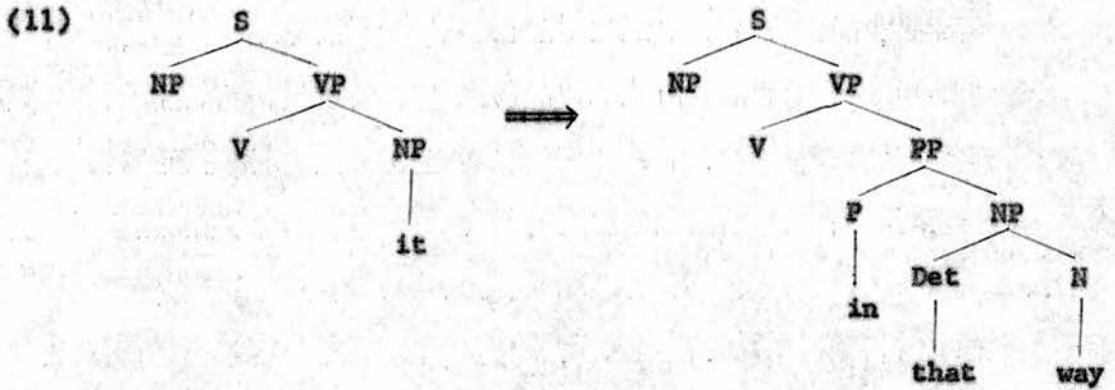
If presentential so is an adverb, it is natural to assume, with Bolinger (1972), that it is the adverb considered in the last chapter. There are problems with this suggestion, however. To suggest that presentential so is the adverb considered in the last chapter is to suggest that it derives from in that way. There is no direct evidence for such a source, however. It is not generally possible to replace presentential so with in that way or that way. Nor is there any obvious indirect evidence. I have suggested that how derives from in what way and that adverbial as clauses derive from complex way phrases. If these were possible where presentential so is possible, it would suggest that the latter derives from in that way. They are not generally possible, however, as the following show.

(9) * How do you believe.

(10) * I believe as Sam believes.

Thus, while it seems natural to identify presentential so with the adverb considered in the last chapter, a number of facts argue against such an identification.

I want to suggest that the solution to this problem is to recognize presentential so as an idiom. Tentatively, I want to suggest that there is a precyclic rule defining the following mapping.

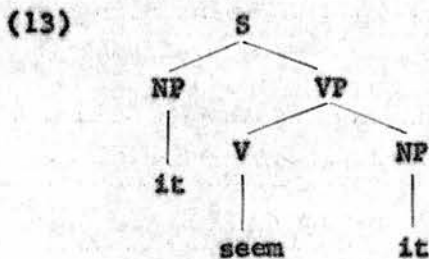


The way phrase that is introduced by this rule will be realized obligatorily as so. Otherwise, the transformational component will treat it just like a way phrase that is present in underlying structure. There will be no question of either passive or ~~ough~~ movement moving it into subject position. There will be no possibility, then, of sentences like (2) - (5) being generated. The fact that (9) and (10) are unacceptable is a quite straightforward matter on this account. The only way that such sentences could be generated would be through additional rules like (11). I would suggest that they are unacceptable because there are no such rules.

In passing, we can note that this approach provides some further support for the analysis of seem that I sketched in chapter 9. Notice that (12) is a perfectly acceptable sentence.

(12) It seems so.

If prosentential so has the source I am proposing, this will derive from something like (13).



Such a structure will be generated quite naturally if seem has the kind of analysis that I sketched earlier, but not if it has the traditional analysis. Here, then, we seem to have further support for my analysis.

I want now to compare this account of presentential so with the account of idioms developed in Newmeyer (1974). Central to Newmeyer's account is an 'idiom inventory'. This is a list of ordered pairs of semantic representations, the first member of each pair giving the actual meaning of some idiom, the second giving its literal meaning. The initial P-marker in the derivation of an idiom is the semantic representation that gives its literal meaning. The semantic representation that gives its actual meaning is not part of the derivation, although it constrains it in certain ways. For Newmeyer, then, (14) will have the same initial P-marker whether it has the idiomatic or the literal meaning.

(14) Zeno kicked the bucket.

In the former case, however, the initial P-marker is associated with a semantic representation giving the meaning 'Zeno died'. This association constrains the derivation in two ways. Firstly, it blocks certain transformations. For example, it blocks the passive transformation. (15) can only have the literal reading.

(15) The bucket was kicked by Zeno.

Secondly, it constrains lexical insertion. Most obviously, it requires the insertion of the lexical item bucket and blocks the insertion of the synonymous lexical item pail. (16), like (15), can only have the literal reading.

(16) Zeno kicked the pail.

This illustrates the main features of Newmeyer's account. One further point should be noted. This is that the second member of an entry in the idiom inventory will not always be a well-formed semantic representation. This is because there are idioms which have no literal meaning. Examples are happy go lucky, by and large, and to kingdom come.

It might seem that this account is quite different from that I have advanced. This is not the case, however. As we have seen, Newmeyer suggests that the initial P-marker in the derivation of an idiom is the semantic representation that gives its literal meaning. There is no reason, however, why we should not regard the semantic representation that gives the idiom's actual meaning as the initial P-marker. We can then interpret the idiom inventory as a special set of derivation initial transformations, and the constraints as ordinary global constraints. Some of the entries in the idiom inventory can be interpreted as rules that are very much like (11). As we have seen, there will be entries in the idiom inventory where the second member is not a well-formed semantic representation. Such entries can be interpreted as rules whose output is not generated independently. This is exactly the kind of rule that (11) is. Thus, Newmeyer's approach is quite similar to mine. I will return to this question in the section after next.

I think the account of prosentential so that I have sketched here is a quite promising one. I have only scratched the surface of the problems that arise in connection with prosentential so. I think, however, that the account I have sketched provides the basis for a deeper investigation of these questions.

13.2. so and it

The obvious question to consider next is when exactly the rule I have proposed applies. It is clear that it does not apply whenever the structural description is met. Obviously, it does not apply if the verb is one that does not take a complement. Also, however, it does not apply with many verbs that take complements. It does not apply for example, with regret. (1) illustrates.

(1) * Sam regretted that Mary had left, and Jim regretted so too. It seems, then, that the rule applies with a subset of complement-taking verbs. The question is: what subset?

Two linguists who have considered the distribution of prosentential so are Kiparsky and Kiparsky (1971). They claim that factive verbs can only take it, but that non-factive verbs can take both it and so. They cite the following data.

(2) John regretted that Bill had done it, and Mary regretted $\left\{ \begin{array}{l} \text{it} \\ *so \end{array} \right\}$ too.

(3) John supposed that Bill had done it, and Mary supposed $\left\{ \begin{array}{l} \text{it} \\ *so \end{array} \right\}$ too.

They seek to explain the distribution of it and so by reference to the underlying structure of factive and non-factive complements. They assume that factive and non-factive complements have the underlying structures (4) and (5), respectively.



They also assume that it is the result of pronominalization, and that so is the result of a rule like Ross's. Given these assumptions, the distribution of it and so follows quite naturally. Factive complements

are exhaustively dominated only by NP, while non-factives are exhaustively dominated by both NP and S. Thus, the former can only be replaced by it, but the latter can be replaced by both it and so. The obvious problem with this explanation is that it depends on untenable assumptions about the source of it and so. We need not go into this, however, because the basic generalization is false.

That this generalization is false is pointed out in Cushing (1972). Cushing points out that there are non-factive verbs that cannot take so. He notes, for example, that suggest cannot. He illustrates with the following example.

- (6) Paul suggested that sentence pronominalization might depend on factivity, and Carol suggested $\left\{ \begin{array}{l} \text{it} \\ *so \end{array} \right\}$ too.

Other verbs that Cushing notes are hypothesize, postulate, prove, announce, assert, and deduce. In view of such verbs, it is clear that the Kiparsky's generalization is false. Clearly, then, we must look for an alternative generalization.

Cushing suggests that the key to the distribution of it and so is not the feature [+ factive] but a feature [+ stance]. He suggests that [+ stance] verbs take it and [- stance] verbs so. [+ factive] verbs are a subset of [+ stance] verbs. The fact that many verbs take it and so is apparently taken as indicating that they are ambiguous between [+ stance] and [- stance] readings.

The problem with this suggestion is that it is not at all clear that the [+ stance] feature has any independent motivation. Cushing's characterization of the [+ stance] distinction is a vague one. He suggests that it is a distinction between verbs involving 'specific acts of adopting a definite stance with respect to the truth or falsity of the following S' and verbs involving 'passive states of mind, with

the subject acquiescing or expressing a disposition to the truth of the following S'. It is not at all clear that this distinction is of any general significance.

Cushing seeks to add substance to his proposal by relating it to the lexicalist hypothesis, in particular to the lexicalist assumption that there are significant parallels between NP's and S's. He suggests that complements can be classified as definite or indefinite and that [+ stance] verbs take definite complements and [- stance] verbs indefinite complements. He then suggests that it is a definite anaphor and so an indefinite anaphor like one in (7).

(7) The Hatter ate a piece of cake, and Alice ate one too.

This line of thought adds a further dimension to Cushing's proposal. I think, however, that it is quite misconceived.

I think firstly that the notion of an indefinite complement must be rejected. We can interpret complements as referring to various abstract objects: propositions, propositional functions, or facts. Given such an interpretation, they must be definite, like other referring expressions. We can compare complements with proper names. Like proper names, they refer directly, not by way of some set, as definite descriptions do. There are no indefinite proper names. Equally, I think, there are no indefinite complements. I think also that the idea that so is an indefinite anaphor is quite mistaken. so is not at all like one. (7) says that the Hatter ate one member of a certain set and Alice another. We can compare this with (8).

(8) Paul thinks that complementation is partly semantic, and Carol thinks so too.

Clearly, this does not say that Paul thinks one member of a certain set and Carol another. It is fairly clear, then, that so is not an indefinite anaphor.

I think, then, that Cushing's discussion sheds little light on the distribution of it and so. Both Cushing and the Kiparskys assume that the distribution of it and so is determined by the meaning of the associated verb. I want to suggest that it is more fruitful to look at the function of the associated verb. This thought has occurred to a number of linguists. I do not think, however, that it has been developed very adequately.

I want to suggest that a sentence like (9) can be used in two different ways.

(9) I believe that Sam is mad.

On the one hand, it can be a statement about the speaker's beliefs. On the other, it can be a hedged assertion about Sam.¹ In the former case, I believe is used 'normally'. In the latter, it functions as a hedging device. Similar suggestions have been made by a number of linguists. Aijmer (1972), for example, discussing a sentence like (9), suggests that I believe has a 'self-referring' and a 'sentence-qualifying' use. In similar vein, Kimball (1972) suggests that a sentence like (9) can be 'an assertion that the speaker is in a certain state of belief' or 'the expression of a belief on the part of the speaker'. Broadly similar views are advanced by Prince (1976), and by Nobel (1971), Lysvag (1975), and Hooper (1975). We can also recall

- - - - -

1. As James Thorne has pointed out to me, it is particularly natural to interpret sentences like (9) as hedged assertions if that is deleted. It is particularly natural, that is, to interpret a sentence like (1) as a hedged assertion.

(1) I believe Sam is mad.

Urmson's (1952) observation that verbs like believe can be 'used to indicate the evidential situation in which the statement is made, and hence to signal what degree of reliability is claimed for, and should be accorded to, the statement to which it is conjoined'. My basic suggestion, then, is not particularly novel.

I want now to suggest that it occurs with a verb that is used normally and so with a verb that functions as a hedging device. Again, this is not a new idea. It can be found in Aijmer (1972), Lysvag (1975), and Hooper (1975). The main evidence for it is data like the following from Lindholm (1969).

(10) Was Caesar a Jew? I believe $\left\{ \begin{array}{l} \text{so} \\ \text{*it} \end{array} \right\}$.

With so, I believe is a hedging device. In effect, then, I believe so is a hedged yes. As such, it is a perfectly appropriate answer. With it, however, I believe is used normally. Thus, I believe it is a statement about the speaker's beliefs. As such, it is not an appropriate answer. Similar data is the following from Aijmer.

(11) Has Peter stolen the money? I guess $\left\{ \begin{array}{l} \text{so} \\ \text{*it} \end{array} \right\}$.

(12) Did Mary buy a new dress? I imagine $\left\{ \begin{array}{l} \text{so} \\ \text{*it} \end{array} \right\}$.

I think, then, that this suggestion is quite well motivated. It is not the whole truth about presentential so, but it is an important part of it.

We can now consider some other phenomena that are associated with hedging. Firstly, I want to suggest that neg-raising can apply with verbs that have a hedging function, but not with verbs that are used normally. Again, this suggestion is now new. It is made by Aijmer (1972), Kimball (1972), Hooper (1975), and, most notably, Prince (1976).

Neg-raising lifts a negative out of a complement sentence. It accounts for the fact that a sentence like (13) has a reading in which the negative is associated not with the main verb think, but with the complement verb rain.

(13) I don't think it will rain today.

It also accounts for the fact that (14) is grammatical, although sleep a wink normally requires a negative in the same clause, as (15) shows.

(14) I don't think Jim slept a wink.

(15) * Jim slept a wink.

Whenever there is some reason for thinking that a verb cannot have a hedging function, neg-raising cannot apply. Prince suggests, quite reasonably, that a progressive verb cannot have a hedging function. She notes then that (16) is ungrammatical.

(16) * I'm not guessing that Harry slept a wink.

This shows that neg-raising cannot apply in this situation. It seems reasonable to assume that a verb cannot have a hedging function if it is associated with an adverb. Notice now that the following are ungrammatical.

(17) * I don't ever think that Jim slept a wink.

(18) * I never think that Jim slept a wink.

Clearly, then, neg-raising is blocked here. There is quite good evidence, then, that neg-raising applies with verbs that have a hedging function, but not with verbs that are used normally.

Next, I want to consider parenthetical constructions like the following.

(19) Sam is mad, I believe.

(20) Sam is, I believe, mad.

(21) Sam, I believe, is mad.

I want to suggest that verbs like believe normally have a hedging function in such constructions. Intuitively, it seems fairly clear that I believe is a hedging device in (19) - (21). Notice also that (22) is ungrammatical.

(22) * Sam is mad, I'm guessing.

Clearly, this supports the present suggestion. Notice, however, that (23) is grammatical.

(23) Sam is mad, I always think.

I have suggested that a verb associated with an adverb cannot have a hedging function. Here, then, we have a verb in a parenthetical construction which does not have a hedging function. Thus, we cannot say that verbs like believe always have a hedging function in parenthetical constructions. We can suggest, however, that they normally do.

Finally, I want to look at embedded tag questions. Normally, tag questions are associated with main clauses. However, Robin Lakoff (1969) points out that complements can sometimes take tag questions. (24) illustrated.

(24) I suppose Sam is mad, isn't he?

I want to suggest that it is only when the preceding verb has a hedging function that a complement can take a tag question. Much the same suggestion is made in Hooper (1976). Sentences like the following provide support for it.

(25) * I'm guessing that Sam is mad, isn't he?

(26) * I always think that Sam is mad, isn't he?

In both cases, we have verbs that cannot have a hedging function, and, in both cases, tag questions are impossible. I think, then, that this suggestion is well founded. It is worth adding that tag questions can themselves be regarded as hedging devices. We might, then, regard a

sentence like (24) as a doubly-hedged assertion.

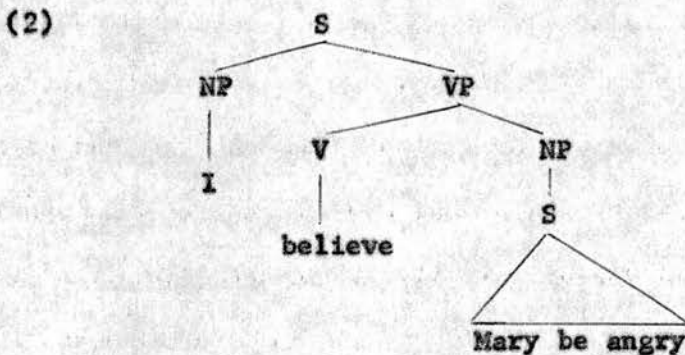
I have argued, then, that prosentential so and certain other phenomena are associated with hedging. In the next section, I will develop a formal account of hedging and consider how exactly so and the other phenomena are associated with it.

13.3. Some Analyses

I have suggested that a sentence like (1) can be used in two different ways, that it can be a statement about the speaker's beliefs or a hedged assertion.

(1) I believe that Mary is angry.

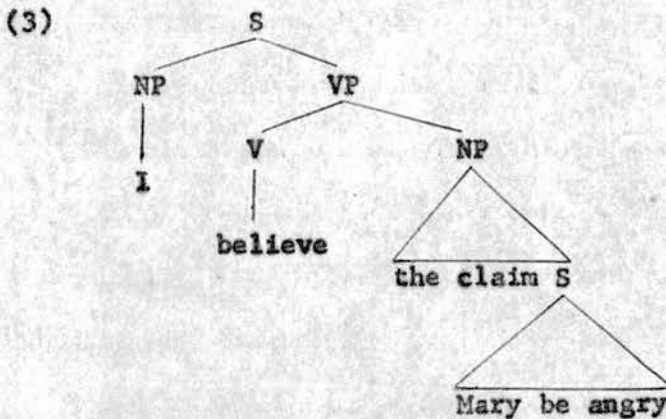
I said that I believe is used normally in the first case and as a hedging device in the second. Implicit in this formulation is the assumption that it is the second use of such sentences that needs explanation. I assume that (1) derives from something like (2) in the first use.



For the second use, however, a different source is necessary.

Of the various linguists I have noted who touch on the question of hedged assertions only three have any proposals about their analysis: Aijmer (1972), Lysvag (1975) and Nobel (1971). Least plausible are Aijmer's proposals. If I understand her correctly, she would derive (1) from something like (3) when it is a statement about the speaker's

beliefs, and from something like (2) when it is a hedged assertion.



Her reason for assuming a source like (3) in the first case is that she thinks that a verb like believe is 'syntactically factive' in this use. Presumably, this means that it cannot undergo raising. This, however, is surely false. (4) can surely be a statement about the speaker's beliefs.²

(4) I believe Mary to be angry.

I would suggest, in fact, that this is all it can be. For me at least, it cannot be a hedged assertion. I don't think, then, that (3) is a suitable source for (1) when it is a statement about the speaker's beliefs. Nor do I think that (2) is a suitable source for (1) when it is a hedged assertion. There is nothing in (2) to make it clear that the complement is the main assertion and I believe a hedging device. I think, then, that Aijmer's proposals are not very plausible.

