MODALITY IN ENGLISH SYNTAX

by

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ABSTRACT

This study of the English modal system centers around three problems for English and general syntactic theory: 1. Conditions on the form of grammar--surface structure interpretation. 2. Interpretation of modality in complement constructions; e.g., as in John expects to know the answer tomorrow (future: John-will-know the answer tomorrow). 3. Conditions on the functioning of grammars--the control problem and the By Phrase Constraint.

Evidence is first given for the postulation of a syntactic category M(odal).

Next it is shown that rules of interpretation on surface structures are needed to account for the correct semantic interpretation of a number of constructions involving modals.

We then demonstrate that for a variety of constructions in English such as John expects to know the answer tomorrow, syntactic considerations show that a rule of future interpretation (will-interpretation) rather than a transformational rule of deletion (will-deletion) is required.

Finally it is argued that modals play an essential role in the statement of the "control problem."

Thesis Supervisor: Noam Chomsky
Title: Professor of Linguistics

TO ELISABETH

who stood by me through
the writing of this dissertation
and our two years together
in prison

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TABLE OF CONTENTS

INTRODUCTION

A. Modality--Explicit vs. Implicit Modality

In traditional grammars, will, would, can, could, must, should, etc. have been referred to as modals. In this study we will consider the syntactical and semantic properties of constructions which contain such elements explicitly such as

1) John will come.

2) Can John play?

Furthermore, we will consider constructions such as

3) John expects to know the answer tomorrow.

which might be said to contain such elements (in this case will) implicitly.

That is, the proposition 4) is recognized to be a well-formed proposition of English

4) John will know the answer tomorrow.

while 5) is not

5) *John knows the answer tomorrow.

Furthermore, the infinitival complement in sentence 3) may be said to be understood as "meaning" 4).

Both the case of constructions containing an explicit modal such as will and the case of constructions with no such overt modal, but which are similar in interpretation to constructions containing modals, are subsumed under the term modality. This is simply to leave open the question whether at some deeper level of structure of

3) John expects to know the answer tomorrow.

there is an explicit will present, later deleted by some transformational operation.

B. Modals and Higher Levels of Adequacy in Grammatical Description

We have already been using the term modal, familiar from traditional studies of English grammar. The first question that occurs to one to ask is whether there is some syntactic characterization of this notion. We will turn to this important question in Chapter I. But there is another, equally fundamental question which we will seek to provide some answer to first--and that is what the justification is for studying modals at all. The answer to this question is not obvious and is ultimately based on the answer to the more general question--what is the study of grammars about? Let us illustrate this problem with our study of modals.

Consider the following set of facts which every speaker of English knows, at least in his unconscious use of the language, and consciously, if we call his attention to them:

FACT I

Consider the superficially similar English sentences

6) John may sit down.

7) John tried to sit down.

The regular interrogative and negative forms for the sentence containing the modal *may* are

8) May John sit down?

9) John may not sit down.

but not

10) *Did John may sit down?

11) *John didn't may sit down.

For the sentence containing *try*, the opposite facts obtain. We have

12) Did John try to sit down?

13) John didn't try to sit down.

but not

14) *Tried John to sit down?

15) John tried not to sit down. (except in another sense)

FACT II

Consider the following expressions containing the modal may

16) The doctor may examine John.

and the corresponding passive

17) John may be examined by the doctor.

These are cognitively synonymous expressions. However, there is an interpretation of each where the surface subject (underlined) is the topic; i.e., 16) has the following two interpretations

18a) I give permission for the doctor to examine John.

18b) I give the doctor permission to examine John.

Similarly, 17) has the following two interpretations

19a) I give permission for John to be examined by the doctor.

19b) I give John permission to be examined by the doctor.

FACT III

Although 5) is ill-formed

5) *John knows the answer tomorrow.

whereas 4) is not

4) John will know the answer tomorrow.

we get both in the complement of hope

20) I hope that John {knows / will know} the answer tomorrow.

FACT IV

Observe that in

21) I'm asking you if {I / you} could please open the door.

the complement subject may be identical to either the subject or the indirect object of the main clause. However, when we replace the choice of the modal could with either would or may, we have

22) I'm asking you if {*I / you} would please open the door.

23) I'm asking you if {*you / I} may please open the door.

FACT V

Consider the interpretation of

24) John might have lost his wallet.

One interpretation is identical to the same sentence with the present tense form of the modal

25) John may (possibly) have lost his wallet.

An additional interpretation, however, involves the presupposition that John did not lose his wallet; e.g., if continued as follows

26) John might have lost his wallet, but luckily he didn't.

We have listed here only five facts about English modals. Indefinitely many more could be given and can be readily found in various traditional and modern grammars of English. In fact many grammars do not attempt to go beyond this endless listing of facts like I-V and seek only to give as complete a list as possible. The more complete the list the better the grammar is judged to be. But we wish to reject mere exhaustive coverage of data (in this case that dealing with modals) as a serious goal of linguistic inquiry in favor of a study in depth of a small set of facts which bear on general hypotheses about language which enable us to reach still higher levels of adequacy in grammatical description.

Our approach to the set of facts I-V will thus be quite different from one which seeks only to provide an exhaustive catalog of such facts. For instance, we will discuss facts I-IV in detail whereas we will not even mention fact V again. The reason for this is that certain of the facts I-IV can

be shown to shed some light on the proper formulation of English grammar, i.e., are relevant at the level of particular grammar, while certain others are seen to shed light on universal principles of grammar, i.e., are relevant at the more abstract level of universal grammar. On the other hand fact V (and innumerable other facts available in traditional and modern descriptive studies of modals) does not at the present state of research provide any evidence for or against a particular formulation of English grammar or add to our knowledge of more abstract universal principles of language (at least to my knowledge no one has yet shown fact V to be so relevant). We will thus be making an "in depth" study of a restricted set of facts about modals which provide such insights about grammar. At the same time we will disregard other facts until such time as they can be demonstrated to bear on the choice between alternative grammars of English or can be shown to be relevant to certain principles of universal grammar. (See also Chomsky, 1964, for discussion of "comprehensiveness of grammars.")

This decision to restrict our attention to certain facts to the exclusion of others may perhaps be made clearer from a parallel in English phonology. A great deal of attention has been given to the detailed study of the rules which describe the degrees of stress and the reduction of vowels in English words (Chomsky and Halle, 1968) while, on the other hand, less attention has been given to the detailed study of the rules which account for the different degrees of aspiration on English consonants. The reason for

this has been that many of the facts involving stress have been shown to be explainable on the basis of underlying principles of universal grammar (e.g., conditions on rule ordering, the cyclical application of rules and disjunctive ordering of rules) which are so abstract that they can reasonably be assumed to belong to the domain of universal grammar; i.e., they are principles available to the learners of any language. However, the status of the rules involving the distribution of aspiration on consonants in English seems somewhat different. These rules have not yet revealed any comparable level of insight into universal grammar or even at the level of particular grammar, e.g., showing that the formulation of the rules of aspiration depends heavily on the other rules of English phonology. This thus accounts for the in depth research going on in the field of English stress as opposed to an approach which insists on a "complete" or "comprehensive" phonology of English, which, however, is often no more than the superficial cataloging of facts with complete neglect of explanatory universal principles.

Having provided some justification for our decision to study a certain set of facts about English in detail (see I-IV) while excluding others superficially similar (in so far as they involve modals), let us comment on why we said that certain of the facts I-IV shed light at the level of <u>particular</u> grammar while still others do so at the level of <u>universal</u> grammar. This distinction depends on the much

discussed distinction between the descriptive adequacy of a grammar and the explanatory adequacy of the theory underlying it (Chomsky, 1965).

A grammar of a language is said to be "descriptively" adequate if it correctly describes the speaker's knowledge of his language and expresses the significant generalizations underlying the language. A linguistic theory associated with a grammar is said to have achieved "explanatory" adequacy if it provides a general (language-independent) basis for selecting from among all possible grammars compatible with the language data the one which is the descriptively adequate one.

Consider Fact III, viz., that every speaker of English knows that both sentences in 27) are well-formed

27) I hope that John will know the answer tomorrow.
I hope that John knows the answer tomorrow.

although 5) is not

5) *John knows the answer tomorrow.

A descriptively adequate grammar of English must somehow account for this intuition of the speaker. Let us sketch two possible ways of doing this

Solution 1: We generate both 28) and 29) in the syntax

28) I hope that John knows the answer tomorrow.

29) I hope that John will know the answer tomorrow.

Semantic features on the verb hope account for the interpretation of futurity and the occurrence of the future time adverbial tomorrow in the complement of 28). Sentence 5)

5) *John knows the answer tomorrow.

is filtered out (if unembedded as above) by interpretive semantic rules.

Solution 2: 28) is derived from an underlying 29) by means of a transformational rule of will-deletion which applies to the complement of 29) deleting the underlying will which is responsible for accounting for the interpretation of futurity in the complement and the occurrence of the future time adverbial.

In Chapter III we will consider a variety of constructions in English which call for a similar mechanism of future interpretation; e.g.,

30) If John knows the answer tomorrow, he'll get an A.
It doesn't matter who knows the answer tomorrow.
The first person to know the answer tomorrow will get an A.
Assume that John knows the answer tomorrow.

We will give syntactic arguments which show that Solution 1, which calls for a semantic rule of future interpretation best

accords with the data in 27), 30). If Solution 2, on the other hand, is incorporated in the grammar of English, then certain complications of the grammar (see "future time adverbial argument," 3.B.II.a) are entailed and linguistic generalizations are lost (see "two wills argument," 3.B.II.b). Thus for a grammar of English to attain the level of descriptive adequacy Solution 1 must be preferred.

Consider now Fact II, viz., that 16) and 17) each have an interpretation where the surface subject is the topic (the "permittee")

16) The doctor may examine John.

17) John may be examined by the doctor.

or similarly the fact that in 31) the surface subject may not be second person

31) May {*you / I / yours truly} please {examine John? / be examined by the doctor?}

whereas in 32) the surface subject must be interpreted as the addressee

32a) Will {*I / you / his Majesty} please step this way.

32b) Will someone please examine his Majesty.
Will his Majesty please be examined by someone.

Facts like these (taken together with other phenomena in English dealing with focus and presupposition, the scope of logical elements like negation, etc.) offer support to the theory of grammar known as the "extended standard theory" (Chomsky, 1970a, forthcoming) which argues that certain aspects of surface structure play a role in semantic interpretation (along with the grammatical relations and lexical items of deep structure). Insofar as we can justify the addition to linguistic theory of certain semantic rules of interpretation on surface structure, we have taken a step towards explanatory adequacy, having shown the necessity of certain conditions on the form of grammar (viz., the assumptions of the extended standard theory[1]), which are available to the learner of every language, i.e., are part of the innate schemata the language learner uses to acquire his native language. Thus in the case under consideration, the learner knows that notions such as "surface subject" are available for aspects of semantic interpretation involving modals, whereas grammatical relations are determined solely in deep structure.

In order to see how the data on modals given above may shed light on questions of explanatory adequacy in a still different way, consider Fact IV; thus, in 21) the complement subject may be identical to either the matrix subject or indirect object

21) I'm asking you if $\left\{\begin{matrix} \text{I} \\ \text{you} \end{matrix}\right\}$ could please open the door.

However, with would or may as the complement modal we have

22) I'm asking you if {*I / you} would please open the door.

23) I'm asking you if {*you / I} may please open the door.

These facts mirror the constraints considered above; viz.,

33) Will {*I / you} please open the door.

May {*you / I} please open the door?

But the statement of the facts in 21)-23) clearly depends on the solution to a more general problem known as the "control" problem (Postal, 1970), i.e., why in 34) the complement subject is understood to be identical to the matrix indirect object

34) I {asked / persuaded} John to open the door.

whereas in 35) it is understood to be identical to the matrix subject

35) I promised John to open the door.

and similarly in many other cases with a missing understood

subject.[2]

Thus since examples as 21)-23), 33) clearly show that modals play a role in the statement of the control problem, whatever set of conditions on the functioning of grammar is correct will provide an explanation for superficially unrelated facts such as

33) Will {*I / you} please open the door.

May {*you / I} please open the door.

In this way, facts such as 33) are crucial evidence in any attempt to reach explanatory adequacy since presumably much of the control problem involves universal principles available to the learner of any language.

Having provided the motivation for the examination of certain facts involving English modals, we turn to a discussion of them in the following sequence

Chapter I-The Modal as a Syntactic Category

Chapter II-Modals and Surface Structure Interpretation

Chapter III-(Implicit) Modality in English Complement Constructions

Chapter IV-Modals and Language Universals--The Control Problem and the By Phrase Constraint

FOOTNOTES (to Introduction)

1. The extended standard theory thus differs from the standard theory in that it permits certain aspects of surface structure (and perhaps "shallow" structure) to play a role in semantic interpretation. Thus the class of possible rules of semantic interpretation is still more narrowly constrained in comparison with generative semantics. Permitting rules of surface structure interpretation corresponds in the terms of generative semantics to adding only one type of "derivational constraint" to the grammar. But generative semantics on the other hand allows any number of other possible derivational constraints which are in principle excluded by the extended standard theory which, as noted above, restricts semantic interpretation to a small well-defined subset of the complete set of phrase markers generated in a grammatical derivation.

2. Although the control problem still resists a final solution, aspects of a solution have been proposed, either in the form of a condition on transformational rules of deletion (Rosenbaum, 1967, 1970), or conditions on well-formedness of deep structure (Perlmutter, 1968), or on aspects of semantic representation involving notions as theme, goal, etc. (Jackendoff, 1969).

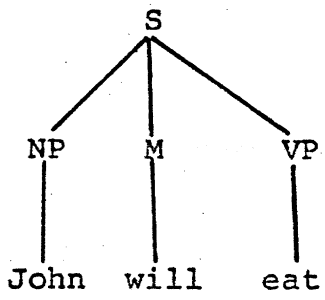
CHAPTER ONE. THE MODAL AS A SYNTACTIC CATEGORY

CHAPTER I--THE MODAL AS A SYNTACTIC CATEGORY

A. A Syntactic Analysis

Throughout this study we will adopt the hypothesis that the modal is a syntactic category M(odal), i.e., is generated exactly where it is in surface structure as in

1)



Thus it is not generated by the set of rules by means of which V(erb) is derived along with its various complements

2) VP--> V (NP)
V S

There are a number of reasons for this decision. Note that there are many syntactic criteria which distinguish M(odals) from V(erbs). Thus

3) M(odals) behave differently than verbs under certain transformations:

A. Interrogation

May John sit down? vs.

*Tried John to sit down?

B. Negation

John may not sit down. vs.

John tried not to sit down. (≠...didn't try...)

4) There are no sequences of modals[1]:

*John will can come. vs.

John tried {to eat. / eating.}

5) Modals don't occur in infinitives or poss-ing clauses[2]:

*John tried to will eat.
*Willing eating is fun. vs.

John tried {to eat. / eating.}

6) Modals do not agree with the grammatical subject of the containing sentence:

I can eat.
*John can's eat. vs.

I try to eat.
John tries to eat.

7) Modals do not have derived nominals[3]:

*John's can-ness
*John's can-ity vs.

John's ability
John's attempt

B. A Semantic Analysis

One might propose that the particular syntactic behavior of the modals (see Part A.) can be predicted from the meaning or semantic structure of the modals. That is, one might propose

that there is a set of semantic features (universal features; e.g., possibility, necessity, permission, etc.) such that one can exhaustively characterize the modals by this set of features and then set about to explain the syntactic properties of the modals on the basis of their semantic structure. Any such demonstration would, of course, lend support to one who argues that "syntax is based on semantics."

But consider "modal verbs" from such a closely related language as German--for example, müssen (must), können (can), dürfen (be allowed). Presumably the universal set of features (possibility, necessity) which characterizes the English modals also characterizes the German modal verbs. Yet the German modal verb parallels the ordinary German verb in the syntactic criteria given above 3)-7). Compare versuchen (try) with the modal verb dürfen (be allowed)

8) Interrogation

Versuchte Peter zu essen?

"Did Peter try to eat?"

Darf Peter essen?

"May Peter eat?"

Negation

Peter versuchte nicht zu essen.

"Peter didn't try to eat."

Peter darf nicht essen.

"Peter is not allowed to eat."

9) Sequences of Verbs and Modals

Peter versuchte zu essen.

"Peter tried to eat."

Der Mensch muss müssen. (Lessing)

"Man must 'must'."

10) Infinitives

Peter versuchte zu gehen.

"Peter tried to go."

Peter bat gehen zu dürfen.

"Peter asked to be allowed to go."

11) Agreement

Du versuchst, er versucht

"you try, he tries"

Du darfst, er darf

"you are allowed, he is allowed"

12) Derived Nominals

Der Versuch

"the attempt"

Das Können, das Sollen

"the ability, the obligation"

Such data suggests that the difference in syntactic behavior between English modals and verbs is not ascribable to the set of semantic features under discussion; to this extent this

lessens the hope that this range of syntactic phenomena has any obvious semantic basis.

More precisely, suppose that someone argues that the syntactic category M(odal) (or more generally Aux(iliary)) can be defined universally across languages on the basis of universal properties such as (necessity), (possibility), (ability), etc.[4] Then some way must be found to distinguish, e.g., must, can, from the semantically cognate German modal verbs müssen, können, which will explain the assymetry between 3)-7) and 8)-12). Otherwise one leaves unexplained the puzzling fact that, in English, M(odals) behave differently syntactically than V(erbs) (compare 3)-7)) whereas in German the opposite obtains--the modal verbs pattern syntactically parallel to "real" verbs (see 8)-12)). Any forthcoming explanation of the syntactic phenomena under consideration must face problems of this sort. Thus there is apparently a syntactic category M(odal) in English (although presumably not in German).

More precisely, we assume in this study that there is a universal feature (or features) of M(odality) which is realized in different ways in various languages.

In English the feature of M(odality) is realized as a syntactic category M(odal) (or, equivalently, feature--see discussion above) which is referred to by syntactic transformations such as Interrogation, Negation, etc.

There are a number of interesting questions which one might pose with respect to this universal feature--such as

why certain English verbs like eat did not assume the syntactic status of M(odal), why permit likewise did not become a M(odal) although the semantically cognate may did, or phrased in more general terms, could any English verb at all become a M(odal)?

In German, on the other hand, this feature is realized as a morphological feature: thus there is imperfect subject-verb agreement for the modal verbs--du darfst/er darf ("you are/he is permitted") vs. du versuchst/er versucht ("you try/he tries"). Furthermore, there is no infinitive marker zu in the complement of modals and there is a special perfect form of the modals when they occur with infinitives--er hat gut arbeiten können ("he has been able to work well"). In the latter respect, modals share features in common with verbs like sehen, lassen, etc.: er hat Peter kommen sehen ("he has seen (i.e., saw) Peter come").

Similarly, in other languages the feature M(odality) may realize itself in these or still other ways.

The comments above are not meant to suggest that there is no point to semantic investigations of the properties of modals. On the contrary, suggestive studies have been made (see Bech, 1949). Compare the two sentences

13) Ich bitte Sie, Peter eine Zigarette geben zu dürfen.

"I am asking you to be allowed to give Peter a cigarette."

Ich bitte Sie, Peter eine Zigarette geben zu wollen.[5]

"I'm asking you to give Peter a cigarette."

where in the first case, the understood subject is identical with the matrix subject and in the second with the matrix indirect object "Sie" (you). The difference in interpretation is apparently due to the modal choice. Bech has investigated the semantic structure of the German modal verbs in an effort to point the way towards an explanation of such examples as 14). Such semantic investigations may shed light on certain classes of cases as these (see discussion of control problem, Chapter IV, Part B).

C. Alternative Analyses of the English M(odal)

A number of syntactic analyses of the M(odal) have been made which make quite different empirical assumptions than in the analysis above; e.g.,

1. The Modal as Main Verb Analysis (Ross, 1969)--It is argued that M(odals) are derived from main verbs occurring in both transitive and intransitive deep structures.
2. The Modal from Cognate Verb Analysis (Newmeyer, 1969)--It is argued that modals are transformationally related to their semantically cognate verbs, e.g., may to permit.
3. The Modal as Semi-Modal Analysis (Langendoen, 1970)--It is argued that there is a syntactic relation between modals and semi-modals, e.g., can to be able.

These proposals are considered in detail in Chapter II.

FOOTNOTES (TO CHAPTER I)

1. Observe that this sequence cannot be ruled out on any obvious semantic grounds. For corresponding to the syntactically ill-formed *John will can come we have the syntactically and semantically well-formed John will be able to come.

2. The fact that M(odals) and nominalization elements such as for-to and POSS-ing are mutually exclusive can be captured, e.g., with the following expansion of the English auxiliary

$$\text{Aux} \rightarrow \left\{ \begin{array}{l} \text{T(M)} \\ \text{for-to} \\ \text{POSS-ing} \end{array} \right\} \ldots\ldots\ldots$$

3. The fact that the modals do not have derived nominals follows from the lexicalist hypothesis (Chomsky, 1970 (b)), if modals are not main verbs. Again the fact that can-ity is ill-formed cannot be ascribed to any obvious semantic constraint since we have ability.

On the other hand if modals were main verbs occurring both in transitive and intransitive deep structures (see Chapter II, Part E) we might expect to find such alternatives as John's eagerness to please vs. *John's easiness to please. That is, assuming that the root interpretation of must (necessity, as in John must leave immediately) corresponded to a transitive deep structure (like eager, try) whereas the epistemic interpretation of must (logical entailment, as in John must be crazy) corresponded to an intransitive deep

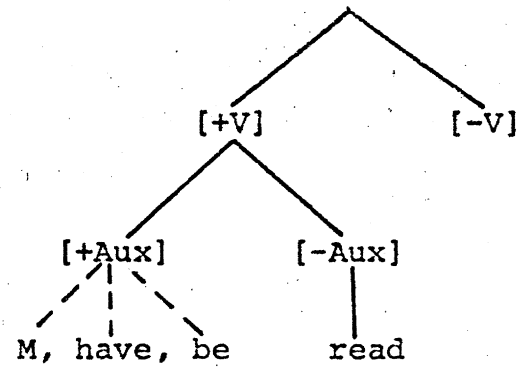
structure (like easy, seem) we might expect to get the non-existent John's immediate must-ity to leave but not *John's must-ness to be crazy. The fact that we get neither follows from the introduction of M(odal) into the base as a syntactic category separate from V(erb) in conjunction with the lexicalist hypothesis.

There are a few apparent exceptions as John has a strong will and this dishwasher is a must for every housewife. These marginal constructions have little semantic correspondence with their modal cognates. Thus we do not have *John strongly will leave nor *that John is crazy is a must (corresponding to John must be crazy) nor *the missile's striking the target is a must (compare the missile must strike the target).

4. In a recent paper (1972) Ross proposes that for English the auxiliary verbs, hence also the M(odals) are marked with the feature [+Aux], defined universally across languages whereas the non-auxiliary verbs such as like are marked [-Aux]. Thus with respect to interrogation only [+Aux] items invert so that one gets may John sit down? but *likes John Mary? Ross argues that the feature [Aux] "must be given a universal definition, i.e., in terms of "futurity, desire, ability, possibility, need, interest, inception (and other aspects)."

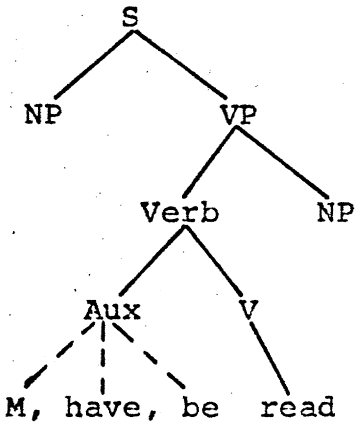
Note first that in this framework (see Ross, 1969, Chomsky, 1969) that English verbs and auxiliaries are subclassified according to the following two features [V], [Aux]:

A.