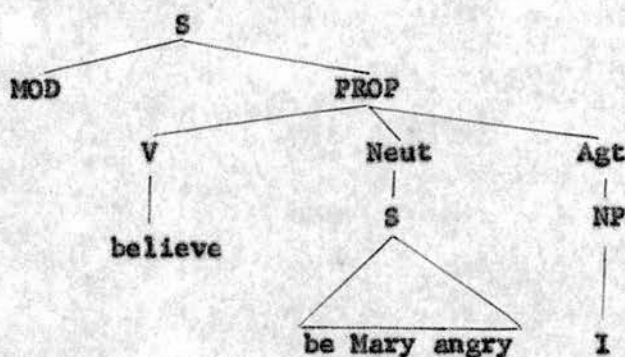
Lysvag assumes a Fillmorean case framework. Within this framework, he would apparently derive (1) from (5) when it is a statement about

- - - - -

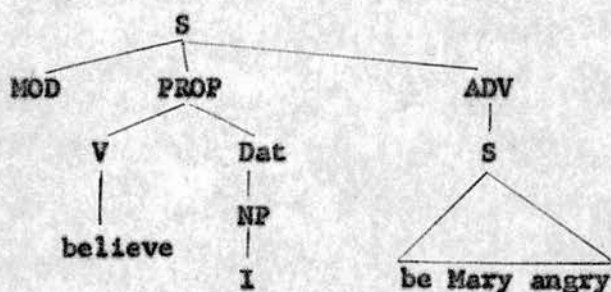
2. Like (4.1.56), (4) is dubious for some speakers. I don't think, however, that this affects the main point.

the speaker's beliefs, and from (6) when it is a hedged assertion.

(5)



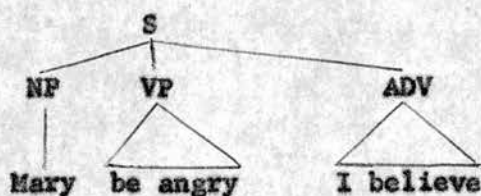
(6)



Leaving aside questions about the validity of the Fillmorean framework, the obvious objection to this analysis is that (6) is no more suitable than (2) as a source for (1) when it is a hedged assertion. (6) does not make it clear that the complement is the main assertion and the rest of the sentence a hedging device. I think, then, that this approach must be rejected.

Nobel's approach is much more plausible. He would derive (1) from something like (2) when it is a statement about the speaker's beliefs and from something like (7) when it is a hedged assertion.

(7)



(1) derives from (7) through adverb preposing. If adverb preposing does not apply, the result is (8).

(8) Mary is angry, I believe.

(7) does make it clear that the complement is the main assertion and the rest of the sentence a hedging device. It looks, then, as if we have a quite plausible analysis for hedged assertions. Shortly, however, I will show that it is less plausible when certain related phenomena are considered.

Following Gordon and Lakoff (1971) and Heringer (1972), I want to suggest that hedged assertions are one of a number of 'indirect speech acts'. All the following can be indirect speech acts.

(9) Could you pass the salt?

(10) Do you think Mary is a spy?

(11) Why don't you take a holiday?

(9) can be a question about the hearer's abilities, but it can also be a so-called 'whimperative', i.e. an indirect imperative. Similarly, (10) can be a question about the hearer's thoughts or an indirect question about Mary. Finally, (11) can be either a question or an indirect suggestion. Intuitively, we have a unified phenomenon here. I think, then, that we require a unified account.

Returning now to Nobel's account of hedged assertions, we can show that it cannot be generalized to other indirect speech acts. To generalize the account, we would have to claim that the constituents that signal the indirect character of whimperatives, indirect questions and indirect suggestions originate in sentence-final position. Initially, this might seem quite plausible in view of the existence of sentences like the following.

(12) Pass the salt, could you?

(13) Is Mary a spy, do you think?

(14) Take a holiday, why don't you?

There are problems, however. As Green (1975) points out, the derivation of a sentence like (10) from a source like (13) requires an otherwise unmotivated rule that is the inverse of subject-verb inversion. More importantly, as Green also notes, there are indirect speech acts for which no sources like (12) - (14) are available. Green gives examples like the following.

(15) Would you like to set the table now?

(16) Do you suppose you could let me finish?

(17) Would you mind closing the window?

(18) How about setting the table?

It is fairly clear, then, that Nobel's account cannot be generalized. I think, therefore, that it must be rejected.

How, then, should indirect speech acts be analyzed? One suggestion, developed by Gordon and Lakoff (1971) and Searle (1975), is that they are an example of conversational implicature in the sense of Grice (1975).³ On this view, sentences like (1) and (9) - (11) are strictly speaking unambiguous. In appropriate circumstances, however, they can convey a second meaning as a result of certain principles of conversation. (1), for example, is a statement about the speaker's beliefs, but it can conversationally entail a hedged assertion. (9) is a question, but it can conversationally entail an imperative. (10) and (11) will be interpreted similarly. Since the notion of conversational implicature is needed quite independently, this is an attractive

- - - - -

3. I follow Cole (1975) in interpreting Gordon and Lakoff as claiming that indirect speech acts are an example of conversational implicature. It is not certain that this is correct interpretation. For a different interpretation, see Katz and Bever (1976).

approach. There are, however, a number of arguments against it. I will review some of the main ones.

We can begin with the criticisms of Cole (1975). Cole focuses on sentences that can only be indirect speech acts. He shows that the interpretation of such sentences cannot be an instance of conversational implicature. A typical example is (19), which Gordon and Lakoff discuss.

(19) Why paint your house purple?

This can only be a suggestion that the speaker should not paint his house purple. It cannot be a question, unlike (20), which presumably has the same source.⁴

(20) Why do you paint your house purple?

To account for (19), Gordon and Lakoff propose a deletion rule that can apply only if a suggestion is conveyed. Discussing such cases, Cole points out that for a certain interpretation of some sentence to be regarded as an instance of conversational implicature it must be different from the literal meaning but related to it by a plausible chain of inference. This is clear from an example with which Gordon and Lakoff begin their discussion. They note that (21), when said by a duke to his butler, can be an order to close the window.

(21) It's cold in here.

Clearly, the meaning conveyed is different from the literal meaning. Clearly, also, it is related to it by a plausible chain of inference.

- - - - -

4. James Thorne has pointed out to me that (19) can be a question for some speakers. As long, however, as there are speakers for whom it can only be a suggestion, it will present a problem for the proposal under consideration.

(19), however, is quite different. Here, there is no meaning apart from the meaning conveyed. Clearly, therefore, this is not derived from some other meaning through a chain of inference. It seems clear, then, that such sentences are not an example of conversational implicature.

Problems also arise with certain sentences that cannot be indirect speech acts. Consider the following sentences from Sadock (1975).

(22) Will you close the door?

(23) Will the door be closed by you?

(22) can be either a question or a whimperative. (23), however, can only be a question. On the approach we are considering, (22) is a question but can in certain circumstances convey an imperative. Given such an account of (22), the fact that (23) cannot be a whimperative is a serious problem. (23) asks the same question as (22). Thus, if the whimperative interpretation of (22) is an instance of conversational implicature, one would expect (23) to have the same interpretation. The fact that it does not have this interpretation suggests that it is not an instance of conversational implicature in (22).

Broadly similar to (22) and (23) are (24) and (25), also from Sadock.

(24) Can you close the window?

(25) Are you able to close the window?

Like (22), (24) can be either a question or a whimperative. (25), however, like (23), can only be a question. Clearly this suggests that the whimperative interpretation of (24) cannot be an instance of conversational implicature. Similar observations are made by Green (1975) and Ross (1975). They provide further evidence against an

approach like Gordon and Lakoff's.

Finally, we can consider certain cooccurrence phenomena. The approach we are considering assumes that (26) conversationally entails (27) in just the same way as (21) conversationally entails (28).

(26) Can you take out the garbage?

(27) Take out the garbage.

(28) Shut the window.

Consider now the following data from Davison (1975).

(29) Take out the garbage, please, since my hands are full.

(30) Can you take out the garbage, please, since my hands are full.

(31) Shut the window, as it's my turn to move in the chess game.

(32) * It's cold in here, as it's my turn to move in the chess game.

These show that whimperatives, like ordinary imperatives, can be followed by a clause giving the reason for the request, but that a declarative sentence that conversationally entails an imperative cannot be followed by such a clause. Similar data is adduced by Sadock. Such data suggests that indirect speech acts have the cooccurrence properties of the corresponding direct speech acts, not those of related instances of conversational implicature. Thus, it provides further evidence against the approach we are considering.

None of the examples of the preceding paragraphs involve hedged assertions. It is easy to show, however, that the view that hedged assertions are an instance of conversational implicature is no more plausible than the view that other indirect speech acts are. We have seen that a sentence like (33) can only be a hedged assertion.

(33) I believe so.

It is, therefore, just like (19), and, for the same reason, cannot

be an instance of conversational implicature. Notice also the contrast between (34) and (35).

(34) I believe that Eve has left.

(35) What I believe is that Eve has left.

(34) can be either a statement about the speaker's beliefs or a hedged assertion. (35), however, can only be the former. This contrast is just like that between (22) and (23). The latter shows that the whimperative interpretation of (22) cannot be an instance of conversational implicature. In the same way, the former shows that the hedged assertion interpretation of (34) cannot be.

It seems fairly clear, then, that indirect speech acts, including hedged assertions, are not an example of conversational implicature. This does not mean, however, that they have nothing to do with it. It is quite possible that they have their origins in conversational implicature. This is the central contention of Cole's paper. It is also the view of Sadock, Green, and Davison. It is, I think, a plausible one.

If indirect speech acts are not an example of conversational implicature, what are they? An observation of Sadock's suggests a plausible answer to this question. Sadock observes that indirect speech acts have much the same properties as idioms. Notice, for example, that (36) and (37) are very much like (22) and (23).

(36) Tony kicked the bucket.

(37) The bucket was kicked by Tony.

(36) has both a literal and an idiomatic reading. (37), however, has only a literal reading. Notice also that (38) and (39) are like (24) and (25).

(38) Marsha buried the hatchet.

(39) Marsha buried the axe.

(38) has both a literal and an idiomatic reading, but (39) has only a literal reading. It seems, then, that indirect speech acts are quite like idioms. I want to suggest that they are a kind of idiom and can be analyzed in much the same way.

Consider firstly the following sentences.

(40) Sam kicked the bucket.

(41) Sam died.

It is clear that these say the same thing. It is clear also that they are appropriate in different contexts. Roughly, (40) is appropriate in informal contexts. I would suggest, then, that (40) is a realization in such contexts of the structure underlying (41). Consider now the following.

(42) Can you wash the dishes?

(43) Wash the dishes.

We can suggest that these also say the same thing but differ in the contexts in which they are appropriate. Roughly, (42) is appropriate in polite contexts. We can suggest, then, that (42) is a realization in such contexts of the structure underlying (43). We can propose a similar account for the following.

(44) I believe that Jim is here.

(45) Jim is here.

Specifically, we can propose that (44) is a realization in tentative contexts of the structure underlying (45). The main features of these analyses are represented schematically in the following. (S stands for surface structure, L for underlying (logical) structure, and C for context.)⁵

5. I follow Ross (1970) and Sadock (1975) in assuming that declarative sentences originate as complements of a performative verb of saying.

(46) S. Sam kicked the bucket.

L. I say to you (Sam past die)

C. informal

(47) S. Can you wash the dishes?

L. I request of you (you wash the dishes)

C. polite

(48) S. I believe that Jim is here.

L. I say to you (Jim be here)

C. tentative.

We can suggest similar analyses for other indirect speech acts.

It is clear that these analyses require some quite complex rules.

For (40), we will need something like (49). (I place contextual conditions in square brackets.)

(49) X die Y \implies X kick the bucket Y / [informal]

For (42), we might suggest something like (50).

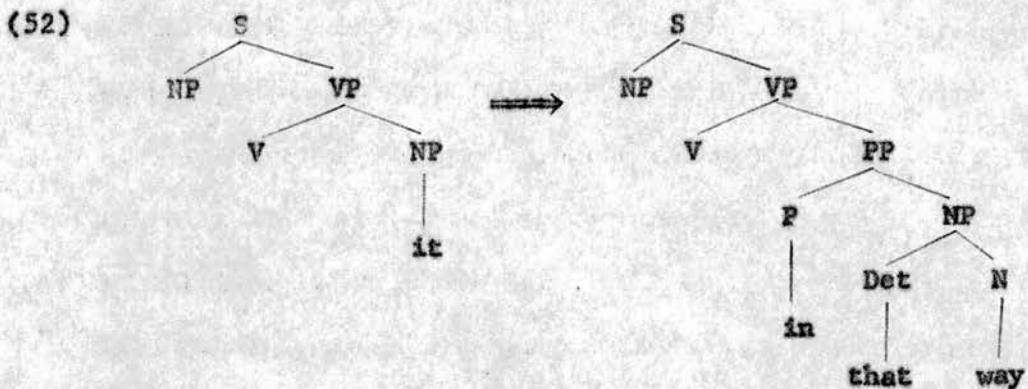
(50) I request of you (you VP) \implies I ask you (you can VP) /
[polite]

For (44), something like (51) might be appropriate.

(51) I say to you X \implies I say to you (I believe X) /
[tentative]

(49) will be a completely idiosyncratic rule with no particular similarities to any other rules. In contrast, both (50) and (51) will be members of quite large families of rules with various features in common. These rules will probably be derivation-initial. As we have seen, Newmeyer (1974) assumes, in effect, that idioms involve derivation-initial rules. Finally, we should note that there will be various global constraints associated with these rules to prevent the derivation of sentences which cannot have idiomatic readings.

We can return now to presentential so. I suggested earlier that it is the result of the following rule.



I also suggested that it occurs with a verb that functions as a hedging device. This suggests that (52) applies just in case the verb is a hedging device. If the verb is a hedging device, it will itself be the result of an idiom rule. It follows, then, that (52) cannot be derivation-initial. Rather, it will follow rules like (51). Thus, we will have derivations like the following.

(53) I say to you it

I say to you (I believe it)

I say to you (I believe in that way)

I believe in that way

I believe so

Here, then, we have evidence that Newmeyer's conception of idioms is not entirely adequate. A second point about (52) is that it involves a global condition. Nothing in the input structure shows that the verb is a hedging device. It is only the fact that it is the result of a rule like (51) that shows this. Thus, to say that (52) applies just in case the verb is a hedging device is to say that it applies just in case the verb is the result of a rule like (51). Clearly, this is a global condition. A final point about (52) is that it is a meaning

changing rule. The meaning of (54) will not be predictable from the input to (52), because this structure will appear in the derivation of (55).

(54) I believe so.

(55) I believe it.

(55), of course, cannot be a hedged assertion.

Before we return to the other phenomena that I have associated with hedging, I want to suggest an analysis for yes. As (53) indicates, I assume that a sentence like I believe so is the form taken in a tentative context by (56).

(56) I say to you it.

It is natural to ask what happens to (56) in a normal, non-tentative context. The obvious suggestion, I think, is that it is realized as yes. As (53) indicates, I assume that a sentence like I believe so is the form taken in a tentative context by (56).

(56) I say to you it.

It is natural to ask what happens to (56) in a normal, non-tentative context. The obvious suggestion, I think, is that it is realized as yes. I want to suggest, then, that yes is the realization in normal contexts of a pronominal object of a declarative performative.⁶

- - - - -

6. It is interesting to note in connection with this proposal that, according to the O.E.D., so could be used for yes in Middle English. Also of interest is the fact that the French equivalent of I believe so is Je crois que oui.

We can return now to neg-raising. I suggested earlier that this applies with verbs that have a hedging function but not with verbs that are used normally. It would seem, then, that it is rather like (52). There is one difference, however. Whereas (52) is obligatory with a verb that has a hedging function, neg-raising is optional. Notice that both (57) and (58) can be hedged denials.

(57) I believe Jim isn't happy.

(58) I don't believe Jim is happy.

(The former can also be a statement that the speaker holds a certain negative belief. The latter can also be a denial that the speaker holds a certain belief.) Apart from this, neg-raising is very much like (52). Like (52), it involves a global condition. It can apply just in case the verb is the result of a rule like (51). It is also a meaning changing rule. The meaning of (58) is not predictable from the input to neg-raising, because this structure appears in the derivation of (57), which has a meaning not shared by (58).

Next, we can return to parenthetical constructions like the following.

(59) Steve is a Pabloite, I believe.

(60) Steve is, I believe, a Pabloite.

(61) Steve, I believe, is a Pabloite.

One approach to such sentences would derive them from (62).

(62) I believe that Steve is a Pabloite.

This is the approach of Rardin (1975), who suggests that (59) derives from (62) through a rule of sentence raising, and that (60) and (61) derive from (59) through a rule of sentence shift. It is also the approach of Ross (1973), who calls these rules *slifting* and *niching*. In (59) - (61), I believe is a hedging device. Thus, if we adopted this approach, we might suggest that sentence raising, like neg-raising,

applies with verbs that have a hedging function. There are, however, a number of arguments against this approach, in particular against sentence raising. Clearly, we must consider these.

One argument, advanced by Stillings (1975), focuses on sentences like the following.

(63) I don't think John isn't going to the party.

(64) John isn't, I don't think, going to the party.

On the most obvious formulation of sentence raising, (64) will derive from (63). The two sentences, however, have completely opposite meanings. (64) is equivalent not to (63) but to (65).

(65) I think John isn't going to the party.

On the face of it, this is a serious problem. There is a simple solution to it, however. Firstly, as Rardin notes, it is clear that sentence raising cannot apply with a negative verb. (66) illustrates.

(66) * Steve is a Pabloite, I don't think.

Thus, (64) will not derive from (63). All we need, then, is some way of deriving (64) from (63). For such derivations, Rardin suggests a rule of not distribution applying after sentence raising and sentence shift. Given such a rule, (64) will derive from (65) by way of (67).

(67) John isn't, I think, going to the party.

It seems, then, that this argument carries little weight.⁷

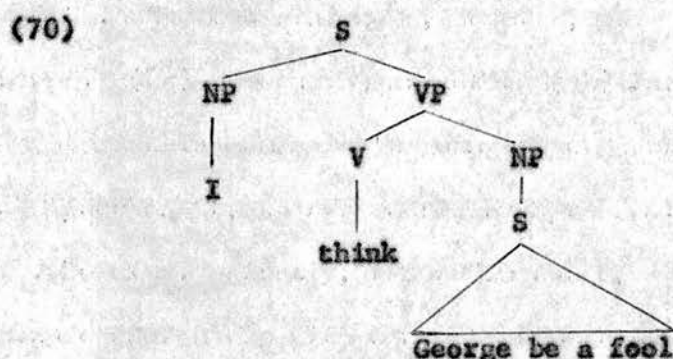
A second argument, also advanced by Stillings, centres on sentences like the following.