The classification in A. can be seen to be equivalent to the formulation in terms of categories given below (Chomsky, 1957):

B.



where v=V,M,have,be (i.e., corresponds to +V)

It is important at this point to distinguish between the notational reformulation of the proposal in the tree diagram in B. by the feature notation in A. from the much different proposal that M(odals) are main verbs in deep structure (see Part C and Chapter II, Part E). Thus any explanation of the assymetry between the behavior of M(odals) in English and the behavior of the German modal verbs which might be based on

universal properties can be as easily stated in terms of either A. or B., which, as noted, are equivalent. However, this is at present a purely notational point since no explanation based on universal properties is yet available.

In Chapter II, Part E we consider a proposal--viz., that modals are verbs occurring in transitive and intransitive deep structures--which has quite different empirical consequences than our framework and thus is more than a question of notation. We will consider a number of arguments against this proposal on syntactic grounds.

5. These sentences have an archaic or literary flavor. For other examples, see Bech.

CHAPTER TWO. MODALS AND SURFACE STRUCTURE INTERPRETATION

CHAPTER II--MODALS AND SURFACE STRUCTURE INTERPRETATION

A. Introduction

In Chapter II we will investigate facts of the following sort--consider

16) The doctor may examine John.

17) John may be examined by the doctor.

These sentences are cognitively synonymous; however, each has an interpretation where the surface subject (underlined) is the topic; thus 16) has two interpretations

18a) I give permission for the doctor to examine John.

18b) I give the doctor permission to examine John.

The two interpretations corresponding to 17) are

19a) I give permission for John to be examined by the doctor (=18a)

19b) I give John permission to be examined by the doctor.

Secondly, consider such examples as with the modal will

1) Will $\left\{\begin{matrix}*\text{I} \\ \text{you} \\ \text{his Majesty}\end{matrix}\right\}$ please be examined by the doctor.

as compared with the set with may

2) May I please examine you, Dr. X?

*May you please examine me, Dr. X?

May I please be examined by you, Dr. X?

*May you please be examined by me, Dr. X?

The generalization in 1) is that the surface subject is interpreted as the addressee of the request. In 2), on the other hand, it is that the surface subject of these constructions cannot be second person.

Such examples involving modals illustrate certain linguistic generalizations which are best stated in terms of some property of surface structure, in this case in terms of the notion "surface subject." Thus these examples, and others like them, bear directly on the choice between alternative theories of language, viz., the "standard" theory and the "extended standard" theory (see Chomsky, 1970a, forthcoming). For the latter theory argues that certain aspects of semantic interpretation (e.g., the scope of logical elements such as quantifiers and negation, focus and presupposition) are directly related to surface structure properties. Thus insofar as the generalizations stated above with respect to examples 16), 17), 1), 2) depend on surface properties, such examples provide a confirmation of the extended standard theory and argue against the alternative "standard" theory of language structure.

In the next part we will illustrate the notion "surface structure interpretation" and show how our examples involving modals require a parallel treatment.

B. Surface Structure Interpretation[1]

Consider again the sentences

16) The doctor may examine John.

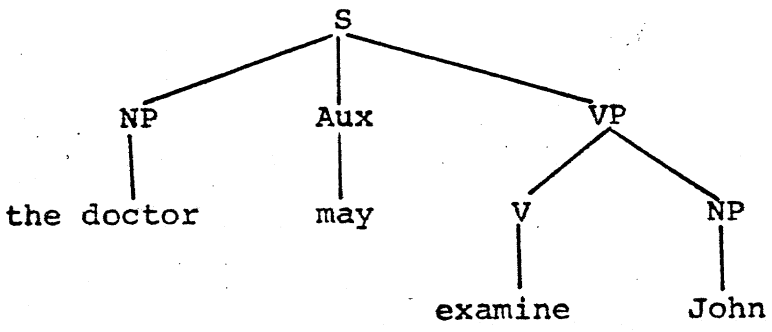
17) John may be examined by the doctor.

where in each case the underlined noun phrase is interpreted as the "permittee." We will first present the hypothesis we are proposing (the Surface Structure Interpretation Hypothesis) which handles sentences like 16) and 17). We will then consider an alternative hypothesis (the Deep Structure Interpretation Hypothesis) for the same sentences and will later show that the alternative hypothesis cannot handle a wider range of similar facts.

Surface Structure Interpretation Hypothesis

In this theory, 16) has the following deep structure

3)



The surface structure of 16) is essentially identical to 3), to which Affix-Placement and Agreement must apply.

Semantic Interpretation

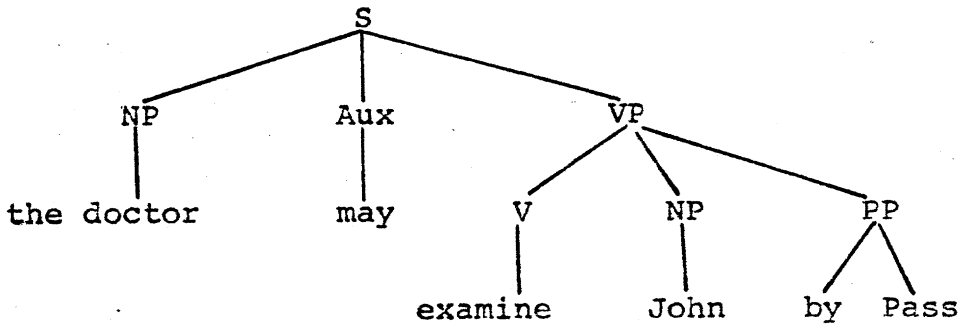
The semantic interpretation of 16) is as follows

I. the doctor (the deep subject, see 3)) is the "logical" subject in 16) and John (the deep object) is the "logical" object.

II. the doctor (the surface subject) is the "permittee" (corresponding to the interpretation I give the doctor permission to examine John).

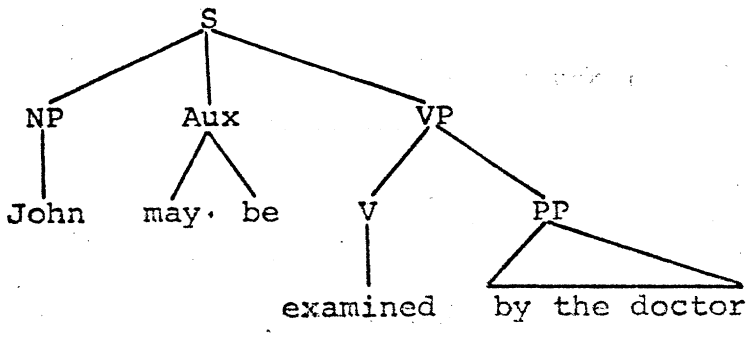
Now let us consider the rules that generate 17). The deep structure of 17) is approximately the same as that for 16) except for the Passive marker

4)



The surface structure of 17) is

5)



Semantic Interpretation

The semantic interpretation of 17) is as follows

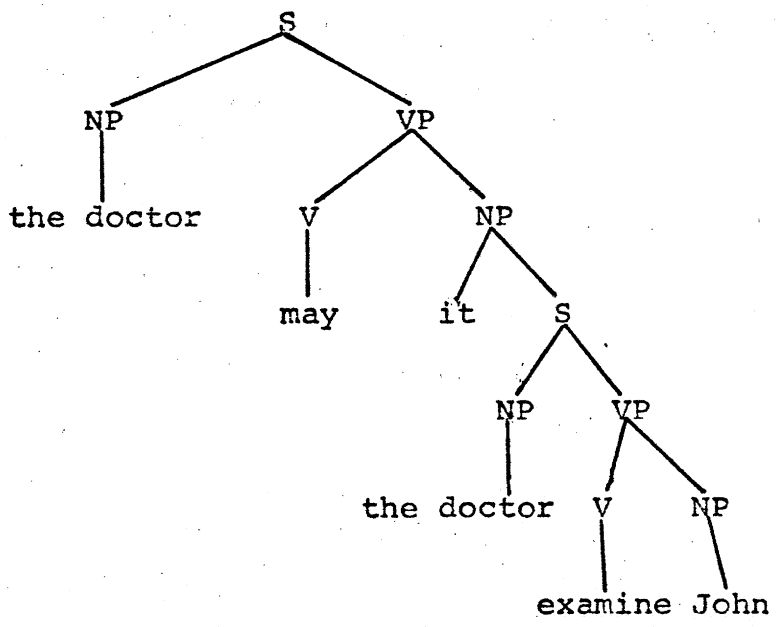
I. the doctor (the deep subject, see 4)) is the "logical" subject in 17) and John (the deep object) is the "logical" object.

II. John (the surface subject, see 5)) is the "permittee" (corresponding to the interpretation I give John permission to be examined by the doctor).

Deep Structure Interpretation Hypothesis

In this theory, 16) has the following deep structure

6)



The surface structure for 16) is the same as above under our hypothesis and is yielded by the application of EQUI (which deletes the embedded occurrence of the doctor) as well as a few other rules irrelevant here.

Semantic interpretation

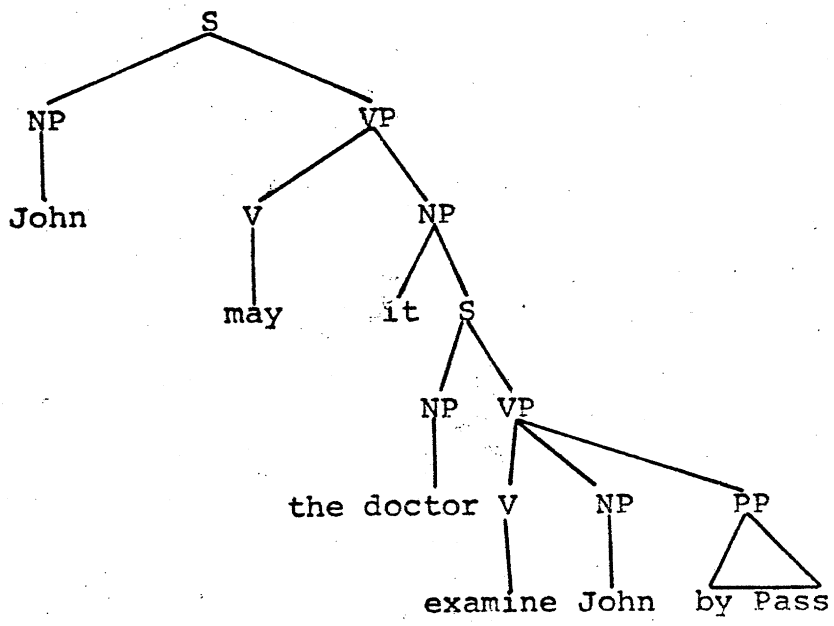
The semantic interpretation of 16) is as follows

I. the doctor (the deep subject of both X may Y and W examine Z, see 6)) is the "logical" subject in 17) and John (the deep object) is the "logical" object.

II. the doctor (the deep subject) is the "permittee" (corresponding to the interpretation I give the doctor permission to examine John).

Now let us consider the rules that generate 17) in the Deep Structure Interpretation Hypothesis. The deep structure of 17) is as follows

7)



The surface structure for 17) is the same as above under our hypothesis and is yielded by the application of Pass(ive) to the complement of 7) with subsequent deletion of the derived subject John by EQUI, etc.

Semantic interpretation

The semantic interpretation of 17) is as follows

I. John (the deep subject of X may Y) is both the "logical" subject and "permittee" of X may Y (corresponding to the interpretation I give John permission to be examined by the doctor).

II. John (the deep object of examine Z)is the "logical" object.

A Comparison of the Hypotheses

The Surface Structure Interpretation Hypothesis claims that the features of surface structure (such as "surface subject," etc.) must be taken into account in determining semantic representation. Thus in both 16) and 17) it is the surface subject that is the "permittee."

The Deep Structure Interpretation Hypothesis, however, does not take properties of surface structure into account for determining semantic representation. Thus the "permittee" in 16) and 17) is determined in essentially the same way that grammatical relations like "subject of" are determined. In both cases it is the deep subject of X may Y which is the "permittee."

In the following sections we will consider a range of constructions which show clearly that the Surface Structure Interpretation Hypothesis is to be preferred over the Deep Structure Interpretation Hypothesis. We will demonstrate this by examples like the following (all with the "root" interpretation)

8) John may be examined by the doctor.

(with the interpretation I give permission for John to be examined by the doctor.)

There {may / must} be a revolution.

Suit {may / must} be brought against A.T.&T.

May {I / *you} please go.

Will {*I / you} please open the door.

Will someone please examine his Majesty.

(≠ Will his Majesty please by examined by someone)

It is examples like this from which we will conclude that surface structure properties play a role in semantic interpretation and which will lead us to reject the Deep Structure Interpretation Hypothesis (which postulates deep structures like 6) and 7))as being both semantically and syntactically inadequate.

C. Surface Structure Interpretation with Modals

Consider the following examples (repeated from II.A)

15) The doctor may examine John. (=16)

16) John may be examined by the doctor. (=17)

17) May I please { examine you, Dr. X? / be examined by you, Dr. X? }

There are two interpretations of sentences such as

15) The doctor may examine John.

viz., the "permission" interpretation as in

18) I give permission for the doctor to examine John.

and the "possibility" interpretation as in

19) It may be the case that the doctor will examine John.

For the moment we are considering only the former interpretation of "permission."

Examples 15) and 16) are cognitively synonymous. Furthermore, each sentence has a "general" interpretation, paraphrased by either of

20) I give permission for { the doctor to examine John. / John to be examined by the doctor. }

Moreover 15) has an additional interpretation with the doctor as the topic, the "permittee," as in

21) I give the doctor permission to examine John.

whereas 16) has the additional interpretation with John as the topic, as in

22) I give John permission to be examined by the doctor.

Thus the generalization is that in the structures under consideration with may, the surface subject may be interpreted as the topic (the "permittee").

Note that in

23) The cake may be eaten now.

only the general interpretation is possible; i.e.,

24) △ gives permission for the cake to be eaten now.

We see that the surface subject must in general be animate if it is to be the topic ("permittee.") Thus we do not have

25) * △ gives the cake permission to be eaten now.
*The cake was permitted to be eaten now.

Let us turn to the interrogative structures in 17).

Observe first that such utterances as

26) May I please have that ashtray.

May I please have a pound of meat (said to the grocer).

are requests for an action, rather than for a linguistic response as is the case in

27) May I take two giant steps?

Yes, you may.

Thus for the first example in 26) it would be quite inappropriate to reply only

28) Yes, you may.

An appropriate response is to hand the speaker the ashtray, with or without a linguistic response. Let us term this the "request" usage of may.

Observe that this "request" usage contrasts with the normal "permission" usage in interrogative structures. Thus we have

29) May you drive your father's car. (permission)

May $\left\{\begin{matrix}*\text{you} \\ \text{I}\end{matrix}\right\}$ please drive your father's car (request)

The last example illustrates another property of the may

in the "request" usage; viz., that the subject in such constructions may not be second person. Thus we have

30) May {*you / I} please open the door.

But a consideration of sentences such as

17) May I please {examine you, Dr. X. / be examined by you, Dr. X.}

31) *May you please {examine me, Dr. X. / be examined by me, Dr. X.}

quite clearly demonstrates that the phenomena under consideration are facts about surface subjects and not deep subjects.

Were one to seek to state the generalizations as a deep structure interpretive principle one would have to say that a string of the form

32) Q NP may please V NP

is ruled out under the following conditions

1. if there is no Pass(ive) marker in the string then the subject NP must be first person to be interpreted.
2. if there is a Pass(ive) marker present in the string, then the object NP must be first person to be interpreted.

But clearly this is a fact about surface subjects and any rule which must refer to object NPs is missing a generalization.

Similar comments apply to

33) May we please eat the cake now, Mother?

34) *May the cake please be eaten now, Mother?

For similar arguments based on the modal will, consider examples such as

35) Will {you / his Majesty / *I} please step this way.

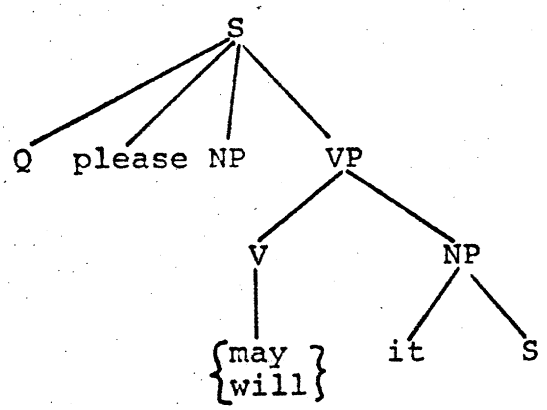
where here, in the "imperative"[2,3] use of will, the subject must be interpreted as the addressee[4]. Again it is the surface subject that is appropriate as is seen from such sentences as

36) Will {you / *I} please {examine John. / be examined by the doctor.}[5]

Of course, any generalization about surface structure may be reflected at the level of deep structure[6] if one is to permit the introduction of any arbitrary structure at that level. Thus in the cases discussed, the subject restrictions may be stated in terms of deep subjects, if we assume underlying structures of the following form, where may is a deep structure transitive verb whose subject may not be second person (i.e., in the "request" interpretation, as with please) and will a deep structure transitive verb whose subject must be

interpretable as the addressee:

37)



But the restrictions are not stated any more simply at the deep structure level; and no new generalizations are captured. Much worse, a generalization is lost, for the analysis implicit in 37) entails that the generalization in terms of the surface structure subject is an accident. It would make no difference in these terms whether the generalization held of subject noun phrases or object noun phrases.

In any case, of course, the force of such an explanation of the phenomena under consideration depends on the plausibility of independent arguments for underlying structures like 37). These are, however, quite dubious on syntactic grounds (see II.D).

D. The Modal as Main Verb Proposal

Since a considerable literature in transformational grammar has appeared in which it has been maintained in one form or another that the English M(odal) is a main verb in deep structure (see Ross, 1969; Newmeyer, 1969; Perlmutter 1970), we will consider this proposal in the following sections.

First observe again that the modal may is ambiguous in

15) The doctor may[7] examine John.

A. Permission --The doctor has permission to examine John.

B. Possibility--It may be the case that the doctor will examine John.

The modal as main verb proposal embodies the following claims about may (abstracting from its several variants; see also II.H)

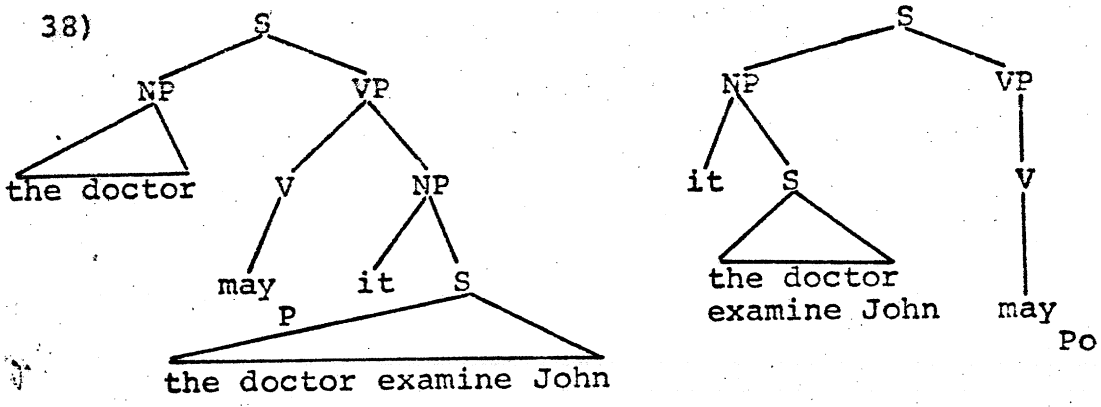
Assumption 1: The interpretation of "permission" is associated with a particular lexical item $may_{P(ermission)}$; the interpretation of "possibility" is associated with a particular lexical item $may_{Po(ssibility)}$.

Assumption 2: May_P and may_{Po} are main verbs in deep structure.

Assumption 3: May_P occurs in a transitive verb structure (like try).

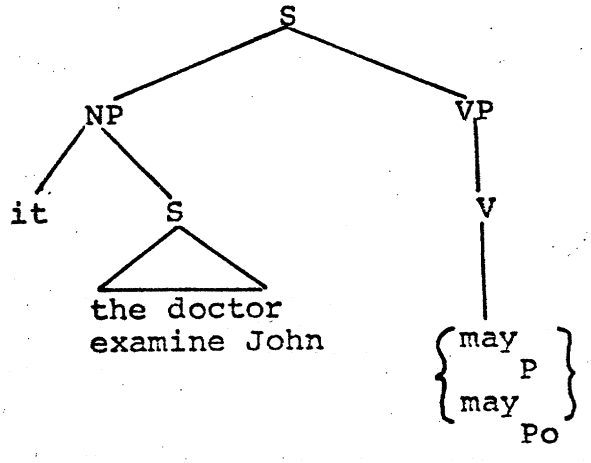
May_{Po} occurs in an intransitive verb structure (like seem):

38)



We have listed the modal as main verb hypothesis as three assumptions since; e.g., if assumption 3 is false; i.e., if one can show that the transitive phrase marker for $\underline{may}_{P}$ in 38) is unmotivated, for instance, assumptions 1 and 2 may still be held to be valid; i.e., one might argue for the following phrase markers:

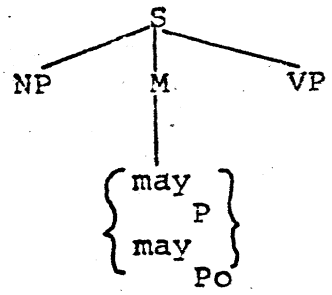
39)



where $\underline{may}_{P}$, $\underline{may}_{Po}$ are main verbs.

Similarly, if one succeeds in showing that assumption 2 in addition to assumption 3 is false, one might still argue for assumption 1; viz., that $\underline{may}_{P}$ and $\underline{may}_{Po}$ are separate lexical items of the category M(odal) as in

40)



To this extent then assumptions 1-3 are independent and we will argue against each claim separately in the next three parts, beginning with assumption 3.

E. Modals as transitive/intransitive verbs

We now consider the argument for assumption 3; viz., that modals such as may occur in both transitive and intransitive verb structures at the deep structure level. This claim is intimately bound to the distinction root vs. epistemic (Hofmann, 1966). Thus it is noted that English modals fall into two semantic classes

41)

Root (R)	Epistemic (E)
may P(ermission)	may Po(ssibility)
must N(ecessity)	must L(ogical entailment)
will V(olition)	will F(uture prediction)
can A(bility)	can Po(ssibility)

Thus we have the following systematic ambiguities

42) John may go home.

1) permission (=is allowed to)

2) possibility (=might, it may be the case that)

43) John must sleep in the car.

1) necessity (=has to)

2) logical entailment (=it must be the case that)

44) John won't eat his supper.

1) volition (=refuses to)

2) future prediction (=it is not the case that John will...)

etc.

Observe that in general, the "root" interpretation is excluded by the Prog(ressive) and the Perf(ect)

45) You may be singing now.

*1) permission (R)

2) possibility (E)

46) He must have gone.

*1) necessity (R)

2) logical entailment (E)

The "epistemic" interpretation on the other hand is excluded in if-conditional clauses

47) If John must take drugs, I will give him the money for them.

1) necessity (R)

*2) logical entailment (E)

Furthermore, the "epistemic" interpretation, but not the "root," is invariant under Pass(ive) (but see discussion below)

48a) John won't confess to the crime.

1) volition (R)

2) future prediction (E)

48b) The crime won't be confessed to.

*1) volition (R)

2) future prediction (E)

49a) John may kill you.