(68) I think that George is a fool, but Mary won't believe it.

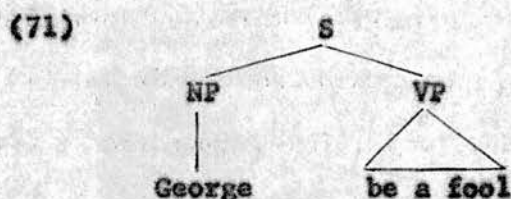
- - - - -

7. Ross (1973) accounts for sentences like (64) rather differently. He assumes that neg-raising is accomplished by copying and deletion and that deletion is blocked if slifting intervenes.

(69) George, I think, is a fool, but Mary won't believe it. As Stillings points out, (68) is ambiguous. it can be understood as that I think that George is a fool or as that George is a fool. (69), however, is unambiguous. Here, it can only be understood as the latter. This looks like a problem. In fact, however, it is not a problem within the framework I have developed. Notice that the first clause of (68) can be a statement about the speaker's thoughts. In this use, it will derive from (70).



It can also be a hedged assertion. In this use, it will derive through a rule like (51) from (71).



In contrast, the first clause of (69) can only be a hedged assertion, and, therefore, can only derive from (71). Thus, the proposition that I think that George is a fool can figure in the underlying structure of the first clause of (68) but not in the underlying structure of the first clause of (69). It is only natural, then, that it can refer to this proposition in (68) but not in (69).

A third argument of Stillings¹ is less easy to counter. It involves sentences like the following.

(72) Is Sam finished, do you think?

The obvious source for (72) is (73).

(73) Do you think Sam is finished?

Applying sentence raising to (73) gives the ungrammatical (74).

(74) * Sam is finished, do you think?

To derive (72), we will have to apply subject-verb inversion in the raised sentence. This is rather problematic, however. For subject-verb inversion to apply in the raised sentence, it must have an interrogative status. think, however, cannot take an interrogative complement. It is not at all clear how a complement can acquire an interrogative status when it is raised. I think, then, that sentences like (72) pose a real problem for sentence raising.

It may be that sentence raising can be maintained, in spite of sentences like (72). My inclination, however, is to reject it. In the present framework, it is quite easy to suggest an alternative. Instead of assuming that a sentence like (75) derives through (51) and sentence raising, we can suggest that it derives through something like (76).

(75) Jim is ill, I believe.

(76) I say to you X \implies I say to you X, I say to you (I believe) / [tentative]

We can suggest a similar rule for (72). We can suggest that (73) derives through something like (77), when it is an indirect question.

(77) I ask you S \implies I ask you (you think S) / [polite]

For (72), then, we can suggest something like the following.

(78) I ask you S \implies I ask you S, I ask you (you think) / [polite]

I think, then, that rules like (76) and (78) provide a quite plausible alternative to sentence raising.

It is appropriate at this point to return briefly to sentences like (79).

(79) Open the window, can you?

Sadock assumes that such sentences derive from whimperatives through a rule of 'fracturing'. On this account, (79) will derive from (80).

(80) Can you open the window?

Fracturing is clearly rather like sentence raising, and it faces a similar problem. Just as the interrogative status of sentences like (72) pose a problem for sentence raising, so the imperative status of sentences like (79) poses a problem for fracturing. Their imperative status is shown by examples like the following.

(81) Do light a fire, won't you?

(82) Don't light a fire, will you?

I think, then, that fracturing is rather dubious. I would like to suggest, therefore, that (79) is the result not of (51) and fracturing but of something like the following.

(83) I request of you (you VP) \implies I request of you (you VP),
I ask you (you can) / [polite]

This, of course, is very much like (77) and (78).

Finally, we can return to tag questions. If tag questions are a hedging device, it is natural to assume that they are the result of a rule like (51). It would seem, however, that they cannot be the result of a derivation-initial rule. As has often been noted, the shape of a tag question is dependent on the surface shape of the main clause. It would seem, then, that they are the result of a fairly late rule.

13.4. Some Problems

I think that the analysis I have sketched has considerable attractions. It also faces serious problems, however. In this section, I will take a look at these problems. I have no real solutions. All I can do is indicate some lines of thought that might lead to solutions.

The most serious problem that the analysis faces is that the main underlying assumption is apparently false. The starting point for the analysis is the assumption that pro-sentential so, neg-raising, and certain parenthetical constructions are symptomatic of hedging. It seems fairly clear that a verb like believe can function as a hedging device only if it is first person and present tense. It seems clear, in other words, that sentences like the following cannot be hedged assertions.

(1) Frodo believes that Aragorn is mad.

(2) I thought that Eve had left.

This suggests that pro-sentential so, neg-raising and parenthetical constructions should be impossible with verbs that are not first person and present tense. It is clear, however, that this is false. The following illustrate.

(3) Gimli believes it will rain, and Legolas Believes so too.

(4) Sam thought there would be trouble, and I thought so too.

(5) Steve doesn't think he slept a wink.

(6) I didn't think Sam had slept a wink.

(7) Sam is mad, Jim believes.

(8) Sam was mad, I thought.

It looks, then, as if the assumption that these phenomena are symptomatic of hedging is false.

As we have seen, a number of linguists have considered these phenomena and suggested a connection with hedging. In general, they have not noted the problem that sentences like (3) - (8) pose for such suggestions. An interesting case is Hooper (1975). Hooper suggests that verbs like believe have a literal reading and a 'parenthetical' reading, and that presentential so, neg-raising, and parenthetical constructions are symptomatic of the parenthetical reading. The problem with this suggestion is that it is not at all clear what is meant by a parenthetical reading. It is clear that to say that a first person present tense verb has a parenthetical reading is to say that it functions as a hedging device. Hooper makes this clear when she remarks that I believe so is 'equivalent to a weakened or qualified yes', and that (9) is a 'qualified assertion'.

(9) I believe John is here

The problem is that it is not at all clear what it means to say that verbs that are not first person and present tense have a parenthetical reading. Certainly, Hooper offers no clear account of this. I think, then, that the term 'parenthetical reading' serves to gloss over a serious problem.

How, then, should we account for sentences like (3) - (8)? As far as (3) - (6) are concerned, a natural suggestion is that we should revise the presentence rule and neg-raising. I have suggested that both can only apply with verbs that have a hedging function. An obvious way to accommodate (3) - (6) would be to say that they only apply with first person present tense verbs if they have a hedging function, but they apply more or less freely elsewhere. Revised in this way, the two rules will give us something like the right results.

An obvious objection to this approach is that, as things stand, we cannot accommodate (7) and (8) in a similar way. I suggested in

the last section that sentences like (10) and (11) involve something like (12), followed by the prosentence rule and neg-raising, respectively.

(10) I believe so.

(11) I don't believe I slept a wink.

(12) I say to you X \implies I say to you (I believe X) / [tentative]

I rejected, however, the view that sentences like (13) have a similar derivation.

(13) Mary is here, I believe.

I rejected, that is, the view that they involve (12), followed by sentence raising. Instead, I suggested that they are derived directly through something like (14).

(14) I say to you X \implies I say to you X, I say to you (I believe) / [tentative]

Thus, as I have analyzed sentences like (13), there is no rule that we can invoke in connection with (7) and (8) in the way that we can invoke the prosentence rule and neg-raising in connection with (3) - (6). One might take the existence of sentences like (7) and (8) as evidence that sentences like (13) should be derived through (12) and sentence raising after all. If we do derive them in this way, we could then suggest that sentence raising, like the prosentence rule and neg-raising, only applies with a first person present tense verb if it has a hedging function, but applies more or less freely elsewhere.

It is possible that an approach like this might prove viable. It hardly inspires confidence, however. The most obvious objection is that it involves three rather strange rules. Quite apart from this, a number of observations suggest that a rather different approach

might be appropriate. Particularly important are the observations of Prince (1976).

Prince is concerned with neg-raising in English and French. She focuses mainly on first person present tense sentences, but she also considers sentences that are not first person and present tense. She suggests, as I have done, that the former are hedged assertions. She suggests, in other words, that (5) has much the same import as (15).

(15) Steve says he doesn't think he slept a wink.

Support for this suggestion comes from an observation of Jackendoff (1971). He notes that a number of verbs that allow neg-raising in first person present tense uses do not allow it with other persons and tenses. He notes, for example, that the negative can only be associated with the main verb in the following.

(16) Bill didn't { suppose
 { imagine } that they had won.
 { guess }

On Prince's suggestion, all this means is that certain verbs can appear in hedged assertions, but not in reports of hedged assertions. This seems a fairly natural situation.

Prince's suggestion, then, is that sentences like (5) and (6) are understood as reports of hedged assertions. It is natural to ask whether we can say the same thing of sentences like (3) and (4) and (7) and (8). In connection with the latter, we can note Aijmer's suggestion that (17) is understood as a report of John's saying (18).

(17) Peter is fat, John believes.

(18) Peter is fat, I believe.

We can also note Urmson's suggestion that X is, Jones believes, at home is understood as a report of Jones' statement X is, I believe, at home. Urmson goes on to suggest that sentences like (7) and (8) are

impossible when there is no question of a report being involved. Specifically, he suggests that, on seeing Jones making his habitual dash to the railway station during a railway stoppage, one could say (19), but not (20).

(19) Jones believes that the trains are working.

(20) The trains, Jones believes, are working.

It seems quite natural, then, to interpret sentences like (7) and (8) as reports of hedged assertions.

What, then, of sentences like (3) and (4)? Again, I think requests are involved. That they are is suggested by the dubious character of (21).

(21) ? Sam says that Mary is a fool, but he doesn't believe so. If the second clause of (21) is understood as a report, it will have much the same import as (22).

(22) Sam says he doesn't believe that Mary is a fool.

(21), then, will attribute contradictory statements to Sam. Notice that (23) is quite acceptable.

(23) Sam says that Mary is a fool, but he doesn't believe it.

Here, there is no question of the second clause being understood as a report. It seems fairly plausible, then, to suggest that sentences like (3) and (4) involve reports of hedged assertions.

Assuming that they are sound, how should these observations be accounted for? This is not at all an easy question. One possibility is that the sentences we are concerned with derive from explicit reports. On this view, the sentences in (24) would derive from those in (25).

(24)a. Tony believes so.

b. Jim doesn't think Mary slept a wink.

c. Steve is arrogant, Sam believes.

(25)a. Tony says he believes so.

b. Jim says he doesn't believe Mary slept a wink.

c. Sam says Steve is arrogant, he believes.

An obvious problem for this approach is that the sentences we are concerned with do not have exactly the same significance as explicit reports. Notice, for example, the contrast between (26) and (27).

(26) Jim asked if it would rain, and Sam said he thought so.

(27) ? Jim asked if it would rain, and Sam thought so.

Another problem is that it is not at all clear how sentences like those in (25) should be analyzed. In particular, it is not at all clear how the complements should be analyzed. One might suggest, with Kuno (1972a), that they originate as direct quotations. On this proposal, the sentences in (25) would derive from the following.

(28)a. Tony says 'I believe so'.

b. Jim says 'I don't think so'.

c. Sam says "Steve is arrogant, I believe".

It is clear, however, that direct quotations pose serious syntactic and semantic problems (Partee, 1973a). Thus, even if the sentences we are concerned with derive from explicit reports, our problems will not be over. I think, then, that it is quite natural to interpret sentences like (3) - (8) as reports of hedged assertions. How this should be accounted for, however, is not at all clear to me. I must, therefore, leave the problem that such sentences pose unresolved.

A further weakness of the analysis I have sketched is that it ignores differences between hedging devices. This weakness is particularly clear if we consider tag questions. Consider, for example, (29).

(29) Eve is here, isn't she?

This is certainly a hedged assertion. It is more than this, however. It is also a request for confirmation. It is clear, then, that (29) is different from a 'pure' hedged assertion like (30).

(30) I believe Eve is here.

I would suggest that there are also differences between pure hedged assertions. I would suggest, for example, that there are differences of connotation between (30) and (31), and between (30) and (31) and (32).

(31) I suppose Eve is here.

(32) I imagine Eve is here.

So far, I have ignored all such differences. It is clear, however, that they must be accounted for in some way.

Quite relevant at this point is Lakoff's (1974) discussion of 'syntactic amalgams'. By a syntactic amalgam he means 'a sentence which has within it chunks of lexical material which do not correspond to anything in the logical structure of the sentence; rather they must be copied in from other derivations under specifiable semantic and pragmatic conditions'. Lakoff suggests that sentences like the following are amalgams.

(33) John invited you'll never guess how many people to his party.

(34) John is going to, I think it's Chicago on Saturday.

More importantly in the present context, he suggests that tag questions and parentheticals are amalgams. He considers here incidentally not only parentheticals that function as hedging devices but also parentheticals that make concessions like that in (35) and parentheticals giving the source of information like that in (36).

(35) John, I admit, cannot play the tuba well.

(36) Kangaroos, The Times reported, are decreasing in numbers. Lakoff's proposals are quite tentative, but they are of considerable interest.

As I have analyzed indirect speech acts, they are quite like amalgams. They contain lexical material that does not correspond to anything in their logical structures. This material is introduced under certain pragmatic conditions. It is not copied from some other derivation, however. The fact that this material is more than just a signal of the context suggests that it perhaps should be. It suggests, in other words, that indirect speech acts could be re-analyzed as amalgams. I have no explicit proposals to make. I think, however, that such a re-analysis could well be the right way to account for the differences between hedging devices.

We should note perhaps that Lakoff himself does not regard simple hedged assertions or whimperatives as amalgams. He continues to assume, with Gordon and Lakoff (1971), that they are instances of conversational implicature. This is related perhaps to the fact that his focus is mainly syntactic. His concern is with problematic surface structures, not with problematic speech acts. The surface form of simple hedged assertions and whimperatives like (37) and (38) poses no obvious problems.

(37) I believe Sam is making his will.

(38) Could you put the cat out?

Semantically, however, they are just as problematic as (39), which Lakoff would regard as an amalgam.

(39) Sam is making his will, I believe.

I think that Lakoff is mistaken in concentrating on syntactic factors.

I think it is quite likely that all indirect speech acts will turn out to be amalgams, not just those that have problematic surface structures.

We should also note that, if indirect speech acts are re-analyzed as amalgams, they will be less like ordinary idioms than I have assumed. This is quite reasonable, I think. Structurally, indirect speech acts contain additional lexical material compared with the corresponding direct speech acts, whereas ordinary idioms simply contain different lexical material from the normal expression of the same meaning. Semantically, I think, indirect speech acts have additional content in a way that ordinary idioms do not. This is obviously true of tag questions. It is also true, I think, of pure hedged assertions and other indirect speech acts. None of this means that there are not important similarities between indirect speech acts and ordinary idioms. It does suggest, however, that my original analysis exaggerated these similarities somewhat.

These remarks are quite vague. I think, however, that it is quite likely that they point in the right direction. I think, then, that differences between hedging devices are rather less of a problem than sentences like (2) - (8).

13.5. Further Constructions

In the last two sections, I have been investigating the proposition that prosentential so is associated with hedging. There is much truth to this proposition. It is clear, however, that it is not the whole truth, even if the problematic sentences of the last section are reports of hedged assertions. There are at least three constructions involving what is apparently prosentential so that I have not yet

considered. Of these constructions, only one has anything to do with hedging.

The first construction I want to consider is exemplified by sentences like the following.

(1) Steve is a Tribunite, or so I believe.

We might regard this as a kind of hedged assertion. The second clause is a kind of retrospective hedge. The speaker makes an assertion, and then hedges it. (1) is equivalent to (2), where the speaker explicitly takes back part of what he has said.

(2) Steve is a Tribunite, or at least I believe he is.

There are sentences like (1) where the second clause contains a verb that cannot appear in an ordinary hedged assertion. The following illustrate.

(3) Tony is over the hill, or so I would claim.

(4) Mary is six foot, or so I would estimate.

(5) and (6) show that the verbs cannot appear in ordinary hedged assertions.

(5) * I claim so.

(6) * I estimate so.

There are also sentences like (1) where the second clause is not primarily a hedging device. Consider, for example, (7) and (8).

(7) Albert is an empiricist, or so Sam argues.

(8) Roberta is a Geordie, or so Brian says.

Here, although the second clause relieves the speaker of part of the responsibility for the first clause, its main function is to indicate the source of the information contained in the first clause. All these sentences, incidentally, have equivalent parenthetical sentences. The following illustrate.

(9) Steve is a Tribunite, I believe.

(10) Tony is over the hill, I would claim.

(11) Albert is an empiricist, Sam argues.

I assume that so is the result of the presentence rule in this construction. Apart from this, however, I have little idea as to how the construction should be analyzed.

The second construction I want to consider is exemplified by sentences like (12).

(12) So I believe.

One might think that this is a hedged assertion just like (13).

(13) I believe so.

It seem, however, that this is not the case. Unlike (13), (12) is not a natural answer to a yes-no question. Rather, its natural use is to confirm or endorse a statement. Thus, we have exchanges like the following.

(14) A: Eve is emigrating.

B: So I believe.

Unlike hedged assertions, this construction can contain what Karttunen (1972) calls semi-factive verbs. The following illustrate.

(15) So I { realize
notice
see }.

(16) * I { realize
notice
see }.

How this construction should be analyzed is not at all clear. It seems likely, however, that so is the result of the presentence rule.

Finally, we can consider the do so construction. This is illustrated in sentences like the following.

(17) Roberta paints murals, and Sue does so too.

Here, the main elements of an analysis seem fairly clear. It is fairly clear that we are dealing with presentential so. This so has the same adverbial properties. It cannot appear in subject position, as the following illustrate.

(18) * So is often done.

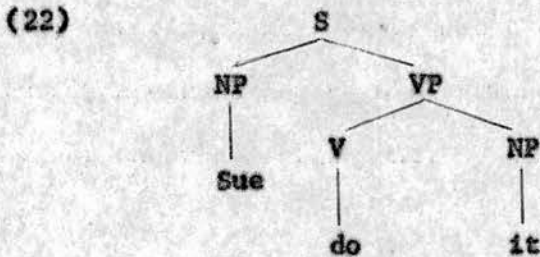
(19) * So is easy to do.

Nor can it appear as a raised object.

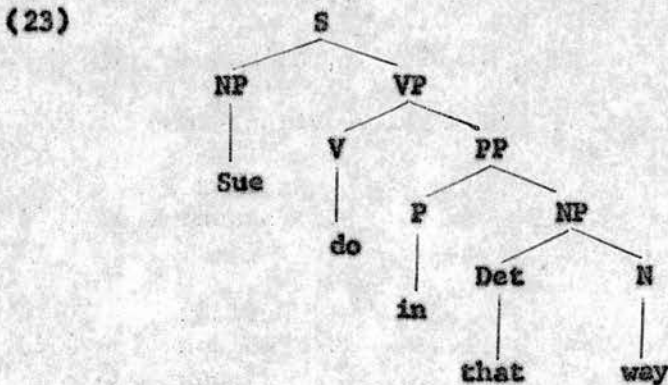
(20) * We thought so to be often done.