1) permission (R) (John as topic, the "permittee")

2) possibility (E)

49b) You may be killed by John.

1) permission (you as topic, the "permittee")

2) possibility (E)

Thus there are at least three ways in which the root-epistemic distinction is grammatically realized:

A. Co-occurrence of the epistemic, but not the root interpretation, with Prog and Perf.

B. Exclusion of the epistemic interpretation from if-clauses.

C. Invariance of the epistemic (but not the root) interpretation under Pass(ive).

Fact A has never been offered as supporting evidence for the modal as transitive/intransitive verb hypothesis (Assumption 3). Thus it is irrelevant to the consideration at hand.

Fact B has been advanced as evidence that there are two lexical wills (Assumption 1), a will of "future prediction" and a will of "volition" (see Chapter III, Part 2), but never to support Assumption 3; viz., that modals occur in transitive and intransitive verb deep structures. However, both Fact A and Fact B are relevant to a general account of the

distinction root/epistemic--see Part G for a discussion of a possible explication of this distinction involving the semantic interpretation of tense and aspect (Fiengo, 1971).

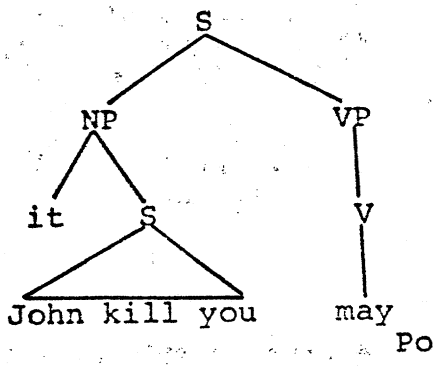
We are thus left with Fact C; viz., that the epistemic (but not the root) interpretation of modals is invariant under the passive (see 48)-49)). It is this fact which has been used to support Assumption 3 which is under consideration--the hypothesis that modals occur as transitive/intransitive verbs in deep structure. Thus we will examine this set of facts in detail.

Turning to 48), 49) observe that the modal as main verb hypothesis accounts for the fact that the "epistemic" interpretation of the modal (in this case <u>may</u>) is invariant under the passive by deriving both

50) John may kill you. i.e., it may be the case that S
You may be killed by John.

from the deep structure

51)



where either <u>John</u> or <u>you</u> may end up via <u>it</u>-replacement as the

derived subject of may, the latter in the case that the passive has applied.

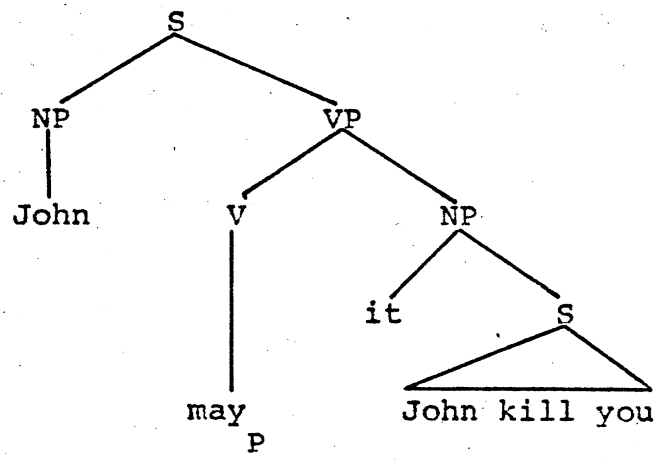
In the permission case on the other hand both John and you may appear as deep structure subjects, reflecting the semantic fact that either NP (underlined below) may be the topic (the "permittee") as in

52) John may kill you.

53) You may be killed by John.

Thus we have for the first interpretation

54)



However, this analysis into a transitive ("root")/intransitive ("epistemic") dichotomy seems dubious even on semantic grounds. For as we observed in Part C, pairs such as 52), 53) above and

15) The doctor may examine John.

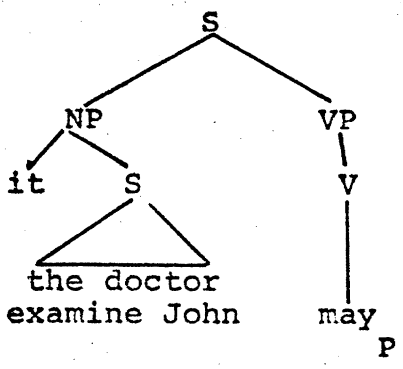
16) John may be examined by the doctor.

also have a general interpretation, invariant under the passive. Thus 15) and 16) can each be paraphrased by either of

20) I give permission for {the doctor to examine John. / John to be examined by the doctor.}

Thus at least on semantic grounds there is equal justification for postulating an intransitive structure for may$_{P(ermission)}$ to account for the interpretation in 20)

55)



In order to account for the subsidiary interpretation of 15) with the doctor as topic (the "permittee") and in 16) with John as the topic, we add to the grammar the semantic interpretive rule that the surface subject (if animate) is interpreted as the topic (the "permittee") where again either the doctor or John becomes the derived subject by it-replacement.

Apart from semantic objections, the proposal that may$_{P(ermission)}$ corresponds to a transitive deep structure has serious defects on syntactic grounds.

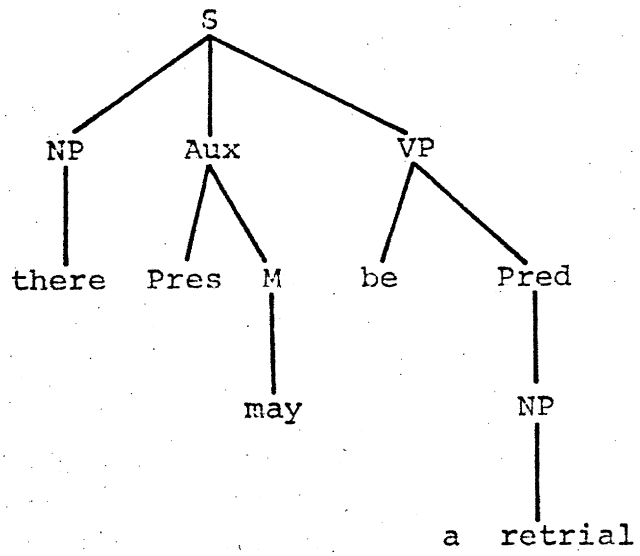
Consider

56) The Supreme Court has decided that there may be a retrial.
God has decreed that there may be an eclipse of the sun.

where here the may has the permission interpretation.

Notice that examples like 56) present no problems within our framework. That is, we assume that the complement of the first sentence in 56) has the following deep structure

57)

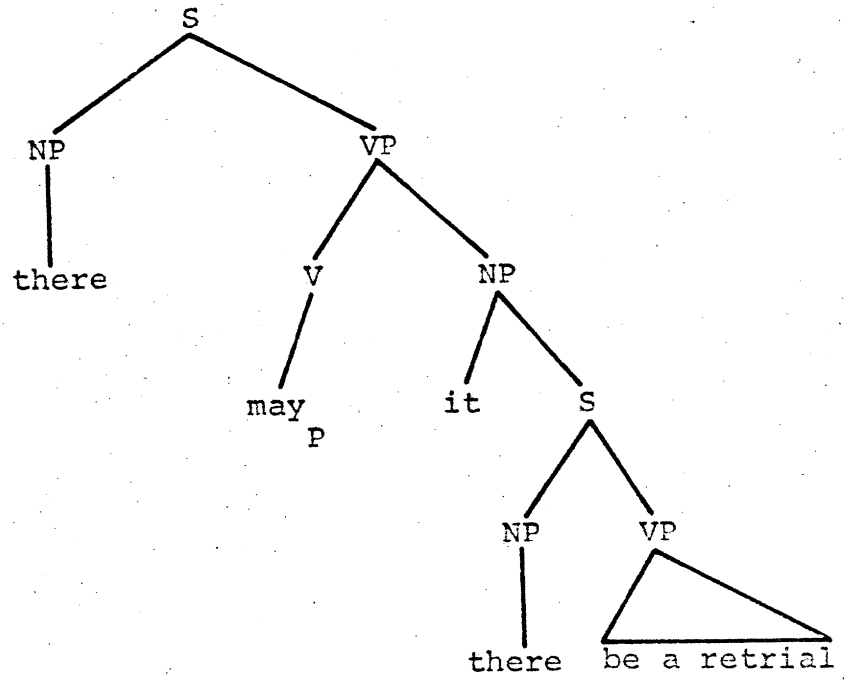


(nothing here depends on the fact that <u>there</u> is generated as a deep structure noun phrase instead of being inserted by transformation as in previous accounts in the literature. That the phrase structure analysis of <u>there</u> is in fact the empirically correct analysis for English is shown below in Part J.) We obtain the appropriate surface structure after the application of Affix Placement and Agreement. Observe, furthermore, that in our analysis, the deep structure for the modal <u>may</u> is the same (see 57)) both for the "root" and "epistemic" interpretations.

The alternative hypothesis claims, however, that <u>may</u> in its "root" interpretation of permission; viz., <u>may</u>$_p$, is syntactically like <u>try</u>; i.e., it occurs as a transitive verb

in deep structure. Thus the complement of the first sentence in 56) has the following deep structure

58)



We will see in Part J. that the simplest statement for the distribution of <u>there</u> in English is that it occur in deep structure in the context ___Aux be NP, as is the case in the deep structure 57). Let us examine 58): the case of the embedded <u>there</u> poses no problem since it occurs in the context ___Aux be NP, where Aux in this case is a complementizer. However, the matrix <u>there</u> fails to meet this contextual condition, since there is a second <u>there</u> intervening before the <u>be</u>. Thus we are forced to complicate the statement of the distribution of <u>there</u> by saying that <u>there</u> occurs everywhere in the context ___Aux be NP (except with "root" modals), clearly an undesirable result.

Deep structures like 58) are equally undesirable for proponents of a there-insertion transformation. Here, too, one would have to argue that there is inserted everywhere in the context of NP-Aux be X except in the case of "root" modals (although the embedded there could be explained, if one were willing to abandon the "like-subject" constraint).

Moreover, there are independent reasons for rejecting deep structures like 58). In general it is assumed that embedded subjects are deleted by EQUI; thus the second occurrence of John in John tried $_{S}$[John go]$_{S}$ is deleted by this operation to yield John tried to go. Similarly, such an operation must apply to there in the embedded sentence in 58) to yield the appropriate surface form there may be a retrial.

Observe, however, that there does not undergo operations of deletion like EQUI. Thus consider

59) John can be chairman without (his) being { hypocritical. / a hypocrite.

Here the embedded subject his can be optionally deleted. However, there does not similarly delete in

60) There can be peace { without there being a war. / *without being a war.

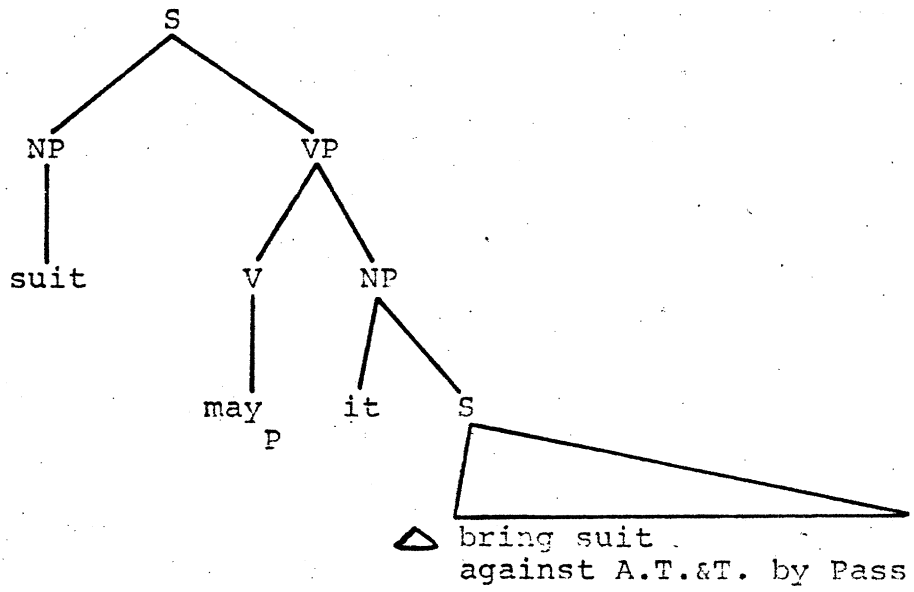
Thus on completely different grounds we must reject the analysis of may$_{P}$ as an intransitive verb in deep structure like try, as in the deep structure in 58).

Difficulties of an equally serious sort arise in the derivations of sentences like

61) The Supreme Court decided that suit may be brought against A.T.&T.

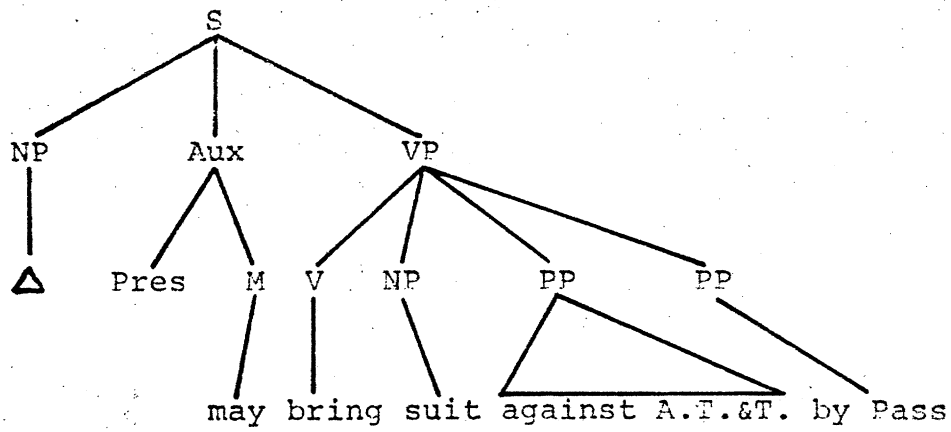
where bring suit belongs to that class of expressions whose distribution is stated by constraining the occurrence of the nominal part, such as suit, to the object position in deep structure (see Perlmutter, 1970). Thus the following structure is ill-formed, but again a necessary consequence to a theory which insists that the "root" may has a transitive verb underlying structure

62)



However, within our analysis, examples like 61) present no problem. Thus the complement of 61) has the following deep structure

63)



Observe that suit is a deep structure noun phrase object. Both Pass(ive) and then the deletion of the unspecified agent apply to 63) to yield the correct surface structure.

Comments similar to the preceding could be made with respect to must in view of such examples as there must be a revolution, suit must be brought at once against A.T.&T., etc., where again a transitive verb structure analysis for the "root" modal must is highly implausible. (Newmeyer, 1970, points out the problem posed for the modal as transitive verb analysis by examples like the former).

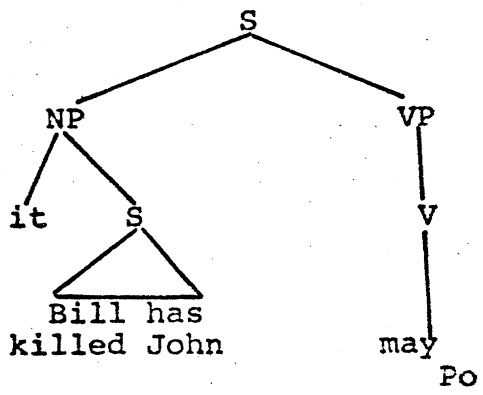
Let us sum up thus far. The position that we have been arguing against is that there is any semantic or syntactic evidence for the existence of a fundamentally different deep structure--a transitive verb deep structure--for modals under the "root" interpretation. That is, it has been assumed because of the existence of paraphrases like

64) Bill may have killed John.

65) John may have been killed by Bill.

that the epistemic modals like the may of "possibility" in 64), 65) have deep structures of the form

66)



where the passive applies freely in the embedded sentence such that either Bill or the derived subject John is raised into the top sentence by it-replacement.

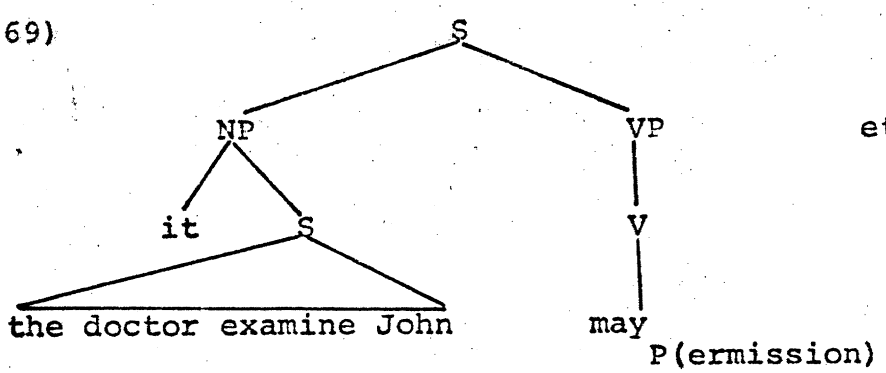
But even if we accept this analysis of modals under the "epistemic" interpretation, the existence of paraphrases like 67), 68)

67) The doctor { may / must / should } examine John. (permission) (necessity) (moral obligation)

68) John { may / must / should } be examined by the doctor. (permission) (necessity) (moral obligation)

argues for an identical set of deep structures for the modals under the "root" interpretation; e.g.,

69)

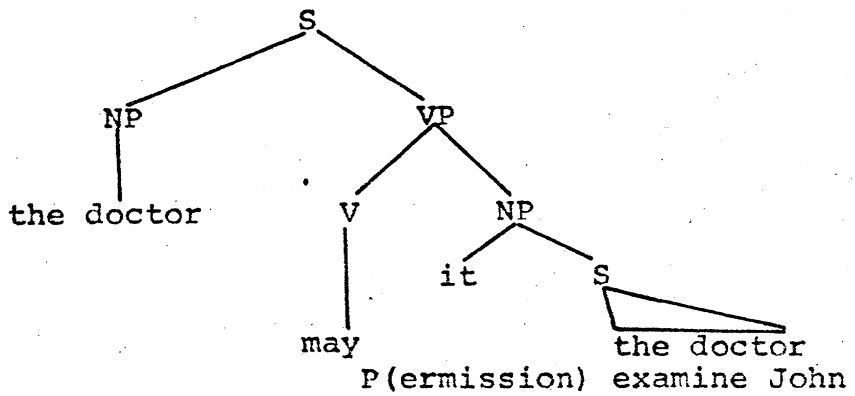


etc.

We have furthermore pointed out that the sentences in 67), 68) have in addition an interpretation with the surface subject as topic (taking moreover into account such features as animacy in the NP and stativity in the VP) with respect to "permission," "volition," "moral obligation," etc. But we have argued that this fact can be accounted for by a rule of interpretation which marks the surface subject as topic; thus in 69) the topic is whatever embedded subject is raised into the top sentence by it-replacement. Thus there is no motivation for positing a transitive verb structure in addition to the intransitive one that we already need.

Moreover, we have indicated that the specific proposal that the "root" interpretation of modals is accounted for by transitive verb structures of the form below is inadequate on syntactic grounds as well

70)

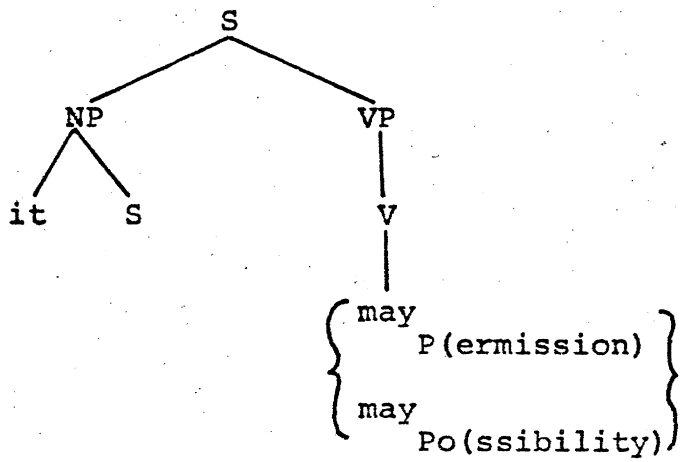


because of the existence of such sentences as

71) Suit {may / must} be brought against A.T.&T.

Thus the data thus far presented could be just as adequately accounted for by a structure of the following form

72)



However, this tree diagram embodies a further claim which must be justified; viz., that the modals $\underline{may}_{P}$, $\underline{may}_{Po}$ are main verbs with sentential complements. This is assumption 2 above, which we now turn to in the next part, having rejected assumption 3.

F. Modals as Main Verbs

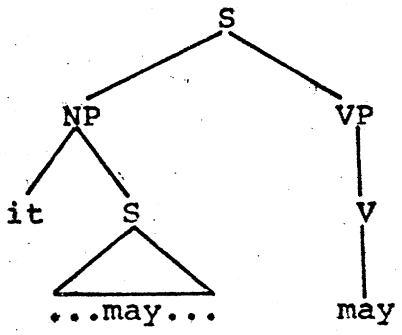
We now turn to assumption 2; viz., the claim that modals are main verbs in deep structure. Such an assumption is reflected in the phrase structure in 72).

This position implicitly assumes otherwise unwarranted modifications of the grammar of English. Two such modifications

are

1. Since M(odal) is a main verb with a sentential complement and the sentential complement may contain such a "modal verb" also, so that we have

73)

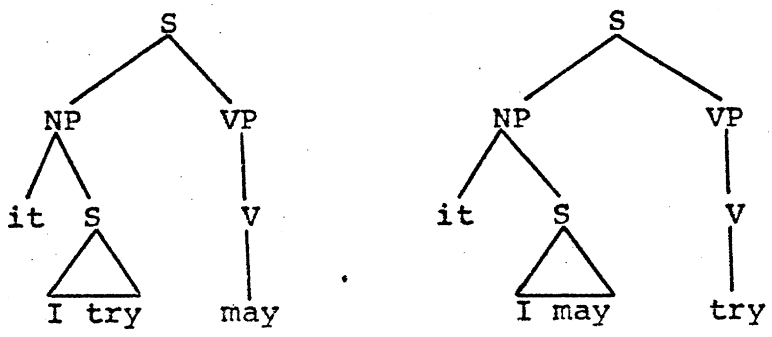


we must have output constraints which rule out sequences of the form

74) NP M(odal) M(odal)
etc.

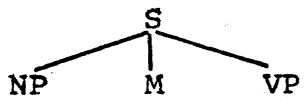
2. Since structures as in 75) are generated we must have a rule of modal insertion such that the <u>may</u> ends up in its proper position in surface structure

75)



If we on the other hand make the assumption that M(odal) is generated in the base rules exactly where it is in surface structure; viz.,

76)



sentences like

77) *I may may come.

are excluded automatically by a phrase structure rule of the following form

78) S--→ NP (M) VP (we have abstracted away from the interaction of M(odal) with other auxiliary verbs)

and the position of <u>may</u> as in

79) I may try.

and not

80) *I try may.

is likewise automatically accounted for by the rule.

The position that modals are in fact main verbs has been

supported by such data as

81) John can't seem to run very fast.

82) If I can hear your voice by tomorrow, we will know the operation was a success. (ear-patient to doctor)

83) If John knows the answer tomorrow, he'll get an A.

Consider first 81). The matrix can is interpreted with the complement sentence John runs very fast. It is argued in Langendoen (1970) that the matrix can originates in the infinitive clause, from which it is raised with not (actually, an abilitative marker is copied, but this does not affect the point at hand--see II.I.). But observe that can does not occur in infinitivals (nor do any of the modals)

84) *John seems to $\left\{\begin{matrix}\text{can}\\\text{must}\end{matrix}\right\}$ run very fast.