(21) * We thought so to be easy to do.

We can suggest, then, that the second clause of (17) derives from (22).



The presentence rule will convert this into (23).



Eventually, the way phrase will be realized as so. One thing that is not very clear is the exact distribution of do so and do it. Bolinger (1970) suggests that do so is favoured in contexts which involve unfavourable connotations. There is perhaps some truth to this, although some of Bolinger's judgements seem rather dubious. I will not

pursue this matter, however.

It is clear that presentential so has nothing to do with hedging in sentences like (12) or in the do so construction. It is clear, then, that there is more to presentential so than its association with hedging. I think, however, that this association is of considerable importance. It is for this reason that I have concentrated on it in this chapter.

CHAPTER 14

CONFIRMATION AND CONJUNCTION

In this chapter, I want to look at two further constructions which might be thought to involve presentential so. These constructions are illustrated in sentences like the following.

(1) They say the Prime Minister is mad, and so he is.

(2) Joanna is reading the Beano, and so is Alicja.

Anderson (1976) and Ross (1972) argue that so is a prosentence in confirmative sentences like (1). McCawley (1970b) suggests that it is a prosentence in conjunctive sentences like (2). This suggestion is dropped, however, in the revised version of this paper (McCawley, 1974a). I will argue that so is not a prosentence in either of these constructions. Instead, I will suggest that it is a realization of and.

14.1. Critical Preliminaries

Before we consider the problems involved in claiming that these constructions involve presentential so, we must get a clear idea of their character. It is clear that they are quite similar. Both involve so, a subject NP, and an auxiliary verb. The main difference is that the conjunctive construction involves subject verb inversion, whereas the confirmative construction does not. A few examples will illustrate these points.

(1) Sam said the king was eccentric, and so he was.

(2) They say the Mekon is living in Monte Carlo, and so he is.

(3) They say Mary may be a martian, and so she may.

- (4) They said Eve had eloped with Zeno, and so she had.
 (5) The Huns were a nuisance, and so were the Visigoths.
 (6) Roberta was arrested, and so was Steve.
 (7) Brian must go to Milan, and so must Dick.
 (8) The Vandals sacked the city, and so did the Suevi.

The similarities between the two constructions suggest that it is quite likely that they have similar analyses.

When Anderson and Ross claim that so is a presentence in confirmative sentences, they are claiming that it is the result of a rule like (9).

- (9) X - S - Y - S - Z
 1 2 3 4 5 \implies
 1 $\left\{ \begin{array}{l} 2 \\ \text{so} \end{array} \right\}$ 3 $\left\{ \begin{array}{l} \text{so} \\ 4 \end{array} \right\}$ 5

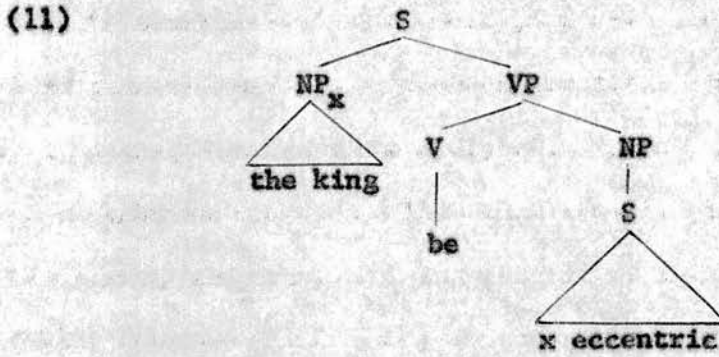
McCawley probably had a similar rule in mind when he claimed that so is a presentence in conjunctive sentences. I have argued, of course, that presentential so results not from (9) but from (10).

- (10)
-
- The diagram shows two syntactic trees for the sentence "it is in that way".
 Left tree: S branches into NP (it) and VP. VP branches into V (is) and NP.
 Right tree: S branches into NP (it) and VP. VP branches into V (is) and PP. PP branches into P (in) and NP. This NP branches into Det (that) and N (way).

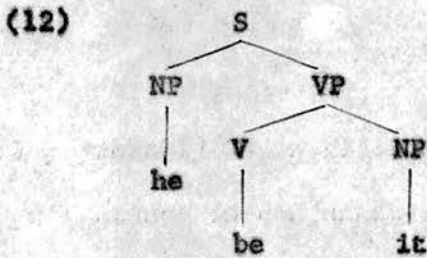
I will argue that so cannot be the result of this rule in confirmation and conjunctive sentences. I will then return briefly to (9), and show that it is no more promising.

We can look firstly at (1). Here, we are concerned with adjectival

be. Following in essence Ross (1969c), I think it is likely that this is a transitive verb, taking a full NP and an open sentence as its arguments.¹ I think, then, that it is quite likely that the complement in the first clause of (1) will derive from something like (11).



Given such an analysis, it would be possible to derive the second clause of (1) through (10) from something like (12).



(1), then, does not seem too problematic.

Consider now (2). Here, we are concerned with progressive be. One might think that this too is a transitive verb. Huddleston (1974) argues, however, that it is intransitive. The equivalence of sentences like the following points to this conclusion.

(13) The inspector was checking the figures.

(14) The figures were being checked by the inspector.

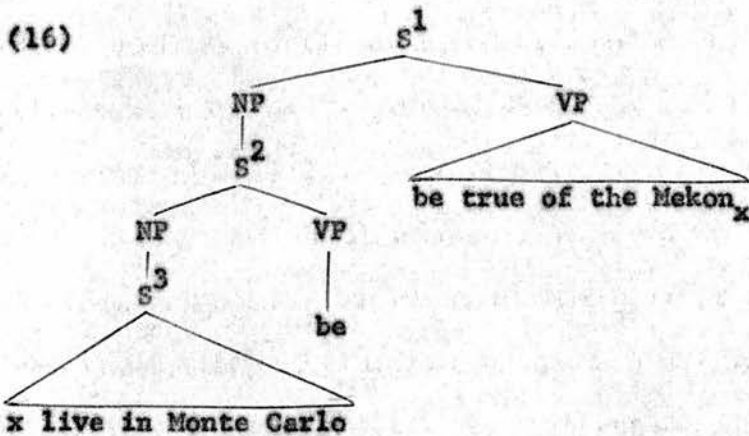
So, too, does the existence of sentences like the following with idiomatic subjects.

- - - - -

1. I will present some evidence for this view in the next chapter.

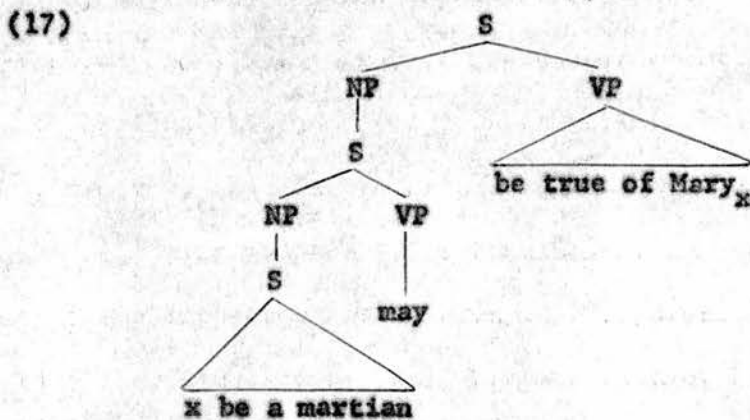
(15) Tabs are being kept on all Gorton sympathizers.

Such evidence is quite persuasive. It suggests, then, that the complement in the first clause of (2) will derive from something like (16).



If progressive be is intransitive, it will be impossible to derive a suitable input structure for (10). It will be impossible, then, to derive the second clause of (2) through (10).

As Huddleston notes, evidence like that just cited suggests that a number of auxiliaries are intransitive. One is epistemic may. Here, the evidence suggests that the complement in the first clause of (3) should derive from something like (17).

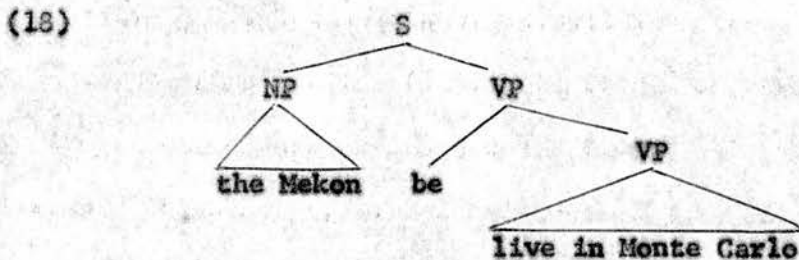


If epistemic may is intransitive, it will be impossible to derive the second clause of (3) through (10). Another auxiliary which appears to be intransitive is perfective have. If it is, the complement in the first clause of (4) will derive from a structure like (17), and it will

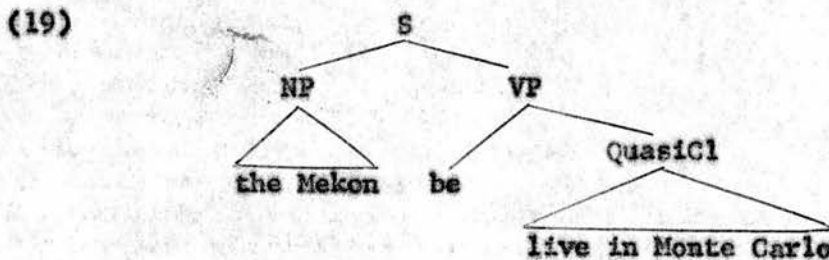
again be impossible to derive the second clause through (10).

It seems fairly clear, then, that so cannot be introduced by (10) in confirmative sentences. Obviously, we can extend this conclusion to conjunctive sentences. I will now argue that (9) works no better.

We can return firstly to (1). Here, if the complement of the first clause derives from (11), it would be possible to derive the second clause from a similar structure through (9). Consider now (2). I have suggested that the complement in the first clause derives from (16). The operation of raising on S^2 , and lowering and deletion on S^3 will convert this into something like (18).



I assume here that raising triggers the pruning of S^3 under Ross's (1967) convention that S nodes that do not branch are pruned. This convention has been challenged by Postal (1974a). He argues that raising (and equi) result not in pruning but in the demotion of the affected S to the status of a 'quasi clause'. On this view, then, (16) will become not (18) but (19).



Which of these views is correct is not too important in the present context. What is important is that it is fairly clear that raising

results in the disappearance of the affected S. Thus, if progressive be is intransitive, the S nodes that (9) requires will be lacking in (2). It will be impossible, then, to derive (2) through (9). In the same way, if epistemic may and perfective have are intransitive, it will be impossible to derive (3) and (4) through (9). It seems, then, that (9) fails in just the same circumstances as (10), although in a rather different way.

It seems fairly clear, then, that so is not a pro-sentence in confirmation and conjunctive sentences. Obviously, then, we must look for a different account. In the next section, I will develop one.

14.2. Emphatic Conjunction

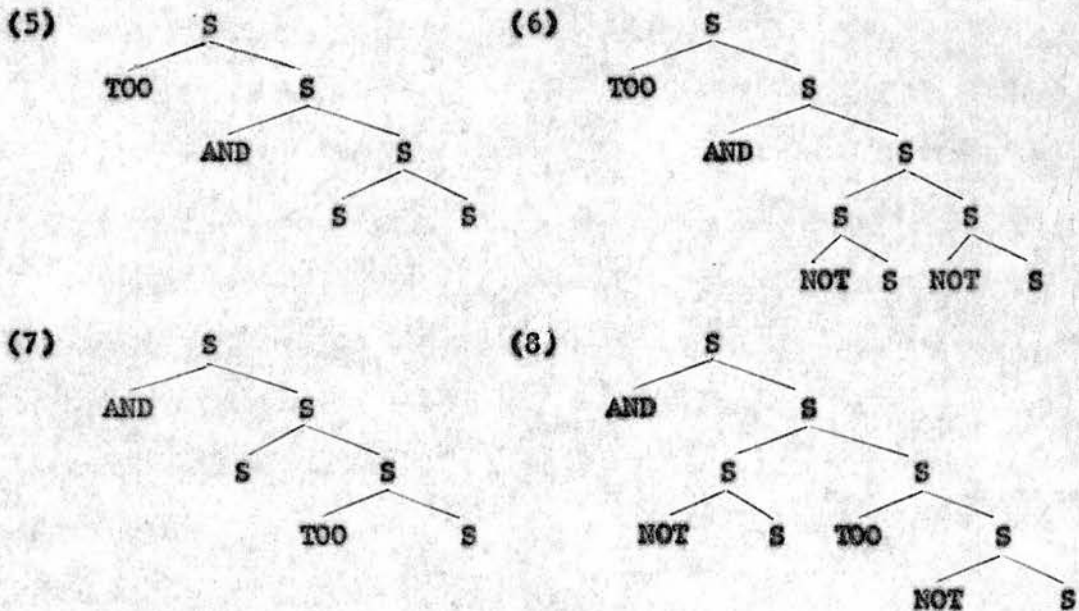
Although he regards so as a pro-sentence in confirmative sentences, Anderson (1976) suggests that it is not a pro-sentence in conjunctive sentences. Instead, he suggests (fn. 10) that it is related to also. This seems a quite plausible suggestion. I want, then, to investigate it. The first question that it prompts is: what sort of word is also? The obvious answer is that it is a signal of emphatic conjunction, like too and as well and, in negative conjunctions, either. Sentences like the following illustrate.

- (1) Erica read 'The 18th Brumaire', and she read 'The Class Struggles in France' also.
- (2) Steve is an economist, and he's a historian too.
- (3) Eve went to Spain, and she went to Portugal as well.
- (4) Jim doesn't like the Stones, and he doesn't like the Who either.

It is necessary, then, to take a look at emphatic conjunction.

The most extensive discussion of emphatic conjunction is that of Green (1973). She suggests that there are two types of emphatic conjunction, one in which both conjuncts are of equal importance, and one in which the second conjunct is added almost as an afterthought. She suggests that the former involves two falling intonations, one on too or either, and one before it, while the latter involves just one falling intonation on too or either. I doubt whether many people consistently make such a distinction. Presumably, however, there are some who do.

Assuming predicate-first order, and utilizing TOO as a predicate of emphasis, Green suggests (5) and (6) as underlying structures for ordinary emphatic conjunction, and (7) and (8) as underlying structures for 'afterthought' conjunction.



Conjunction copying and predicate raising apply to these structures to derive a wide range of surface forms.

The derivational processes envisaged by Green can be illustrated with the following sentences.

(9) Jim isn't a Pabloite, and he isn't a Schactmanite either.

(10) Jim isn't a Pabloite, nor a Schactmanite either.

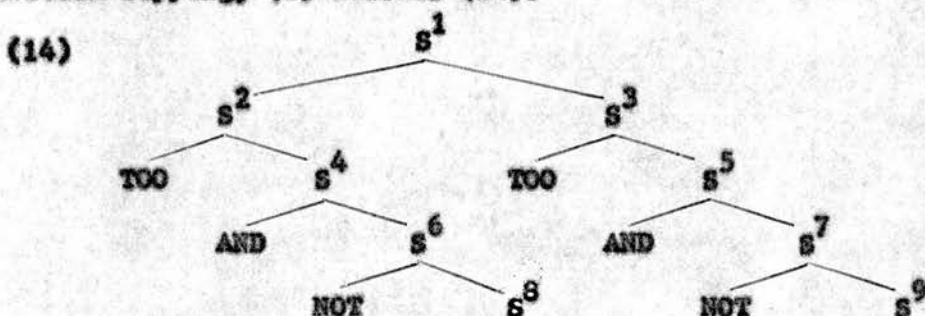
(11) Jim is neither a Pabloite nor a Schactmanite.

(12) Jim is both not a Pabloite and not a Schactmanite.

(13) Jim isn't a Pabloite, and nor is he a Schactmanite.

Green suggests that (9) - (12) have both ordinary emphatic and afterthought readings, but that (13) has only an afterthought reading.

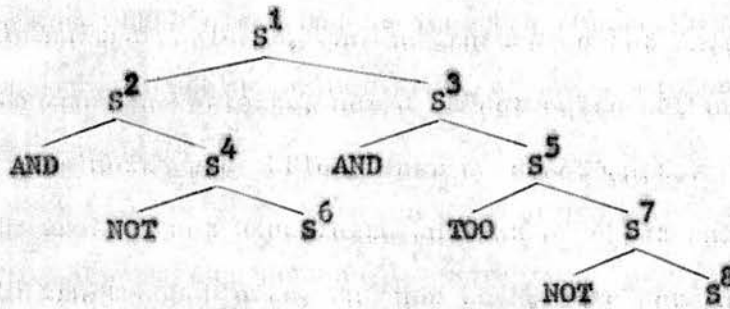
We can consider ordinary emphatic readings first. Here, after conjunction copying, (6) becomes (14).



The derivation of (9) is fairly simple. It will involve simply the deletion of the initial TOO and AND, and the realization of the second TOO as either by a mechanism outlined below. (10) is slightly more complex. It will involve predicate raising on S^5 , giving the complex predicate [AND[NOT]]. This will be realized as nor. TOO again will be realized as either. (11) is again more complex. Here, predicate raising applies on S^2 , S^3 , S^4 and S^5 , creating two complex predicates of the form [TOO[AND[NOT]]]. These are realized as neither and nor. (12) is rather different, involving predicate raising on S^2 and S^3 . Two complex predicates of the form [TOO[AND]] result, which are realized as both and and.

We can turn now to afterthought readings. Here, conjunction copying will convert (8) into (15).

(15)



(9) is fairly straightforward, involving deletion of initial AND and realization of TOO as either. (10) is more problematic. Here the NOT of S^7 must somehow be raised onto the AND of S^3 . Clearly, this will involve an extension of predicate raising. (11) will involve predicate raising on S^2 , S^3 and S^5 . Two complex predicates [AND[NOT]] and [AND[TOO[NOT]]] will be formed. The former will be realized as neither, and the latter as nor. (12) will involve predicate raising on S^3 , and the realization of AND as both and [AND[TOO]] as (stressed) and. (13), which has only an afterthought reading, will involve predicate raising on S^5 , creating [TOO[NOT]], which is realized as nor.