It is suggested that one way of ruling out such sequences as 84) in principle is by output constraints on surface structure of the sort discussed in Perlmutter (1968). Thus 84) could be ruled out by a surface structure constraint of the form

85) Surface Structure Constraint: Tense occurs next to Modal.

At the point that the constraint applies, the only Tense in 84) is next to seem, but since neither can nor must is next

to a Tense marker, 84) is ruled out. However, if can-raising has applied to yield 81), where here Tense is next to the modal at the point at which the surface structure constraint 85) applies, then the sentence 81) will not be ruled out.

Consider now sentences 82), 83). Observe that we do not get sentences of the form

86) *I can hear your voice by tomorrow.
*John knows the answer tomorrow.

and yet both occur in the well-formed 82) and 83). It has been proposed (see also 3.B.II.a) that sentences in if-clauses of the form 82), 83) are derived from underlying forms containing the modal will which is then later deleted by a transformational rule of will-deletion. Thus the underlying form of the sentences in the if-clauses in 82) and 83) respectively are

87) *I will can hear your voice by tomorrow.

88) John will know the answer tomorrow.

Will-deletion applies to each of the sentences 87) and 88) when contained in an if-clause and the grammatical 82) and 83) result. However, forms like 87) do not occur in isolation--there are no sentences in English that contain sequences of modals. Therefore a constraint must be introduced into the grammar to rule out sentences like 87). However, the surface

structure constraint 85) proposed above would be sufficient to rule out 87) since the second modal can does not occur next to Tense at the point the constraint 85) applies. If, however, will-deletion has applied to the string 87), so that can occurs next to Tense, as in 82), then the string will not be ruled out.

Let us now consider how we rule out sentences like 84) and 87) in our analysis. Modals are introduced by the rule (roughly)

89) S--> NP(M)VP

Furthermore, modals are excluded from infinitives and poss-ing clauses in the way discussed in note 1, Chapter I. Thus both 84) and 87) are excluded in deep structure

84) *John seems to $\left\{\begin{matrix}\text{can}\\\text{must}\end{matrix}\right\}$ run very fast.

87) *I will can hear your voice by tomorrow.

Furthermore, notice that, in our analysis, it is always the case that Tense is next to modal in deep structure, since sequences like 84) and 87) are excluded by the rules of the base.

Now let us ask what the justification is for adding the surface structure constraint 85) to the grammar of English. Apparently there are only two cases which motivate its addition to the grammar; viz., the case of can-raising illustrated in 81)

and the case of will-deletion illustrated in 82) and 83). Unless the transformational operations of can-raising and will-deletion can be motivated on syntactic grounds, there is no justification for freely generating sequences of modals, modals in infinitives, etc., only to rule them out later by a surface structure constraint like 85). We will present an analysis of constructions like 81) in Chapter II, I. which involves a rule of semantic interpretation, rather than a can-raising rule. And in Chapter III, B. II. we will show that there is no syntactic rule of will-deletion in English, but a semantic rule of will-interpretation instead. The arguments partly rest on cases which cannot be resolved by any appeal to surface structure constraints. Thus we may conclude that there is no need for the surface structure constraint 85) in the grammar of English, since there is no syntactic motivation for the transformational rules (can-raising and will-deletion) which led to its postulation. Similarly, there is just as little motivation for generating modals in all the places that main verbs occur--after other modals, in infinitive clauses, etc.

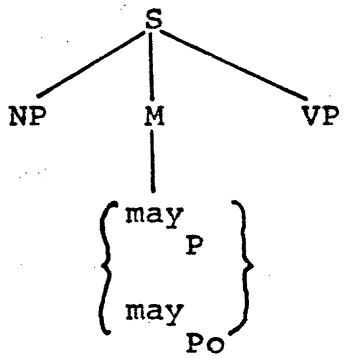
G. Root vs. Epistemic Modals

Having rejected the proposal that modals occur in both transitive and intransitive verb deep structures (assumption 3, Part E) and also the proposal that modals are main verbs (assumption 2, Part F), we are left with assumption 1:

The interpretation of "permission" is associated with a particular lexical item may$_{P(ermission)}$; the interpretation of "possibility" is associated with a particular lexical item may$_{Po(ssibility)}$.

Thus even if we accept the underlying structure 40) for modals, one might still argue that there are two lexical items may$_{P}$ and may$_{Po}$

40)



Accordingly the English M(odals) would fall into the following two sets of lexical items:

41)

Root (R)	Epistemic (E)
may P(ermission)	may Po(ssibility)
must N(ecessity)	must L(ogical entailment)

41) (cont.)

Root (R)	Epistemic (E)
will V(olition)	will F(uture prediction)
can A(bility)	can Po(ssibility)

Under the assumption that we are dealing in 41) with eight lexical items rather than four, we are implicitly claiming that it is an accident in English that the lexical form for "volition" is homonymous with the lexical item for "future prediction" (i.e., both are will) or that the form for "ability" is identical with that for "possibility" (viz., can). That is, under this assumption, it would not be surprising if English had instead the following distribution of forms

88)

Root (R)	Epistemic (E)
may P(ermission)	may L(ogical entailment)
must N(ecessity)	must F(uture prediction)
will V(olition)	will Po(ssibility)
can A(bility)	can Po(ssibility)

However, cross-language considerations reveal that the distribution of forms found in English, 40), is not random. Often lexical items with "possibility" interpretations are lexically identical (i.e., with respect to phonetic specification) with items with "ability" interpretations.[8] Thus on these grounds there seems to be little support for assumption 1.

Note that we have not argued that the distinction root vs. epistemic is in itself an invalid distinction, but have claimed only that there is no syntactic evidence available that these distinctions are reflected syntactically at the deep structure level. There are clearly generalizations which can be captured by referring to the modals in their root or epistemic interpretations. For example, the fact that the root interpretation is excluded by the progressive as in

89) *He won't be doing the dishes tomorrow. (volition)

or the fact that the epistemic interpretation is excluded in if-clauses

90) *If it will rain tomorrow, we will stay home. (future prediction)

or the fact that in general the "root" modals have interpretations with the surface subject as topic, while the "epistemic" modals have interpretations on full sentences. We claim here only that there is no motivation for expressing these semantic distinctions in, e.g., syntactic phrase markers.

A suggestive approach for handling facts like 89) and 90) has been proposed by Fiengo (1971). In order to explain the fact that epistemic modals pattern like infinitives in certain ways, he explores the possibility that epistemic

modals are tenseless elements and root modals tensed elements. Rules of semantic interpretation of tense and aspect are proposed from which it follows, for example, that strings such as Tense-Modal-Aspect as in 89) will be semantically uninterpretable by general rules. This proposal is particularly interesting since it is based on cross-language considerations as well as on syntactic evidence internal to English.

H. Modals and Cognate Verbs

Other transformational studies of the English M(odal) have adopted a somewhat different analysis, which syntactically relates the modals may, can, etc. to their semantically cognate verbs--permit, enable, etc. (see, e.g., Newmeyer, 1969).

Thus, the general approach is to syntactically relate such constructions as in

91) a. I may go.
b. △ permits me to go.
c. △ gives me permission to go.

92) May I go?
Will △ permit me to go?

with a common underlying syntactic structure to explain their similar semantic interpretation, parallel selectional restrictions, etc. Thus observe (see also discussion in Chapter 4))

93) I am asking you if {*I / you} will please allow me to go.

94) I am asking you if {I / *you} may please go.

In 94), the complement subject must be identical to the matrix subject, in 93), to the matrix indirect object. Thus two separate constraints must be stated, unless it can be shown that the expressions in 95) have a common underlying structure

95) May I please go?

Will you please allow me to go?

Turning first to the question of selectional restrictions, observe that arguments based on selectional restrictions alone (in addition, of course, to semantic paraphrase) are weak, in the absence of independent syntactic arguments. But even in the case of close paraphrases, the selectional restrictions may vary in subtle ways.[9] Thus we have parallel selectional restrictions in

96) I was {permitted / given permission} to go.

*I was {permitted / given permission} to elapse.

*The stone was {permitted / given permission} to eat supper.

Yet, in certain cases, permit allows an abstract subject

97) If {the weather / time} permits the Red Sox to finish up the ballgame tomorrow, they will return to Boston.

But, in the case of give <u>permission</u> we have

98) *If {the weather / time} gives permission to the Red Sox to finish up the ballgame tomorrow, they will return to Boston.

Such discrepancies in slectional restrictions are, however, consistent with the lexical hypothesis (Chomsky, 1970b), but argue against a transformational relation between 91)b, c.

But even on semantic grounds, the arguments for such derivations are weak. Thus consider whether the pair 95)

95) May I please go?
Will you please allow me to go?

have a common syntactic source. This seems implausible in the light of such examples as

99) May I please have some salt.

which certainly does not mean the same thing as

100) Will you please allow me to have some salt.

But suppose it is contended that this particular lexical

item have is related to give as in

101) Will you please give me some salt.

However, again on semantic grounds, it can be seen that 101) is inadequate as a paraphrase for

99) May I please have some salt.

which is not necessarily addressed to a second person. Thus 99) may mean

102) Will someone please give me some salt.

But even in the particular case where it is addressed to a second person, as in

103) May I please have some salt, John.

it can be used roughly in the sense

104) Will you please { have someone give me some salt, John. / see to it that someone gives me some salt, John.

Compare

105) May I please have a massage, Miss Bardot.

and

106) Will you please give me a massage, Miss Bardot.

In 105), one would not be particularly surprised if Brigitte Bardot called in another person to apply the massage. But in the second case, one is specifically asking that the massage be applied by Brigitte Bardot herself.

Objections similar to these may be raised with respect to

107) May I please see that book.

which is a semantic paraphrase of neither

108) Will you please permit me to see that book.

nor

109) Will you please show me that book.

for similar reasons.

It thus seems that a transformational analysis which relates such semantically cognate pairs as may-permit, etc. will run up against difficulties of the kind illustrated above. Similar problems which are typical rather than exceptional arise for other cognate pairs (can-enable, etc.) which indic-

ates an inherent defect in this general approach.

Within our framework we assume that pairs like may and permit share certain semantic features in common which account for the similarity of interpretation of sentences like

110) I permit the doctor to examine John.
The doctor may examine John.

However, such pairs are not syntactically related by transformational rules in our analysis.

We have argued against the specific proposal which relates may and permit; in order to save the position that may is derived from a higher verb one could postulate higher abstract verbs which reflect all of the surface properties of may. Thus, for example, the fact that in may NP please open the door, NP cannot be second person, can be formulated in the higher-verb theory by stipulating that in NP_1 MAY NP_2..., NP_2 cannot be second person, where MAY is an abstract higher verb. Clearly, there is no way to empirically distinguish this higher-verb theory from our hypothesis that may is generated where it is in surface structure. Thus the two theories may be regarded as notational variants of one another.

I. The Modal as Semi-Modal

Many traditional grammars note that certain of the English modals sometimes overlap in meaning with the "semi-modals;" viz., will with be going to, can with be able to, and must with have to

1) John {will / is going to} resemble his father.

2) John {can / is able to} speak Russian.

3) John {must / has to} go.

Some grammars further speak of the modals as being "defective" in certain contexts and of the semi-modals as being their "suppletive" forms. Thus can and similarly all English modals are not found in infinitive clauses, whereby be able to can occur in such clauses

4) John seems to {*can / be able to} speak Russian.

Thus be able to is said to be the suppletive form of can in infinitival contexts (among others).

Langendoen (1970) has proposed that there is a syntactic relationship between certain of the modals and the semantically cognate semi-modals. In particular, he has given a number of arguments for postulating such a relationship between can and be able, maintaining that they are derived from the same underlying form. Thus in this view it is argued that the traditional

semantic notion that the semi-modals are suppletives of the modals is syntactically founded and that there is some rule which derives can from be able (or, equivalently, spells out each from a common underlying base form--e.g., ABLE, following Langendoen).

A closer inspection of the distribution of modal and semi-modal forms in English and their syntactic behavior casts considerable doubt on any such general syntactic relationship between modals and semi-modals. There are a number of reasons for these conclusions.