The derivational processes outlined above involve the following lexical insertion rules:

- (16) [AND[NOT]] \implies nor
 [TOO[AND[NOT]]] \implies neither
 [TOO[AND[NOT]]] \implies nor
 [TOO[AND]] \implies both
 [TOO[AND]] \implies and
 [AND[NOT]] \implies neither
 [AND[TOO[NOT]]] \implies nor
 [AND[TOO]] \implies and
 [TOO[NOT]] \implies nor

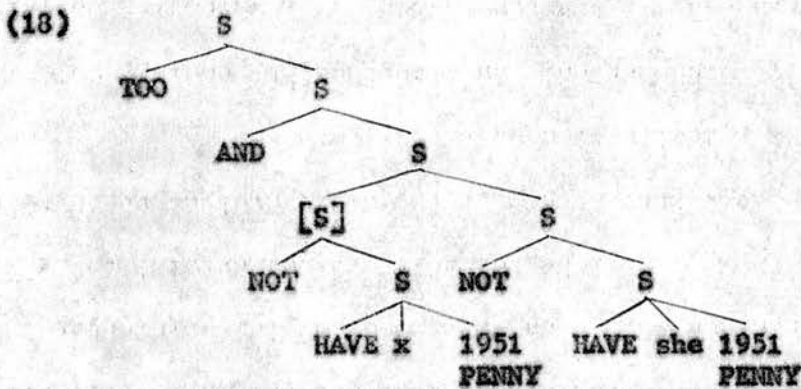
One thing that is suggested quite strongly by these rules is that TOO and AND are in fact the same element. Notice that both [TOO[AND[NOT]]]

and [AND[TOO[NOT]]] can be realized as nor. Similarly, [AND[NOT]] and [TOO[NOT]] can both be realized as nor. In much the same way, both [TOO[AND]] and [AND[TOO]] can be realized as and. If TOO and AND are interchangeable, as this suggests, it would seem reasonable to identify them. As things stand, however, this is difficult, because TOO is associated with a single sentence, whereas AND is associated with a set of sentences. I will return to this matter shortly.

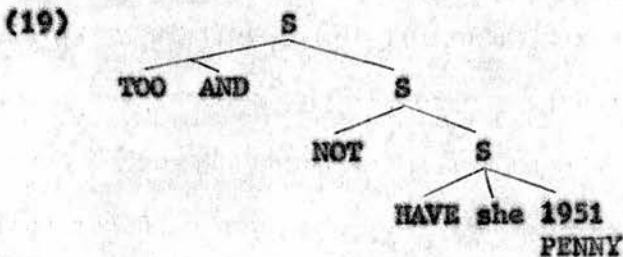
The least plausible aspect of Green's analysis is her account of either. She suggests that either is the realization of TOO under 'the shadow of an immediately lower negative'. She illustrates this conception with the following sentence.

(17) She doesn't have a 1951 penny either, does she.

This, she suggests, will derive from something like (18), in which the S in square brackets represents a presupposition.



After conjunction copying and predicate raising, this becomes (19) (presupposition omitted).



To this a rule of NOT-copying applies, formulated as in (20).

$$(20) \text{ PRED}[\text{TOO AND}]_S[\text{NOT X}]$$

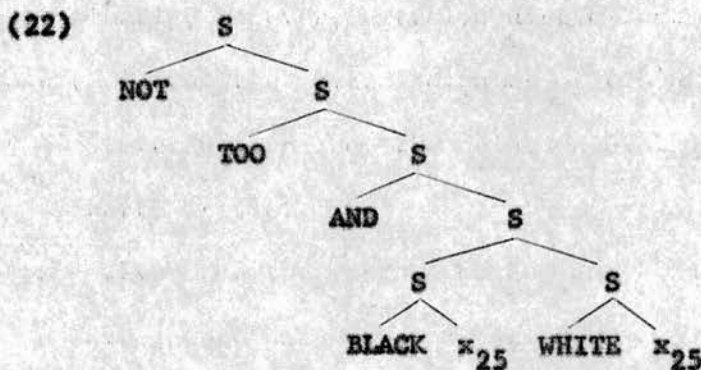
$$\begin{array}{ccc} 1 & 2 & 3 \\ \hline 2 + 1 & 2 & 3 \end{array} \implies$$

This rule produces a complex predicate of the form [NOT[TOO[AND]]], which is realized as either.

As independent evidence for this treatment, Green considers sentences like (21).

(21) Such issues are either black or white.

This, she suggests, can be derived from something like (22).



Clearly, conjunction copying and predicate raising can apply here to derive two constituents of the form [NOT[TOO[AND]]]. But (22) will not do as the underlying structure of (21). The truth conditions of (21) are not those of (22). (21) asserts that one of two propositions is true. (22) denies that both of two propositions are true. Unlike (21), it leaves open the possibility that they might both be false. Thus, sentences like (21) do not provide independent evidence for Green's proposal.

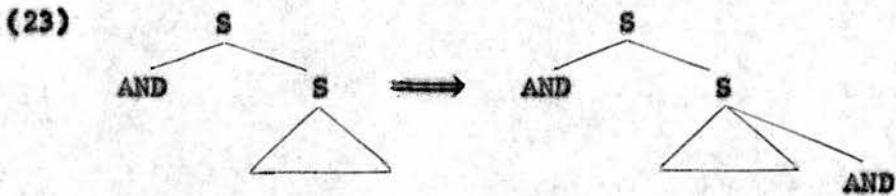
Green's account of either is subject to a number of other problems. Consider firstly a sentence like (9) on the afterthought reading. As we have seen, this will derive from a structure like (15). In (9), AND shows up on the surface. It is not incorporated into any other

constituent. It would seem, then, that both the rule of NOT-copying and the lexical insertion rule for either will need modifying to allow the complex [NOT[TOO]] to be realized as either. Next, consider a sentence like (9) on the ordinary emphatic reading. As we have seen, this will derive from a structure like (14). In (14), however, NOT is not immediately below TOO. The rule of NOT-copying will have to be extended to deal with such cases. Finally, there are problems with sentences like (10). The ordinary emphatic reading is reasonably straightforward. NOT will be raised onto AND to produce nor, and then copied onto TOO to produce either. The afterthought reading is more difficult. NOT will have to be copied onto TOO to produce either. Then, the original NOT will have to be raised onto AND. Clearly, this will involve an extension of predicate raising. It seems, then, that Green's account of either has neither independent support nor the kind of simplicity which she supposes it to have.

I have now outlined the main elements of Green's analysis. The analysis has much to recommend it. It also has its weaknesses, however. I want, then, to propose a number of revisions. When I have outlined these revisions, I will return to so. One aspect of Green's analysis that I will not question is her assumption that AND and NOT originate in sentence-initial position. If they are predicates, consistency would require that I drop this assumption. I doubt that they are predicates. If they are, though, my proposals will not require any great recasting. In what follows, I will ignore Green's distinction between ordinary emphatic and afterthought conjunction.

We saw earlier that there is evidence that emphatic conjunctions involve two ANDs. It is difficult, however, to incorporate two ANDs in underlying structure. There is a simple solution to this problem.

This is to assume that the second AND is introduced by a copying rule. I want, then, to suggest that there is a rule of the following form.



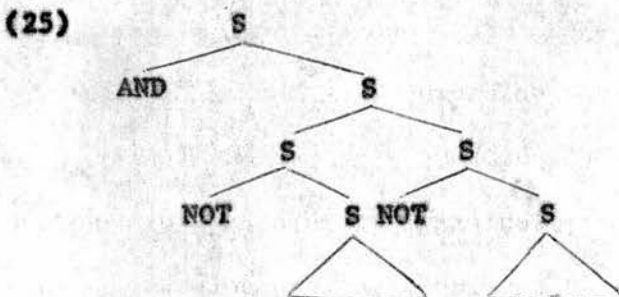
This will apply to the final conjunct of a conjunction, and will be triggered by certain presuppositions. Shortly, I will propose a second copying rule.

Now, we can return to either. We can suggest firstly that either represents an underlying disjunction in sentences like (21). In (9), then, we have a conjunction realized by the normal realization of a disjunction. To account for this, I want to propose the following constraint on lexical insertion.

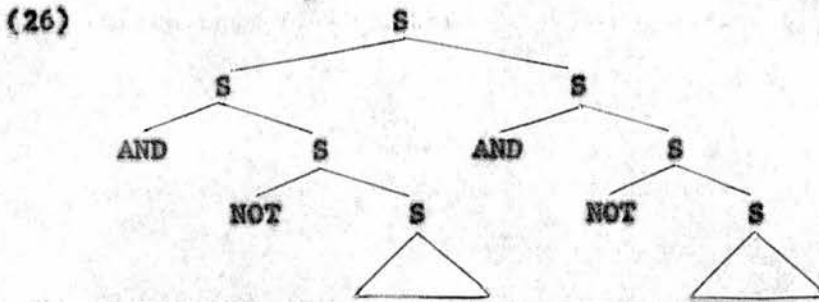
- (24) If a conjunction, C, asymmetrically commands a negative, N, in underlying structure, and a descendant of C follows a descendant of N and is commanded by it in shallow structure, the descendant of C will have the same realization as a disjunction.

We can illustrate the operation of this constraint fairly briefly.

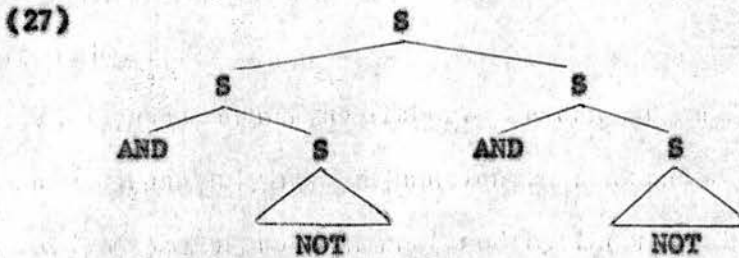
We can assume that (9) derives from a structure of the following form.



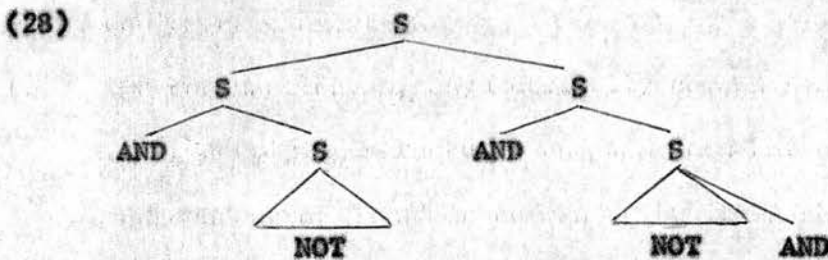
Conjunction copying will convert this into (26)²



NOT-lowering will convert this into (27).



(23) can then apply to give us (28).



Here, the final AND follows a negative and is commanded by it. Under (24), then, it has the same realization as a disjunction. The second

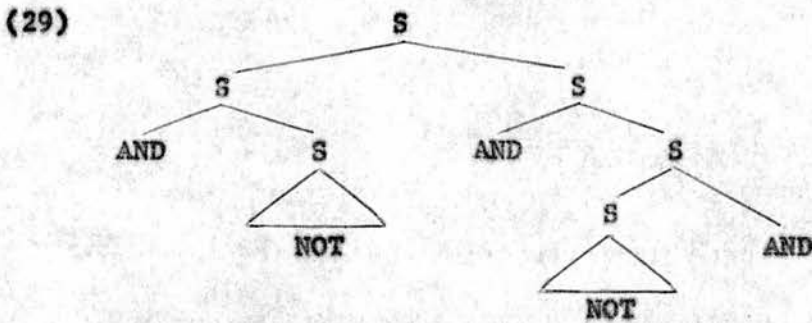
2. Actually, I doubt whether a simple copying rule is the correct mechanism for associating conjunctions with conjuncts. The fact that conjuncts can be spoken by different speakers, as in the following example, argues against this approach.

(1) A: Mary is a fool.

B: And Jane is.

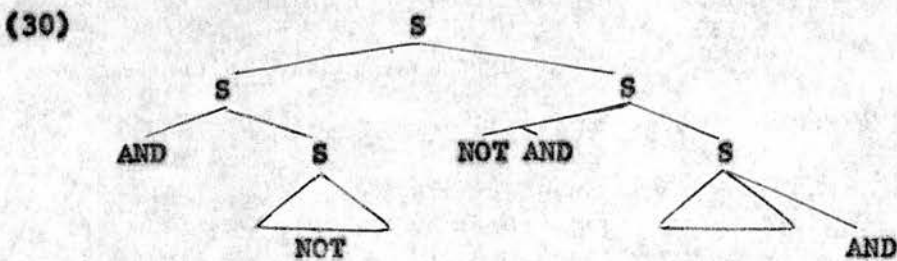
In the present context, however, this is not too important.

AND follows a negative but is not commanded by it. This, then, is not realized as a disjunction. The first AND is, of course deleted. We should note that, for the constraint to work, NOT-lowering must precede (23). If (23) applied first, we would have not (28) but (29).



Here, the final AND follows a negative, but it is not commanded by it. It would not, then, be realized as either. It might be possible to revise some aspect of the analysis so as to avoid the need for this restriction. I will not pursue this matter, however.

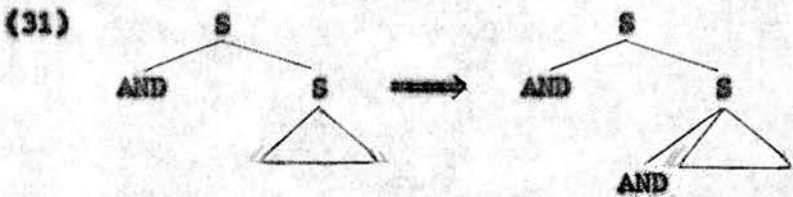
I want now to show that (24) accounts for certain other phenomena. Consider firstly (10). I want to suggest that this involves a rule which I will call 'neg-attachment'. How exactly this rule should be formulated is none too clear. I assume, however, that it attaches a negative to the left of certain constituents. In the derivation of (10), it will convert a structure like (28) into one like (30).



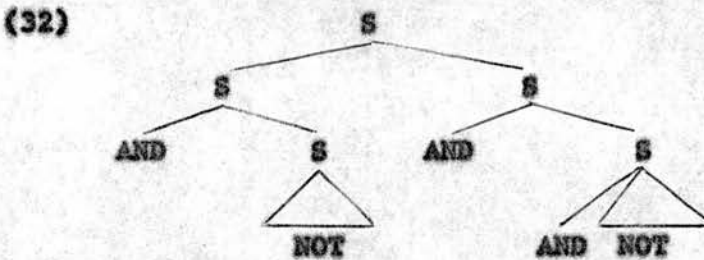
I assume that nor is the normal realization of NOT + OR. In (30), we have NOT + AND. Given (24), however, the AND will be treated like OR. NOT + AND, then, will be realized as nor.

We can note here that neg-attachment plays similar role in this system to that played by predicate raising in Green's system. Predicate raising, however, attaches NOT to the right of AND. For Green, then, nor is a realization of [AND[NOT]] in sentences like (10). Thus, she cannot invoke a constraint like (24) in connection with nor.

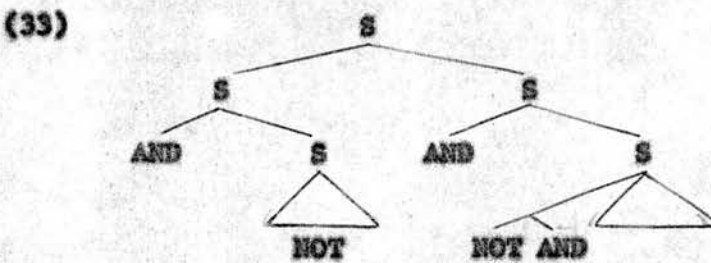
Consider now (13). I want to suggest that this involves a second copying rule of the following form.



Like (23), this will apply to the final conjunct of a conjunction. Applying to a structure like (27), it will give us the following.



Neg-attachment can apply to this to give (33).

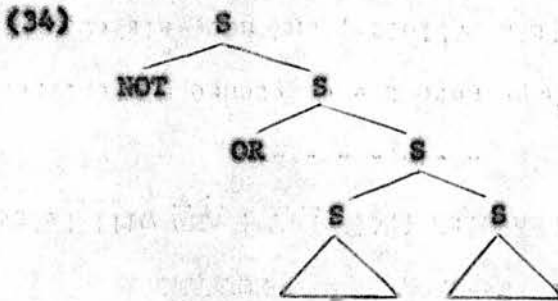


Then, in accordance with (24), NOT + AND will be realized as nor.³

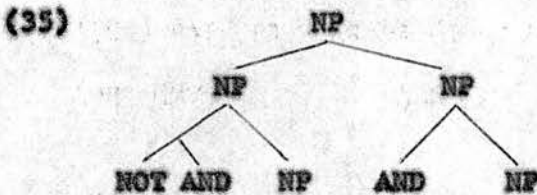
3. We should perhaps note the existence of sentences like (1).

(1) Jim isn't a Pabloite, and nor, either, is he a Schactmanite. Presumably, such sentences involve both the copying rules I have proposed.

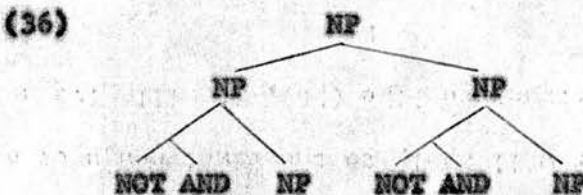
Finally, we can consider (11). We can derive this from a structure like (34).



It seems reasonable, however, to derive it from a structure like (25) as well. In this derivation, conjunction copying and neg-attachment will give us a structure like (35)



A copying rule will convert this into (36).



Then, the two NOT + AND complexes will be realized as neither and nor, in accordance with (24).

I want now to look briefly at some other phenomena which are not discussed by Green. Notice firstly that (38), not (39) is equivalent to (37).

(37) Brian doesn't like Auden, and he doesn't like Spender.

(38) Brian doesn't like Auden or Spender.

(39) Brian doesn't like Auden and Spender.

To account for this, Horn (1972) proposes a rule of 'factoring', which converts an and into an or when it is moved into the scope of a negat-

ive. Arguing against this approach, LeGrand (1974) suggests that (38) derives not from (37) but from a structure like (34). We can suggest a somewhat different account. We can derive (38) from a structure like (34). We can also, however, derive it from (37). Given (24), such a derivation will require no special rule.

Notice now that the following sentences are unacceptable.

(40) * Every dog didn't have a bone.

(41) * Each boy didn't leave.

I would like to suggest that the structures underlying these sentences are realized as (42) and (43), respectively.

(42) No dog had a bone

(43) No boy left.

We can allow for such derivations quite simply. We can assume firstly that neg-attachment is obligatory in such structures, producing NOT + EVERY and NOT + EACH. We can then suggest that there is a constraint like (24) requiring a universal quantifier to be treated as an existential quantifier in such complexes. I think, then, that we can account for sentences like (40) and (41) with a fairly simple extension of the mechanisms required for emphatic conjunction.⁴

We can return now to so. Firstly, we can consider conjunctive sentences like (44).

(44) Jim is reading Hegel, and so is Mary.

It seems quite plausible to suggest that such sentences involve the

- - - - -

4. Broadly similar proposals are made in Labov (1972) and Seuren (1974a). Seuren assumes, however, that quantifiers and negatives are predicates and that the negative is combined with the universal quantifier through negative raising.

second copying rule, (31). It seems plausible, in other words, to relate such sentences to sentences like (45).

(45) Jim doesn't like Kierkegaard, and nor does Mary.

It must be said, however, that there is an important difference between the two sentence types. VP-deletion must apply in the former, but it need not apply in the latter. The following illustrate.

(46) * Jim is reading Hegel, and so is Mary reading Hegel.

(47) * Jim is reading Hegel, and so is he reading Feuerbach.

(48) Jim doesn't like Kierkegaard, and nor does Mary like
Kierkegaard.

(49) Jim doesn't like Kierkegaard, and nor does he like
Heidegger.

I have no explanation for this contrast. I don't think, however, that it detracts to any great extent from the plausibility of the present proposal.⁵

We can now consider confirmative sentences like (50).

(50) Ali said he was the greatest, and so he was.

Here, there are no parallel sentences with nor. (51) illustrates.

(51) * Tony said he wasn't a spy, and nor he was.

There are, however, sentences like (52).

(52) Tony said he wasn't a spy, and nor was he.

Such sentences are confirmative in just the same way as sentences like (50). Sentences like (52) will presumably involve (31). It seems natural, then, to suggest that sentences like (50) do also.

- - - - -

5. Parallel to the sentences noted in fn. 3., we have sentences like (i).

(i) Jim is reading Hegel, and so, too, is Mary.

Presumably, both copying rules are again involved.

It seems, however, that we have a further difference between so and nor. so does not trigger subject verb inversion in confirmative contexts, whereas nor triggers it as usual.

Some sentences which might be thought to pose a problem for this proposal are the following.

(53) Ali said he was the greatest, and indeed he was.

(54) * Jim is reading Hegel, and indeed is Mary.

These appear to suggest that indeed is an alternative to so in confirmative sentences but not in conjunctive sentences. Strictly speaking, however, indeed is not an alternative to so since both can occur in a single sentence. (55) illustrates.

(55) Ali said he was the greatest, and so indeed he was.

I don't think, then, that the contrast between (53) and (54) poses any real problems.

One further point is that too also is possible in confirmative sentences. (56) illustrates.

(56) Ali said he was the greatest, and he was too.

This suggests that (23) also applies in confirmative sentences. It should be noted, however, that also is impossible in confirmative contexts.

(57) * Ali said he was the greatest, and he was also.

I have no explanation.

I think, then, that Anderson was right in relating conjunctive so to also, and thus to emphatic conjunction. I think, however, that he should also have related confirmative so to emphatic conjunction. Both uses of so seem to fit naturally into an analysis of emphatic conjunction. I think, then, that it is quite plausible to regard conjunctive and confirmative so as realization of AND, just like also, too and either

14.3. More as Clauses

I want to conclude this chapter by taking a look at some more as clauses. They are illustrated in sentences like the following.

(1) Sam is a poet, as his father was before him.

(2) Eve has gone to Ithaca, as Jim has.

Superficially, they are rather like adverbial as clauses. Unlike the latter, however, they are preceded by comma intonation. They also often allow subject verb inversion, which adverbial as clauses do not. The following illustrate.

(3) Sam is a poet, as was his father before him.

(4) * Jim played as did Steve.

I want, then, to look at these clauses.

How should these clauses be analyzed? Looking firstly at (1), we might suggest that it involves an adverbial as clause. (1) is equivalent to (5).

(5) Sam is a poet. He is as his father was before him.

We might suggest, then, that (1) derives from (5). It seems, however, that we cannot propose a similar analysis for (2). There is no sentence like (5) from which (2) could derive. (6) is clearly unacceptable.

(6) * Eve has gone to Ithaca. She is as Jim has.

Nor is this kind of analysis very plausible for (3), given the ungrammaticality of (7).

(7) * He is as was his father before him.

Thus, while (1) might derive from (5), we require a different analysis for (2) and (3).

I think that the analysis I have suggested for (1) is probably correct. What, then, of (2) and (3)? I want to suggest that they

derive from ordinary conjunctions, and that as is an idiomatic realization of and. The as clauses in these sentences can be regarded as an example of syntactic analogy in the sense of Hankamer (1972), Cole (1974) and Clements (1975). They are not a simple example, however. In part, they mimic adjectival as clauses. They begin with as. They also involve the same kinds of deletion as adjectival as clauses. Where they involve subject verb inversion, however, they seem to mimic the second clause of sentences like (8).

(8) Jim is a positivist, and so is Mary.

It seems, then, that these as clauses are quite complex. I think, however, that the analysis I have suggested is quite plausible.

We should perhaps note finally that the as clauses of sentences like (1) and (2) can be replaced by like phrases. The following illustrate.

(9) Sam is a poet, like his father before him.

(10) Eve has gone to Ithaca, like Jim.

These sentences pose no problems. They are equivalent to (11) and (12), respectively.

(11) Sam is a poet. (In this) he is like his father before him.

(12) Eve has gone to Ithaca. (In this) she is like Jim.

In both cases, then, we seem to have ordinary adjectival like phrases.

CHAPTER 15

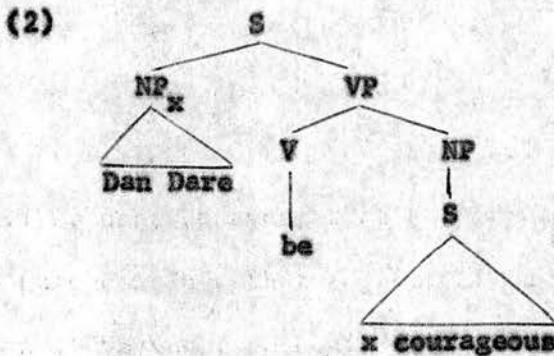
MISCELLANEOUS QUESTIONS

As the title suggests, the topics in this chapter are quite unrelated. There are three topics that I want to discuss. Firstly, I want to consider two classes of pseudo-pronouns. Then, I will look at what I will term ambient go. Finally, I will say something about Sampson's (1975) discussion of the single mother condition.

15.1. Pseudo-pronouns

I suggested in the last chapter that it is likely that adjectival be is a transitive verb, taking a full NP and an open sentence as its arguments. On this view, (1) will derive from something like (2).

(1) Dan Dare is courageous.



Anaphoric sentences like (3) provide support for this analysis.

(3) Dan Dare is courageous, and Digby is that too.

So, too, do pseudo cleft sentences like (4).

(4) What Dan Dare is is courageous.

I think, then, that it is quite plausible.¹ I also noted that there

1. One problem for this proposal is the fact that adjectives can have complements as subjects as in (1).

(1) That Mary is mad is obvious.

(7) and (8) will have similar sources.

(7) Beren may be ambidextrous.

(8) Hurin has gone to bed.

In addition to the evidence noted earlier, support for such analyses comes from the absence of sentences like (3) and (4) with these verbs.

The following illustrate.

(9) * Frodo is playing backgammon, and Sam is that too.

(10) * What Frodo is is playing backgammon.

(11) * Beren may be ambidextrous, and Luthien may that too.

(12) * What Beren may is be ambidextrous.

(13) * Hurin has gone to bed, and Turin has that too.

(14) * What Hurin has is gone to bed.

It seems fairly clear, then, that these verbs are not transitive. It is natural, then, to assume that they are intransitive.

Two classes of sentences appear to pose a problem for this conclusion. The following illustrate.

(15) That Frodo is playing backgammon, which he is, is amusing.

(16) That Beren may be ambidextrous, which he may, is surprising.

(17) That Hurin has gone to bed, which he has, is fortunate.

(18) They say Frodo is playing backgammon, and that he is.

(19) They say Beren may be ambidextrous, and that he may.

(20) They say Hurin has gone to bed, and that he has.

We might take such sentences as evidence that these verbs are transitive after all. If we do, however, the ungrammaticality of sentences like (9) - (14) will be a problem. So, too, will the evidence considered earlier. The correct position, I think, is that these verbs are intransitive, and that it is sentences like (15) - (20) that are the problem. Now, then, should we account for such sentences? I want

to suggest that the pronouns are not real pronouns. Rather they are idiomatic realizations of AND. Notice that we have sentences like the following.

- (21) That Frodo is playing backgammon, and he is, is amusing.
- (22) That Beren may be ambidextrous, and he may, is surprising.
- (23) That Hurin has gone to bed, and he has, is fortunate.
- (24) They say that Frodo is playing backgammon, and so he is.
- (25) They say Beren may be ambidextrous, and so he may.
- (26) They say Hurin has gone to bed, and so he has.

In (21) - (23), we have and. In (24) - (26), we have so, which, I have argued, is a realization of AND. (21) - (26) pose no real problems. Nor will (15) - (20), if we interpret the pronouns as idiomatic realizations of AND. I think, then, that this approach is quite plausible.

Some independent support for this approach comes from sentences like the following.

- (27) Jim was criticized by Mary, which he wasn't by Helen.
- (28) Sam is kind to animals, which he isn't to children.
- (29) Jim looked ill to Mary, which he didn't to Sam.
- (30) Helen was arrested in France, which she wasn't in Germany.

Here, it is not at all plausible to regard the pronouns as real pronouns. In (27), the apparent antecedent of which is not criticized by Mary but criticized. But which is not adjacent to criticized. (28) - (30) show the same peculiarity. Notice now that we have the following sentences.

- (31) Jim was criticized by Mary, but he wasn't by Helen.
- (32) Sam is kind to animals, but he isn't to children.
- (33) Jim looked ill to Mary, but he didn't to Sam.

(34) Helen was arrested in France, but she wasn't in Germany.
 We can suggest that (27) - (30) are alternative realizations of the structures underlying (31) - (34). We should note that sentences like (27) - (30) are only possible when there are parallel sentences with but. (35) and (36) are ungrammatical.

(35) * John played football, which he didn't cricket.

(36) * Mary appears eager, which she doesn't competent.

So, too, are (37) and (38).

(37) * John played football, but he didn't cricket.

(38) * Mary appears eager, but she doesn't competent.

I think, then, that the view that certain pronouns are idiomatic realizations of AND is quite well motivated.

The use of which and that as realizations of AND can be regarded as an example of syntactic analogy comparable to the as clauses considered in the last chapter. The basis for the analogy is provided by sentences like the following.

(39) That Gil-Galad is angry, which he is, is surprising.

(40) They said Elendil was brave, and that he was.

(41) Galadriel is perceptive, which Celeborn isn't.

Here, we have adjectival be. Thus, the pronouns can be real pronouns.

I have argued, then, that there are two classes of pronouns that are not real pronouns. Instead, they are idiomatic realizations of AND. This proposal allows us to maintain the assumption that progressive be, epistemic may and perfective have are intransitive, in spite of sentences like (15) - (20). It also accounts for sentences like (27) - (30). It appears that these pronouns can be regarded as an example of syntactic analogy.

15.2. Ambient so

As I said at the end of 9.1., I want to argue that there is an ambient so as well as an ambient it and an ambient there. The so that I am interested in is illustrated in sentences like the following.

(1) Angus is agitated. Is that so?

(2) If that is so, we'd better look out.

Perhaps the obvious suggestion is that this so is an adjective with much the same meaning as true. If it is an adjective, however, it is an unusual one, in that, as Anderson (1976, fn. 11.) points out, it has no comparative or superlative form. This casts doubt on this proposal. In any event, I think there are good reasons for deriving this so from a simple way phrase, like other gos that I have considered.

I want to suggest that this so derives from a simple way phrase and that the definite description in the way phrase is ambient in the sense that it refers not to some specific manner or condition but to the way 'things' are. In this sense, it is an ambient so. One problem for this proposal is that this so cannot be replaced by a simple the way. The following illustrate.

(3) * Angus is agitated. Is that the way?

(4) * If that is the way, we'd better look out.

Notice, however, that it can be replaced by the way it is.

(5) Angus is agitated. Is that the way it is?

(6) If that is the way it is, we'd better look out.

Here, we have a complex definite description involving a relative clause that contains ambient it. Clearly, this definite description has much the same import as the simple definite description underlying so in (1) and (2). Notice also sentences like the following.

(7) Angus is agitated. Is that how it is?

(8) If that is how it is, we'd better look out.

I assume that a how clause, like an as clause, derives from a complex way phrase. I assume, then, that (7) and (8) have the same source as (5) and (6). (5) - (8) suggest that the unacceptability of (3) and (4) is an idiosyncratic fact, and not something fundamental. I don't think, then, that it detracts too greatly from the plausibility of the present proposal.

The plausibility of the proposal is enhanced somewhat by sentences like the following.

(9) Angus is agitated. Is that the case?

(10) If that is the case, we'd better look out.

Here, the case is ambient in the sense that it refers to the general case, not to some specific case. (9) and (10) contrast with (11), where the case refers to the case just described, and is thus non-ambient.

(11) Tony's wife has run off with the milkman and his son has been arrested on a drugs charge. The case is a difficult one.

Rather like the case is the situation. Parallel to (9) and (10), we have the following.

(12) Angus is agitated. Is that the situation?

(13) If that is the situation, we'd better look out.

Here, the situation is ambient. Parallel to (11), we have (14), where the situation is non-ambient.

(14) Tony's wife has run off with the milkman and his son has been arrested on a drugs charge. The situation is a difficult one.

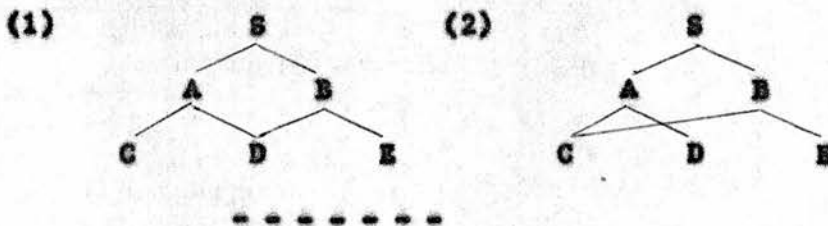
In the light of these sentences, it seems quite natural to suggest that sentences like (1) and (2) involve an ambient the way.

I think, then, that the analysis I have advanced is quite plausible. It seems, then, that we have an ambient so, as well as ambient it and ambient there.

15.3. In Defence of Single Mothers

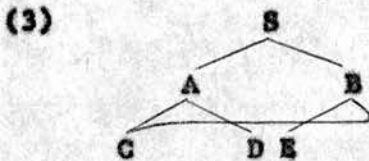
I turn now to Sampson's (1975) discussion of the single mother condition.² The single mother condition is the requirement that no node should have more than one mother. It is central to the definition of a tree, as the term is normally understood in linguistic theory. Sampson argues that the condition should be dropped, and that trees should be replaced by 'semitrees'. He argues for this change on the basis of certain anaphoric phenomena. It is natural, then, that I should say something about his argument.

I want to begin by stressing the radical character of the change that Sampson is proposing. Although he speaks simply of dropping the single mother condition, his semitrees include structures that are three steps removed from ordinary trees. Notice firstly that one could drop the single mother condition but continue to require that if a node A is to the left of a node B then no daughter of A can be to the right of a daughter of B. This would allow structures like (1), but not structures like (2).



2. This discussion owes much to conversations with John Anderson.

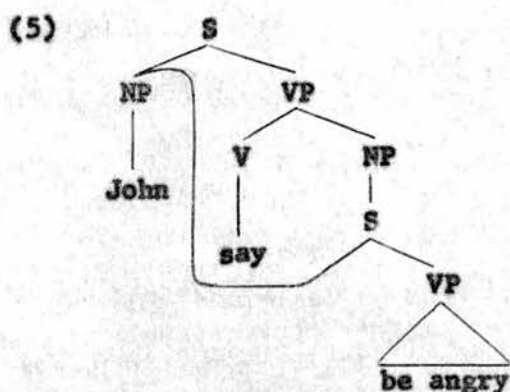
Secondly, notice that one could allow structures like (1) and (2) but require that if a node A is to the left of a node B a daughter of A that is also a daughter of B must be the leftmost daughter of B. This would rule out structures like (3).



Sampson allows structures of all three kinds. Clearly, then, he is proposing a quite radical change. Obviously, good reasons must be advanced for such a change.

If I understand it correctly, Sampson's claim is that this change eliminates certain kinds of arbitrariness inherent in accounts of anaphoric phenomena within a theory which only allows ordinary trees. The first kind of arbitrariness he finds in accounts of anaphoric pronouns. He assumes that the classical theory is essentially correct in taking anaphoric pronouns to derive from NP's lexically and referentially identical to their antecedents. He takes the theory to involve the assumption that only NP's that are lexically identical can be marked as coreferential. He suggests, then, that this is quite arbitrary in a theory that only allows ordinary trees. He suggests that this arbitrariness can be eliminated quite simply in a theory allowing semitrees. He proposes that an anaphoric pronoun and its antecedent derive from a single node with two mothers. (4), for example, would derive from something like (5).

(4) John said he was angry.



Since John and he derive from the same referring node, they must have the same reference. There is no longer any need to allow NP's to be marked as coreferential if and only if they are lexically identical. Instead, one can require any referring node to be distinct in reference from any other.

The obvious problem with this argument is that its starting point - the classical theory - is untenable. More particularly, the assumption that NP's can be marked as coreferential if and only if they are lexically identical is untenable. There are two reasons for rejecting it. Firstly, it necessitates highly complex and otherwise unnecessary transformational machinery. Not only pronouns like it in (6) but also definite descriptions like the girl in (7) would have to be derived transformationally.

(6) Jim read the article quickly. It didn't say anything new.

(7) Sam was talking to the girl from Athens. The girl was shouting.

Secondly, as I argued earlier, the assumption misrepresents the nature of reference. It suggests that NP's can have the same reference only if they have the same meaning. This is simply false. Since the basic assumption is false, this argument establishes nothing.

Sampson finds a second, more general kind of arbitrariness in the fact that transformations can require identity but not non-identity.

of the identical VP's. Thus, while Sampson's proposal eliminates one kind of arbitrariness, it introduces another.

I suggested earlier that good reasons are necessary for a change as radical as that proposed by Sampson. I think it is fairly clear that Sampson has not provided good reasons. I think, then, that the single mother condition should be retained.

CHAPTER 16

CONCLUDING REMARKS

In this final chapter, I want to draw together the main conclusions of the last five chapters and of the thesis as a whole. Apart from reciprocal pronouns and deletion processes, we have now considered all the main anaphoric phenomena of English. It is possible, then, to make some general points about anaphora in English. I suspect that the validity of these points will not be limited to English.

In the last five chapters, I have looked at some of the ways in which constituents other than NP's enter into anaphoric relations. The simplest anaphors I have considered are then and there. I have argued that they derive from at that time and in that place, respectively. Rather more complex are so and such. As anaphors in sentences like the following, they appear to derive from in that way.

- (1) Steve is anxious, and he's been so for some time.
- (2) Joan is looking for a tall Italian, but she won't find such an Italian here.

Both, however, can also derive from simple or complex extent phrases, and such can derive from a complex way phrase as well. We have examples like the following.

- (3) Sam is so foolish.
- (4) Sam is such a fool.
- (5) Jim isn't so foolish as Sam.
- (6) Jim isn't such a fool as Sam.
- (7) With such men as Bradman, the Australians were invincible.

Clearly, then, they are quite complex.

A further complexity of so is its presentential use, illustrated in exchanges like the following.

(8) Does Brian like Joni Mitchell? I think so.

I cannot claim to have solved all the problems associated with this use. I think, however, that it is reasonably clear that this so is an idiomatic realization of a sentential pronoun. Another idiomatic anaphor is like that in sentences like the following.

(9) Dick is delirious, and he's been like that for days.

I have argued that this is an idiomatic realization of in that way. It seems, then, that English has two important idiomatic anaphors.

Perhaps the most important conclusion to emerge from these investigations is the central position of definite descriptions in English anaphora. In the first half of the thesis, I argued that pronouns are of two main kinds: bound variables and referential pronouns. I argued that the latter are a kind of definite description. In the last five chapters, I have argued that certain elements that involve underlying definite descriptions play a crucial role in non-nominal anaphora. In this way, then, definite descriptions are central to English anaphora. Definite descriptions, of course, are not limited to an anaphoric use. It follows, then, that English anaphora depends to a large extent on elements that are not essentially anaphoric.

Another important conclusion is that anaphors do not generally derive from copies of their antecedents. Probably only intensional pronouns and the null anaphors in sentences like the following have such a source.

(10) Sam likes Buffy Sainte Marie, but Jim doesn't.

(11) Jim plays tennis, and Sam cricket.

(12) Someone attacked the rector, but we don't know who.

If anaphors did generally derive from copies of their antecedents, adjectives and adverbs would be on a par with NP's where anaphora is concerned. As it is, however, they are not on a par. NP's enter anaphoric relations directly as antecedents of bound variables or pronouns of laziness. Adjectives and adverbs only enter anaphoric relations indirectly through inferences. In (13), for example, irritable enters into an anaphoric relation through an inference which establishes an antecedent for the definite description underlying so.

(13) Eve is irritable, and she's been so for weeks.

The same is true of carefully in (14).

(14) Steve filled in the form carefully, and he'd do it so again.

Here, then, we have an important contrast between NP's and other constituents. This is another important conclusion.

I want now to sketch a taxonomy of English anaphors. The main contrast I want to draw is between those anaphors that are essentially anaphoric and those which are not. I will call the former 'essential anaphors' and the latter 'accidental anaphors'. Bound variables obviously fall into the former category. So, too, do reciprocal pronouns. It also includes anaphors that arise transformationally, such as intensional pronouns and the null anaphors in sentences like (10) - (12). In the latter category, we have anaphoric definite descriptions and pronouns of laziness. Here also, we have then and there and so, such and like that. I have noted that presentential so seems not to have a non-anaphoric use. I have argued, however, that it is a realization of a sentential pronoun, i.e. of a pronoun of laziness. It seems reasonable, then, to regard it too as an

accidental anaphor.

In a sense, English has a third class of anaphors. In the last chapter, I argued that which and that in sentences like the following are idiomatic realizations of AND.

(15) That Frodo is playing backgammon, which he is, is amusing.

(16) They say Frodo is playing backgammon, and that he is.

As such, they are pseudo-pronouns. In chapter 14., I argued that so is a realization of AND in sentences like the following.

(17) They say the Prime Minister is mad, and so he is.

(18) Joanna is reading the Beano, and so is Alicja.

We can regard this so as another pseudo-anaphor. It seems, then, that English has an important class of pseudo-anaphors. Of course, pseudo-anaphors are not really anaphors at all. It is convenient, however, to include them in this classification.

It seems, then, that we have something like the following taxonomy of anaphors.

(19)a. Essential Anaphors:

bound variables, reciprocal pronouns, intensional pronouns, null anaphors in sentences like (10) - (12).

b. Accidental anaphors:

0 anaphoric definite descriptions, pronouns of laziness, then, there, so, such, like that, presentential so.

c. Pseudo-anaphors:

which in sentences like (15), that in sentences like (16), so in sentences like (17) and (18).

This, then, is the picture that emerges from our investigations.

The obvious question to ask about the conclusions I have been outlining is: how far do they apply to languages other than English?

I think the main conclusions may well apply universally. It is likely, I think, that definite descriptions will be central to anaphora in all languages. It also seems likely that most anaphors will not derive from copies of their antecedents in all languages. Finally, I think it is likely that all languages will involve a contrast between NP's and other constituents where anaphora is concerned. Of course, these questions can only be decided by detailed investigations. Here, then, there is ample room for further research.

BIBLIOGRAPHY

- Adams, D., M.A. Campbell, V. Cohen, J. Lovins, E. Maxwell, C. Nygren and J. Reighard (eds.) (1971), Papers from the Seventh Regional Meeting of the Chicago Linguistic Society, Chicago.
- Aijmer, K. (1972), Some Aspects of Psychological Predicates in English, Stockholm Studies in English 24, Stockholm: Almqvist and Wiksell.
- Akmajian, A. (1970), 'On deriving cleft sentences from pseudo cleft sentences', Linguistic Inquiry 1, 149 - 168.
- Anderson, J.M. (1971), The Grammar of Case: Towards a Localistic Theory, London: Cambridge University Press.
- Anderson, J.M. (1973a), 'Maximi Planudis in memoriam', in Kiefer and Ruwet (eds.) (1973), 20 - 47.
- Anderson, J.M. (1973b), 'Some speculations concerning meetings, matrimony, family resemblances and related matters', York Papers in Linguistics 3, 7 - 29.
- Anderson, J.M. (1974a), 'Existential quantifiers', Acta Linguistica Hafniensia 15, 1 - 27.
- Anderson, J.M. (1974b), 'Concerning quantifiers and coordination', Linguistics Agency, University of Trier.
- Anderson, J.M. (1975), 'Noun phrases as adjectives: Serialisation in seven parts', Linguistics Agency, University of Trier.
- Anderson, J.M. (1977), On Case Grammar, London: Croom Helm.
- Anderson, S.R. (1976), 'Prosential forms and their implications for English sentential structure', in McCawley (ed.) (1976), 165 - 200.
- Anderson, S.R. and F. Kiparsky (eds.) (1973), A Festschrift for Morris Halle, New York: Holt, Rhinehart and Winston.

- Bach, E. (1968), 'Nouns and noun phrases', in Bach and Harms (eds.) (1968), 90 - 122.
- Bach, E. (1970), 'Problematization', Linguistic Inquiry 1, 121 - 2.
- Bach, E., J.W. Bresnan and T. Wasow (1974), "'Sloppy identity": An unnecessary and insufficient criterion for deletion rules', Linguistic Inquiry 5, 609 - 14.
- Bach, E. and R.T. Harms (eds.) (1968), Universals in Linguistic Theory, New York: Holt, Rhinehart and Winston.
- Bach, E. and G.M. Horn (1976), 'Remarks on "Conditions on transformations"', Linguistic Inquiry 7, 265 - 99.
- Bartsch, R. (1973), 'The semantics and syntax of number and numbers', in Kimball (ed.) (1973b), 51 - 93.
- Bartsch, R. and T. Venneman (1972), Semantic Structures, Frankfurt am Main: Athenäum.
- Berman, A. (1974), 'On the VSO hypothesis', Linguistic Inquiry 5, 1 - 37.
- Bever, T.G., J.J. Katz and D.T. Langendoen (eds.) (1976), An Integrated Theory of Linguistic Ability, New York: Thomas Y. Crowell.
- Bever, T.G. and D.T. Langendoen (1971), 'A dynamic model of the evolution of language', Linguistic Inquiry 2, 433 - 63; also in Bever, Katz and Langendoen (eds.) (1976), 115 - 47.
- Binnick, R.I., A. Davison, G.M. Green and J.L. Morgan (eds.) (1969) Papers from the Fifth Regional Meeting of the Chicago Linguistic Society, Chicago
- Bolinger, D.W. (1967), 'Adjectives in English: Attribution and predication', Lingua 18, 1 - 34.
- Bolinger, D.W. (1970), 'The meaning of do so', Linguistic Inquiry 1, 140 - 4.

- Bolinger, D.W. (1972), Degree Words, The Hague: Mouton.
- Bolinger, D.W. (1973), 'Ambient it is meaningful too', Journal of Linguistics 9, 261 - 70.
- Bonney, W.L. (1976), Problems in the Grammar and Logic of English Complementation, Ph.D. thesis, University of Oxford.
- Bresnan, J.W. (1970), 'An argument against pronominalization', Linguistic Inquiry 1, 122 - 3.
- Bresnan, J.W. (1971), 'A note on the notion "Identity of sense anaphora"', Linguistic Inquiry 2, 589 - 96.
- Bresnan, J.W. (1972), The Theory of Complementation in English Syntax, Ph.D. dissertation, M.I.T.
- Bresnan, J.W. (1973), 'Syntax of the comparative clause construction in English', Linguistic Inquiry 4, 275 - 343.
- Burt, M.K. (1971), From Deep to Surface Structure: An Introduction to Transformational Syntax, New York: Harper and Row.
- Carden, G. and T. Dieterich (1976), 'Coreference evidence for a transformationalist analysis of nominals', Indiana University Linguistics Club.
- Chomsky, N.A. (1965), Aspects of the Theory of Syntax, Cambridge, Mass.: M.I.T. Press.
- Chomsky, N.A. (1968), Language and Mind, New York: Harcourt, Brace and World.
- Chomsky, N.A. (1970), 'Remarks on nominalization', in Jacobs and Rosenbaum (eds.) (1970), 184 - 221; also in Chomsky (1972), 11 - 61.
- Chomsky, N.A. (1971), 'Deep structure, surface structure and semantic interpretation', in Steinberg and Jakobovits (eds.) (1971), 183 - 216; also in Chomsky (1972), 62 - 119.

- Chomsky, N.A. (1972), Studies on Semantics in Generative Grammar,
The Hague: Mouton.
- Chomsky, N.A. (1973), 'Conditions on transformations', in Anderson
and Kiparsky (eds.) (1973), 232 - 86; also in Chomsky (1977b),
81 - 160.
- Chomsky, N.A. (1975), Reflections on Language, New York: Pantheon.
- Chomsky, N.A. (1976), 'Conditions on rules of grammar', Linguistic
Analysis 2; also in Chomsky (1977b), 163 - 210.
- Chomsky, N.A. (1977a), 'On wh-movement', in A. Akmajian, P. Culicover
and T. Wasow (eds.) (1977), Formal Syntax, New York: Academic
Press.
- Chomsky, N.A. (1977b), Essays on Form and Interpretation, New York:
Elsevier-Holland.
- Clements, G.N. (1975), 'Analogical reanalysis in syntax: The case
of Ewe tree-grafting', Linguistic Inquiry 6, 3 - 51.
- Cole, P. (1974), 'Backwards pronominalization and analogy', Linguist-
ic Inquiry 5, 425 - 43.
- Cole, P. (1975a), 'The synchronic and diachronic status of conversat-
ional implicature', in Cole and Morgan (eds.) (1975), 257 - 288.
- Cole, P. (1975b), 'Referential opacity, attributiveness, and the
performative hypothesis', in Grossman et. al. (eds.) (1975a),
672 - 89.
- Cole, P. and J.L. Morgan (eds.) (1975), Syntax and Semantics, vol. 3,
New York: Academic Press.
- Cole, P. and J.M. Sadock (eds.) (1977), Syntax and Semantics, vol. 8,
New York: Academic Press.
- Cooper, R. and T. Parsons (1976), 'Montague grammar, generative
semantics and interpretive semantics', in Partee (ed.) (1976)
311 - 62.

- Corum, C., T.C. Smith-Stark and A Weiser (eds.) (1973), Papers from the Ninth Regional Meeting of the Chicago Linguistic Society, Chicago.
- Cresswell, M.J. (1973), Logics and Languages, London: Methuen.
- Cresswell, M.J. (1976), 'The semantics of degree', in Partee (ed.) (1976), 261 - 92.
- Cullicover, P. (1971), Syntactic and Semantic Investigations, Ph.D. dissertation, M.I.T.
- Cushing, S. (1972), 'The semantics of sentence pronominalization', Foundations of Language 9, 186 - 208.
- Dahl, O. (1973), 'On so-called "sloppy identity"', Synthese 26, 81 - 112.
- Davidson, D.A. and G.H. Harman (eds.) (1972), Semantics of Natural Language, Dordrecht: Reidel.
- Davison, A. (1975), 'Indirect speech acts and what to do with them', in Cole and Morgan (eds.) (1975), 143 - 85.
- Delacruz, E.B. (1976), 'Factives and proposition level constructions in Montague grammar', in Partee (ed.) (1976), 177 - 99.
- Dik, S.C. (1972), 'Crossing coreference again', Foundations of Language 9, 306 - 26.
- Dik, S.C. (1974), 'The semantic representation of manner adverbials', unpublished paper.
- Donnellan, K.S. (1966), 'Reference and definite descriptions', Philosophical Review 75, 281 - 304; also in Steinberg and Jakobovits (eds.) (1971), 100 - 114.
- Dougherty, R.C. (1969), 'An interpretive theory of pronominal reference', Foundations of Language 5, 488 - 519.
- Dowty, D.R. (1976), 'Montague grammar and the lexical decomposition

- of causative verbs', in Partee (ed.) (1976), 201 - 45.
- Elliot, D.E. (1969), 'The syntax of the verb happen', Ohio State Working Papers in Linguistics 3, 22 - 35.
- Emonds, J.E. (1969), Root and Structure-Preserving Transformations, Ph.D. dissertation, M.I.T.
- Fauconnier, G.R. (1971), Theoretical Implications of Some Global Phenomena in Syntax, Ph.D. dissertation, University of California, San Diego.
- Fauconnier, G.R. (1975), 'Pragmatic scales and logical structure', Linguistic Inquiry 6, 353 - 75.
- Fillmore, C.J. (1968), 'The case for case', in Bach and Harms (eds.) (1968), 1 - 88.
- Fodor, J.A. (1975), The Language of Thought, New York: Thomas Y. Crowell.
- Fodor, J.A., T.G. Bever and M. Garrett (1975), The Psychology of Language, New York: McGraw Hill.
- Fodor, J.A. and M. Garrett (1967), 'Some reflections on competence and performance', in J. Lyons and R. Wales (eds.) (1967), Psycholinguistic Papers, Edinburgh: Edinburgh University Press.
- Geach, P.T. (1962), Reference and Generality, Ithaca and London: Cornell University Press.
- Geach, P.T. (1972), Logic Matters, Berkeley and Los Angeles: University of California Press.
- Gordon, D. and G. Lakoff (1971), 'Conversational postulates', in Adams et. al. (eds.) (1971), 63 - 84; also in Cole and Morgan (eds.) (1975), 83 - 106.
- Green, G.M. (1973), 'The lexical expression of emphatic conjunction: Theoretical implications', Foundations of Language 10, 197 - 248.

- Green, G.M. (1975), 'How to get people to do things with words: The whimperative question', in Cole and Morgan (eds.) (1975), 107 - 41.
- Grice, H.P. (1975), 'Logic and conversation', in Cole and Morgan (eds.) (1975), 41 - 58.
- Grinder, J. and P.M. Postal (1971), 'Missing antecedents', Linguistic Inquiry 2, 269 - 312.
- Grossman, R.E., L.J. San and T.J. Vance (eds.) (1975a), Papers from the Eleventh Regional Meeting of the Chicago Linguistic Society, Chicago.
- Grossman, R.E., L.J. San and T.J. Vance (eds.) (1975b), Functionalism, Chicago: Chicago Linguistic Society.
- Grosu, A. (1973), 'On the status of the so-called right roof constraint', Language 49, 294 - 311.
- Hankamer, J. (1972), 'Analogical rules in syntax', in P.M. Peranteau, J.N. Levi and C.G. Phares (eds.) (1972), Papers from the Eighth Regional Meeting of the Chicago Linguistic Society, Chicago, 11 - 23.
- Hankamer, J. (1974), 'On the non-cyclic nature of wh-clefting', in LaGaly et. al. (eds.) (1974), 221 - 33.
- Hankamer, J. and I.A. Sag (1976), 'Deep and surface anaphora', Linguistic Inquiry 7, 391 - 426.
- Harman, G.H. (1970), 'Deep structure as logical form', Synthese 21, 275 - 97; also in Davidson and Harman (eds.) (1972), 25 - 47.
- Hays, D.G. (1964), 'Dependency theory: A formalism and some observations', Language 40, 511 - 25.
- Helke, M. (1971), The Grammar of English Reflexives, Ph.D. dissertation, M.I.T.

- Helke, M. (1973), 'On reflexives in English', Linguistics 106, 5 - 23.
- Heringer, J.T. (1972), Some Grammatical Correlates of Felicity Conditions and Presuppositions, Ph.D. dissertation, Ohio State University.
- Hogg, R.M. (1975), Determiner and Quantifier Systems in Contemporary English, Ph.D. thesis, University of Edinburgh.
- Hooper, J.B. (1975), 'On assertive predicates', in Kimball (ed.) (1975), 91 - 124.
- Horn, G.M. (1974), The Noun Phrase Constraint, Ph.D. dissertation, University of Massachusetts.
- Horn, G.M. (1977), 'Unbounded rules and island phenomena', unpublished paper, Adam Mickiewicz University, Poznan.
- Horn, L.R. (1972), On the Semantic Properties of Logical Operators in English, Ph.D. dissertation, University of California, Los Angeles.
- Huddleston, R. (1974), 'Further remarks on the analysis of auxiliaries as main verbs', Foundations of Language 11, 215 - 29.
- Hudson, R.A. (1976), Arguments for a Non-Transformational Grammar, Chicago and London: Chicago University Press.
- Hull, R.D. (1975), 'A semantics for superficial and embedded questions in natural language', in Keenan (ed.) (1975b), 35 - 45.
- Hurford, J.R. (1973), 'Deriving S from S + is', in Kimball (ed.) (1973b), 247 - 99.
- Ioup, G. (1975), 'Some universals for quantifier scope', in Kimball (ed.) (1975), 37 - 58.
- Jackendoff, R.S. (1968), 'Quantifiers in English', Foundations of Language 4, 422 - 42.

- Jackendoff, R.S. (1971), 'On some questionable arguments about quantifiers and negation', Language 47, 282 - 97.
- Jackendoff, R.S. (1972), Semantic Interpretation in Generative Grammar, Cambridge Mass.: M.I.T. Press.
- Jacobs, R.A. and P.S. Rosenbaum (eds.) (1970), Readings in English Transformational Grammar, Waltham Mass.: Ginn.
- Jacobson, P. and P. Neubauer (1976), 'Rule cyclicity: evidence from the intervention constraint', Linguistic Inquiry 7, 429 - 62.
- Johnson, D.E. (1974), Toward a Theory of Relationally Based Grammar, Ph.D. dissertation, University of Illinois.
- Johnson, D.E. (1977), 'On relational constraints on grammars', in Cole and Sadock (eds.) (1977), 151 - 78.
- Karttunen, L. (1971), 'Definite descriptions with crossing coreferences: A study of the Bach-Peters paradox', Foundations of Language 7, 157 - 82.
- Karttunen, L. (1972), 'The logic of English predicate complement constructions', Indiana University Linguistics Club.
- Karttunen, L. (1976), 'Discourse referents', in McCawley (ed.) (1976), 363 - 85.
- Katz, J.J. (1972), Semantic Theory, New York: Harper and Row.
- Katz, J.J. and T.G. Bever (1976), 'The fall and rise of empiricism', in Bever, Katz and Langendoen (eds.) (1976), 11 - 64.
- Keenan, E.L. (1970), 'Names, quantifiers and the sloppy identity problem', Papers in Linguistics 4, 211 - 32.
- Keenan, E.L. (1972), 'On semantically based grammar', Linguistic Inquiry 3, 413 - 62.
- Keenan, E.L. (1975a), 'Logical expressive power and syntactic variation in natural language', in Keenan (ed.) (1975b), 406 - 21.
- Keenan, E.L. (ed.) (1975b), Formal Semantics of Natural Language, London: Cambridge University Press.

- Kempson, R. (1975), Presupposition and the Delimitation of Semantics, London: Cambridge University Press.
- Kiefer, F. and N. Ruwet (eds.) (1973), Generative Grammar in Europe, Dordrecht: Reidel.
- Kimball, J.P. (1972), 'The modality of conditionals - A discussion of "Possible and must"', in J.P. Kimball (ed.) (1972), Syntax and Semantics, New York: Seminar Press, 21 - 7.
- Kimball, J.P. (1973a), 'The grammar of existence', in Corum et. al. (eds.) (1973), 262 - 270.
- Kimball, J.P. (ed.) (1973b), Syntax and Semantics, vol. 2, New York: Seminar Press.
- Kimball, J.P. (ed.) (1975), Syntax and Semantics, vol. 4, New York: Academic Press.
- Kiparsky, P. and C. Kiparsky (1971), 'Fact', in M. Bierwisch and K. Heidolph (eds.) (1971), Progress in Linguistics, The Hague: Mouton, 143 - 173; also in Steinberg and Jakobovits (eds.) (1971), 345 - 69.
- Klima, E.S. (1964), 'Negation in English', in J.A. Fodor and J.J. Katz (eds.) (1964), The Structure of Language, Englewood Cliffs, N.J.: Prentice Hall, 246 - 323.
- Kroch, A.S. (1974), The Semantics of Scope in English, Ph.D. dissertation, M.I.T.
- Kuno, S. (1972a), 'Pronominalization, reflexivization, and direct discourse', Linguistic Inquiry 3, 161 - 95.
- Kuno, S. (1972b), 'Functional sentence perspective', Linguistic Inquiry 3, 269 - 320.
- Kuroda, S-Y. (1970), 'Some remarks on English manner adverbials', in R. Jakobson and S. Kawamoto (eds.) (1970), Studies in General and Oriental Linguistics Presented to Shiro Hattori on the

- Occasion of his Sixtieth Birthday, Tokyo: TEC Corp, 378 - 96.
- Labov, W. (1972), 'Negative attraction and negative concord in English grammar', Language 48, 773 - 818.
- LaGaly, M.W., R.A. Fox and A. Bruck (eds.) (1974), Papers from the Tenth Regional Meeting of the Chicago Linguistic Society, Chicago.
- Lakoff, G. (1968), 'Deep and surface grammar', Indiana University Linguistics Club.
- Lakoff, G. (1970a), 'Pronominalization, negation, and the analysis of adverbs', in Jacobs and Rosenbaum (eds.) (1970), 145 - 65.
- Lakoff, G. (1970b), 'Repartee, or a reply to "Negation, conjunction, and quantifiers"', Foundations of Language 6, 389 - 422.
- Lakoff, G. (1970c), 'A note on ambiguity and vagueness', Linguistic Inquiry 1, 357 - 9.
- Lakoff, G. (1971), 'On generative semantics', in Steinberg and Jakobovits (eds.) (1971), 232 - 96.
- Lakoff, G. (1973a), 'Fuzzy grammar and the performance/competence terminology game', in Corum et. al. (eds.) (1973), 271 - 291.
- Lakoff, G. (1973b), 'Adverbs and opacity: A reply to Stalnaker', Indiana University Linguistics Club.
- Lakoff, G. (1974), 'Syntactic amalgams', in LaGaly et. al. (eds.) (1974), 321 - 44.
- Lakoff, G. (1976), 'Pronouns and reference', in McCawley (ed.) (1976), 275 - 335.
- Lakoff, G. and S. Peters (1969), 'Phrasal conjunction and symmetric predicates', in Reibel and Schane (eds.) (1969), 113 - 42.
- Lakoff, G. and H. Thompson (1975a), 'Introducing cognitive grammar', in Proceedings of the First Annual Meeting of the Berkeley Linguistics Society, University of California, Berkeley.

- Lakoff, G. and H. Thompson (1975b), 'Dative questions in cognitive grammar', in Grossman et. al. (eds.) (1975b), 337 - 50.
- Lakoff, R.T. (1969), 'A syntactic argument for negative transportation', in Binnick et. al. (eds.) (1969), 140 - 7.
- Lakoff, R.T. (1971), 'Passive resistance', in Adams et. al. (eds.) (1971), 149 - 62.
- Lakoff, R.T. (1972), 'Language in context', Language 48, 907 - 27.
- Langacker, R.W. (1974), 'The question of Q', Foundations of Language 11, 1 - 37.
- Langacker, R.W. (1975), 'Functional Stratigraphy', in Grossman et. al. (eds.) (1975b), 351 - 97.
- Langacker, R.W. (1976), 'Semantic representations and the linguistic relativity hypothesis', Foundations of Language 14, 307 - 57.
- Langacker, R.W. and P. Munro (1975), 'Passives and their meaning', Language 51, 789 - 830.
- Lasnik, H. (1976), 'Remarks on coreference', Linguistic Analysis 2, 1 - 22.
- Lees, R.B. and E.S. Klima (1963), 'Rules for English pronominalization', Language 39, 17 - 28; also in Reibel and Schane (eds.) (1969), 113 - 142.
- LeGrand, J.E. (1974), 'AND and OR, some SOMEs and all ANYs', in LaGaly et. al. (eds.) (1974), 390 - 401.
- Levi, J.N. (1975), The Syntax and Semantics of Nonpredicating Adjectives in English, Ph.D. dissertation, University of Chicago.
- Lewis, D. (1970), 'General semantics', Synthese 22, 18 - 67; also in Davidson and Harman (eds.) (1972), 169 - 218, and Partee (ed.) (1976), 1 - 50.
- Liddell, S. (1975), 'What about the fact that "On certain ambiguities" says what it says?', Linguistic Inquiry 6, 568 - 78.

- Lindholm, R. (1969), 'Negative raising and sentence pronominalization',
in Binnick et al. (eds.) (1969), 148 - 158.
- Lyons, J. (1966), 'Towards a "notional" theory of the "parts of speech"',
Journal of Linguistics 2, 209 - 36.
- Lyons, J. (1967), 'A note on possessive, existential and locative
sentences', Foundations of Language 3, 390 - 6.
- Lyons, J. (1968), Introduction to Theoretical Linguistics, London:
Cambridge University Press.
- Lyons, J. (1975), 'Deixis as the source of reference', in Keenan (ed.)
(1975b), 61 - 83.
- Lysvag, P. (1975), 'Verbs of hedging', in Kimball (ed.) (1975), 125 -
154.
- McCawley, J.D. (1967), 'Meaning and the description of language',
Kotoba no uchu, 2(9), 10 - 18, 2(10), 38 - 48, 2(11), 51 - 57;
also in J.F. Rosenberg and G. Travis (eds.) (1971), Readings in
the Philosophy of Language, 514 - 33.
- McCawley, J.D. (1968), 'The role of semantics in a grammar', in Bach
and Harms (eds.) (1968), 124 - 69.
- McCawley, J.D. (1970a), 'Where do Noun phrases come from?', in Jacobs
and Rosenbaum (eds.) (1970), 166 - 83; also in Steinberg and
Jakobovits (eds.) (1971), 217 - 31.
- McCawley, J.D. (1970b), 'English as a VSO language', Language 46, 286
- 99.
- McCawley, J.D. (1973), 'External NP's versus annotated deep structures',
Linguistic Inquiry 4, 221 - 40.
- McCawley, J.D. (1974a), 'English as a VSO language' (revised version),
in Seuren (ed.) (1974b), 75 - 95.
- McCawley, J.D. (1974b), Review of Chomsky (1972), Indiana University
Linguistics Club.

- McCawley, J.D. (1976), *Syntax and Semantics*, vol. 7, New York: Academic Press.
- Montague, R. (1973), 'The proper treatment of quantification in ordinary English', in J. Hintikka, J. Moravcsik and P. Suppes (eds.) (1973), Approaches to Natural Language: Proceedings of the 1970 Stanford Workshop on Grammar and Semantics, Dordrecht: Reidel, 221 - 42; also in Thomason (ed.) (1974), 247 - 70.
- Morgan, J.L. (1968), 'Some strange aspects of it', in B.J. Darden, C.-J.N. Bailey and A. Davison (eds.) (1968), Papers from the Fourth Regional Meeting of the Chicago Linguistics Society, Chicago, 81 - 93.
- Morgan, J.L. (1975a), 'Some interactions of syntax and pragmatics', in Cole and Morgan (eds.) (1975), 289 - 303.
- Morgan, J.L. (1975b), 'Some remarks on the nature of sentences', in Grossman et. al. (eds.) (1975b), 433 - 49.
- Newmeyer, F.J. (1974), 'The regularity of idiom behaviour', Lingua 34, 327 - 42.
- Newmeyer, F.J. (1976), 'The precyclic nature of predicate raising', in M. Shibatani (ed.) (1976), Syntax and Semantics, vol. 6, New York: Academic Press, 131 - 163.
- Nobel, B. (1971), 'Evidence', Ohio State Working Papers in Linguistics 8, 164 - 72.
- Partee, B.H. (1970), 'Opacity, coreference and pronouns', Synthese 21, 359 - 85; also in Davidson and Harman (eds.) (1972), 415 - 41.
- Partee, B.H. (1973a), 'The syntax and semantics of quotation', in Anderson and Kiparsky (eds.) (1973), 410 - 8.
- Partee, B.H. (1973b), 'Some transformational extensions of Montague grammar', Journal of Philosophical Logic 2, 509 - 34; also in

- Partee (ed.) (1976), 51 - 76.
- Partee, B.H. (1975a), 'Deletion and variable binding', in Keenan (ed.) (1975b), 16 - 34.
- Partee, B.H. (1975b), 'Montague grammar and transformational grammar', Linguistic Inquiry 6, 203 - 300.
- Partee, B.H. (ed.) (1976), Montague Grammar, New York: Academic Press.
- Perlmutter, D.M. (1970), 'The two verbs begin', in Jacobs and Rosenbaum (eds.) (1970), 107 - 19.
- Pinkham, J. and J. Hankamer (1975), 'Deep and shallow clefts', in Grossman et. al. (eds.) (1975a), 429 - 50.
- Postal, P.M. (1966), 'On so-called "pronouns" in English', Georgetown University Monograph Series on Languages and Linguistics 19, 177 - 206; also in Reibel and Schane (eds.) (1969), 201 - 24, and Jacobs and Rosenbaum (eds.) (1970), 56 - 82.
- Postal, P.M. (1969), 'Anaphoric islands', in Binnick et. al. (eds.) (1969), 205 - 39.
- Postal, P.M. (1970), 'On coreferential complement subject deletion', Linguistic Inquiry 1, 439 - 500.
- Postal, P.M. (1972), 'Some further limitations of interpretive theories of anaphora', Linguistic Inquiry 3, 349 - 71.
- Postal, P.M. (1974a), On Raising One Rule of English Grammar and its Theoretical Implications, Cambridge Mass.: M.I.T. Press.
- Postal, P.M. (1974b), 'On certain ambiguities', Linguistic Inquiry 5, 367 - 424.
- Prince, E.F. (1976), 'The syntax and semantics of neg-raising', Language 52, 404 - 426.
- Fullin, G.K. (1976), 'The Duke of York gambit', Journal of Linguistics 12, 83 - 103.

- Quine, W.V.O. (1960), Word and Object, Cambridge, Mass.: M.I.T. Press.
- Rardin, R. (1975), 'Sentence raising and sentence shift', Indiana University Linguistics Club.
- Reibel, D.A. and S.A. Schane (eds.) (1969), Modern Studies in English, Englewood, N.J.: Prentice Hall.
- Reinhart, T. (1974), 'On certain ambiguities and uncertain scope', in LaGaly et. al. (eds.) (1974), 451 - 66.
- Ritchie, W.G. (1971), 'On the analysis of surface nouns', Papers in Linguistics 4, 1 - 16.
- Robinson, J.J. (1970), 'Dependency structures and transformational rules', Language 46, 259 - 285.
- Rodman, R. (1975), 'The non-discrete nature of islands', Indiana University Linguistics Club.
- Rodman, R. (1976), 'Scope phenomena, "movement transformations", and relative clauses', in Partee (ed.) (1976), 165 - 176.
- Rogers, A. (1974), 'A transderivational constraint on Richard?', in LaGaly et. al. (eds.) (1974), 551 - 8.
- Rosenbaum, P.S. (1967), The Grammar of English Predicate Complement Constructions, Cambridge, Mass.: M.I.T. Press.
- Ross, J.R. (1967), Constraints on Variables in Syntax, Ph.D. dissertation, M.I.T.
- Ross, J.R. (1969a), 'On the cyclic nature of English pronominalization', in Reibel and Schane (eds.) (1969), 187 - 200.
- Ross, J.R. (1969b), 'A proposed rule of tree pruning', in Reibel and Schane (eds.) (1969), 288 - 99.
- Ross, J.R. (1969c), 'Adjectives as noun phrases', in Reibel and Schane (eds.) (1969), 352 - 60.
- Ross, J.R. (1970), 'On declarative sentences', in Jacobs and Rosenbaum

- (eds.) (1970), 222 - 72.
- Ross, J.R. (1972), 'Act', in Davidson and Harman (eds.) (1972), 70 - 126.
- Ross, J.R. (1973), 'Slifting', in M. Gross, M. Halle and M.P. Schutzenberger (eds.) (1973), The Formal Analysis of Natural Language, The Hague: Mouton, 133 - 69.
- Ross, J.R. (1975), 'Where to do things with words', in Cole and Morgan (eds.) (1975), 233 - 56.
- Sadock, J.M. (1975), Toward a Linguistic Theory of Speech Acts, New York: Academic Press.
- Sampson, G. (1975), 'The single mother condition', Journal of Linguistics 11, 1- 11.
- Schachter, P. (1973a), 'Focus and relativization', Language 49, 19 - 46.
- Schachter, P. (1973b), 'On syntactic categories', Indiana University Linguistics Club.
- Schreiber, P.A. (1971), 'Some constraints on the formation of English sentence adverbs', Linguistic Inquiry 2, 83 - 101.
- Schwartz, A. (1972), 'Constraints on movement transformations', Journal of Linguistics 8, 35 - 85.
- Searle, J.R. (1975), 'Indirect speech acts', in Cole and Morgan (eds.) (1975), 59 - 82.
- Seuren, P.A.M. (1973), 'The comparative', in Kiefer and Ruwet (eds.) (1973), 528 - 64.
- Seuren, P.A.M. (1974a), 'Negative's travels', in Seuren (ed.) (1974b), 183 - 208.
- Seuren, P.A.M. (ed.) (1974b), Semantic Syntax, London: Oxford University Press.

- Siegel, M. (1976), 'Capturing the Russian adjective', in Partee (ed.) (1976), 293 - 309.
- Stalnaker, R.C. (1970), 'Pragmatics', Synthese 22, 272 - 89; also in Davidson and Harman (eds.) (1972), 380 - 97.
- Steinberg, D.D. and L.A. Jakobovits (eds.) (1971), Semantics: An Interdisciplinary Reader, London: Cambridge University Press.
- Stillings, J. (1975), 'Sentence raising', Indiana University Linguistics Club.
- Stockwell, R.P., P. Schachter and B.H. Partee (1973), The Major Syntactic Structures of English, New York: Holt, Rhinehart and Winston.
- Strawson, P.F. (1950), 'On referring', Mind 59; also in Strawson (1971).
- Strawson, P.F. (1952), Introduction to Logical Theory, London: Methuen.
- Strawson, P.F. (1954), 'A reply to Sellers', Philosophical Review 63.
- Strawson, P.F. (1961), 'Singular terms and predication', Journal of Philosophy 58; also in Strawson (1971).
- Strawson, P.F. (1969), 'Meaning and truth', University of Oxford Inaugural Lecture, in Strawson (1971).
- Strawson, P.F. (1971), Logico-Linguistic Papers, London: Methuen.
- Thomason, R.H. (ed.) (1974), Formal Philosophy: Selected Papers of Richard Montague, New Haven, Conn.: Yale University Press.
- Thorne, J.F. (1973), 'On the grammar of existential sentences', in P. Suppes, L. Henkin and A. Joja (eds.) (1973), Logic, Methodology and Philosophy of Sciences, Amsterdam, 863 - 85.
- Urmson, J.O. (1952), 'Parenthetical verbs', Mind 61, 480 - 96.
- Wasow, T. (1972), Anaphoric Relations in English, Ph.D. dissertation, M.I.T.
- Wasow, T. (1975), 'Anaphoric pronouns and bound variables', Language 75, 368 - 83.

Witten, E. (1972), 'Pronominalization and sloppy identity', in Report
NSF - 28 of the Harvard Computation Laboratory.