A. Semantics

Note first of all that there is a divergence in the syntactic distribution among the semi-modals themselves. Thus be going to co-occurs much less readily with M(odals) and the infinitive morpheme to than does be able to

5) John { will / may / should / must } be able to speak Russian.

John seems to be able to speak Russian.

6) *John { will / may / should / must } be going to resemble his father.

*John seems to be going to resemble his father.

Moreover, a hypothesis which treats pairs as will/be going to and can/be able to as variants will predict that they

have the same meaning in identical contexts. On the other hand, a hypothesis which treats them as separate lexical items would assert that while their range of meaning often overlaps or coincides, in general one would expect to find contexts in which one or the other does not occur. And this is in fact the case.

Thus observe that will and be going to may be closely synonymous in both the epistemic (future prediction) and root (volition) interpretations

7) John {will / is going to} resemble his father. (future prediction)

I {won't / am not going to} eat that spinach. (refuse to, volition)

Consider, however, affirmative sentences with activity verbs

9) I'm going to / I'll } mow the lawn now.

Both of these can have the interpretation of future prediction (as said when watching film of oneself). However, if 9) is said, for example, at the beginning of a dialogue, be going to has the preferred interpretation of "intention," whereas will expresses an element of "willingness" on the speaker's part.

Another context which brings out this distinction more clearly is in because-clauses

10) I have to go home next month because my sister {is going to / ≠ will} get married.

(from Hall, 1970)

But even in the volition interpretation as in 8), will and be going to does not always have the root interpretation of "volition" that will does

11) If {you'll (=will) / ≠ are going to} eat your spinach, I'll give you some candy.

Let us consider now can and be able to. Palmer has noted such pairs as

12) I ran fast and so {was able to / *could} catch the bus.

where can cannot be used to refer to a single successful achievement. The main verb of the sentence is important here. Thus consider

13) I {could / was able to} play the piano when I was young.

Here the could (Past+can) and was able to (Past+be able) are variants. However, with certain verbs of achievement, we have

14) I {was able to / *could} get there by 5:00 yesterday.

Thus can and be able to are non-synonymous in past contexts

involving "achievement" verbs such as get there, arrive, climb, etc. However, they are also non-synonymous in future contexts as in

15) If the Celtics practice hard, they { can / *are able to / will be able to } win tomorrow night.

Finally, observe that a hypothesis which treats can and be able to as syntactic variants would expect their distribution in idioms to be identical. One which treats them as separate lexical items would expect them to be lexically conditioned, which is in fact evidenced by such sets as

16) I { can't / *am not able to } stand all the noise you're making.

17) I { can't / *am not able to } help falling asleep.

18) I { can't / *am not able to } afford to lose.

19) I { can't / *am not able to } seem to run very fast.

but

20) I { can't / am not able to / *may } tell the difference between X and Y.

There are in addition a number of syntactic arguments against the proposal of Langendoen (1970). Recall that he proposes that there is an abstract element ABLE spelled out either as be able or can in finite clauses, and only as be

able in infinitive clauses. This is necessary, since he allows sentences such as

21) I can't seem to be able to open the bottle.

(where the can is assumed to be raised from the lower sentence) but does not permit

22) *I can be able to open the bottle.

Before we consider the arguments against Langendoen's proposal, let us point out that the counterpart to a rule of can-raising in our analysis is a rule of semantic interpretation which interprets the matrix can with the complement in

23) John can't seem to run very fast.
John can't seem to help falling asleep.

That is, can is generated in the base with seem and interpreted with the embedded complement by the rules of semantic interpretation. Observe that these rules apply only in the case where can means be able; i.e., in the "root," but not the "epistemic" interpretation

24) *The water can't seem to be boiled.
(=it seems that the water can't be boiled)

This rule must be generalized to apply to features on be unable, inability, etc. which are similarly interpreted with

embedded complements as in

25) I am unable to tell the difference between X and Y.
My inability to tell the difference between X and Y.
*I tell the difference between X and Y.

The fact that we do not make use of a rule of can-raising has, of course, as a consequence that we do not generate modals in infinitive clauses in our analysis either.

Let us now turn to the arguments against relating can and be able which underlies Langendoen's proposal that the source of can in the "can't seem" constructions is in the infinitival clause (an abilitative marker ABLE, which is spelled out either as can or be able).

B. Derived Structure

Be able and can must have derived structures which enable them to properly undergo the A(ux) Inversion rule; i.e., we have

27) Can you open the bottle?

28) *Be able to you open the bottle?

Thus a hypothesis which treats be able and can as variants must introduce appropriate derived structure in the lexical insertion rule, adding new power to such a class of rules. For example, if be able is actually inserted by transformation in place of an abstract ABLE, as in Langendoen's analysis, it must receive precisely the structure of, say, be+Adj, which

allows it to properly undergo the Aux Inversion rule. But under this analysis it would make no difference if be able or able be were the lexical material inserted. It is pure coincidence that the lexical material has the same structure as another structure already required in the base: viz., be+Adj.

On the other hand, a hypothesis which treats them as separate lexical items, can as a M(odal) and be able as be +Adj, provides the appropriate structure automatically.

C. Distribution

1. Although we have

29) I will be able to open the door.

we do not have

30) *I will can open the door.

A lexical insertion hypothesis must state that the can spelling rule does not operate in the environment

31) M___

Independently, such sequences as

32) *I can will open the door.

must be excluded elsewhere in the grammar. A lexical hypothesis which asserts that can is a M(odal) accounts both for the fact that 30) is out and the fact that 32) is out at the same time by generating can, will under a single node.

2. Although we have

33) My being able to lift the trunk amazed him.

34) I expect to be able to come.

we do not have

35) *My canning to lift the trunk amazed him.

36) *I expect to can come.

The transformational hypothesis must state that can is not spelled out in infinitives. Elsewhere the fact that

37) *My musting to lift the trunk amazed him.

38) *I expect to will come.

are likewise impermissible must be accounted for. The lexical hypothesis which treats can as a M(odal) and be able as be+Adj accounts for this under the single generalization that M(odal) is excluded from infinitivals.

C. Deep Structure Argument

We will not do a detailed analysis of the deep structure of the semi-modal be able here. But since the credibility of

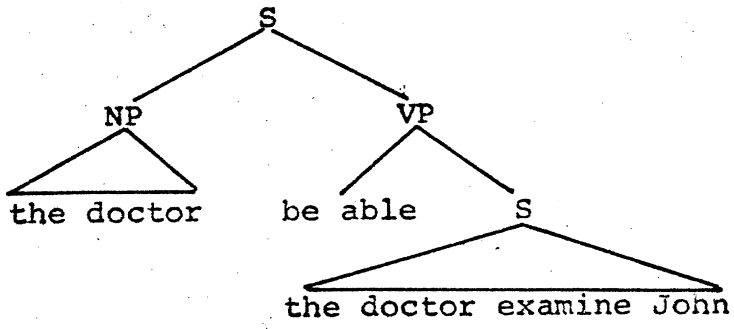
a purported transformational rule which converts be able into can depends crucially on the assumed deep structure of be able, we will consider an analysis, of the type represented in Rosenbaum (1967). Data such as

39) The doctor was able to examine John.

40) John was able to be examined by the doctor.

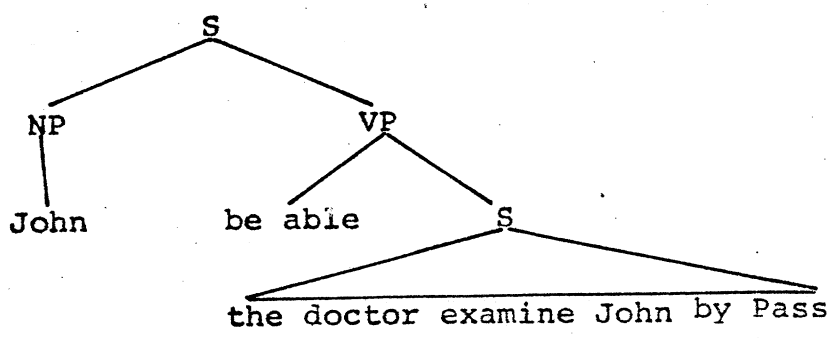
where 39) and 40) are non-synonymous, have led to the suggestion that be able is a deep structure adjective construction with a sentential object. Thus underlying 39) is

41)



and underlying 40) is

42)



The fact that in 41) the deep subject of be able is the doctor and in 42) is John would thus account for the non-synonymy of 39) and 40). Let us call this proposal the deep structure hypothesis since the non-synonymy is accounted for by differences in the deep structure of 39) and 40).

The fact that 43) is acceptable while 44) is not

43) John was able to boil water.

44) *Water was able to be boiled.

can be ruled out by a subsidiary condition that the deep structure subject of be able be restricted to some notion of "concrete agent." To see this consider

45) John was able to lift the box.

46) The device / The intense heat } was able to melt the snow.

where John, the device, and the intense heat all satisfy the criterion of "concrete agent."

To see that the semantic notion of agent plays a role here observe that in

47) Mercury is able to climb walls.

48) Water is able to rust iron.

the subject noun phrases mercury and water are interpretable

in some sense as agents and thus satisfy our criterion while

49) ?*Mercury is able to melt.

(Compare heat melts mercury.)

50) ?*Water is able to evaporate.

(Compare heat evaporates water.)

are marginal unless mercury and water are understood as causing themselves to melt and evaporate, respectively.

That the agency must be in some sense direct is seen from examples as

51) *What the device does is able to cause the snow to melt.

52) *John's clumsiness was able to cause the door to open.

53) *Throwing stones through windows is able to break them.

although we have alongside the above the following

54) What the device does causes the snow to melt.

55) John's clumsiness caused the door to open.

56) Throwing stones through windows breaks them.

Now we wish to show that a rule which converts be able to can is incompatible with the deep structure hypothesis, which we sketched above. Thus consider the sentence

57) John can boil water.

This sentence would derive by the optional application of the be able-→ can rule from

58) John is able to boil water.

But now consider what the source is of

59) Water can be boiled.

The underlying form would have to be

60) *Water is able to be boiled.

The advocate of a be able--→ can rule would presumably require the rule to apply obligatorily to 60) yielding 59). For in fact the can in the sentences under consideration is the root can to which the rule would apply. This is seen, for example, by the fact that sentence adverbials which typically occur with root can occur here also; e.g., easily

61) John can boil water easily. (root)
Water can be boiled easily. (root)
*Parties can be boring easily. (epistemic)

Furthermore, such sentences occur in if-conditionals which, we show later (see 3.B.II.b.), admit only the root interpretation of modals

62) If the water can be boiled, we will be in luck.

First we note that we must now generate forms like 60) freely and later rule them out by some sort of output constraint if the be able--→ can rule has not applied. We are thus in effect doing semantic selectional restrictions in surface structure.

But even more seriously, consider

63) The doctor can examine John.

and

64) John can be examined by the doctor.

Note that 63) and 64) are synonymous on one reading but their deep structures

65) The doctor is able to examine John.

and

66) John is able to be examined by the doctor.

are never synonymous.

Thus for one who accepts the deep structure hypothesis, these facts are very strong motivation at the same time for rejecting a be able--→ can rule.

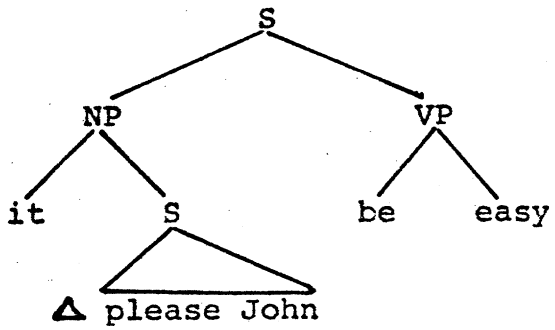
However, there seems to be other independent syntactic evidence in favor of the deep structure hypothesis; viz., that be able is be+Adj rather than like a modal. Compare

67) John is easy to please.

68) John is eager to please.

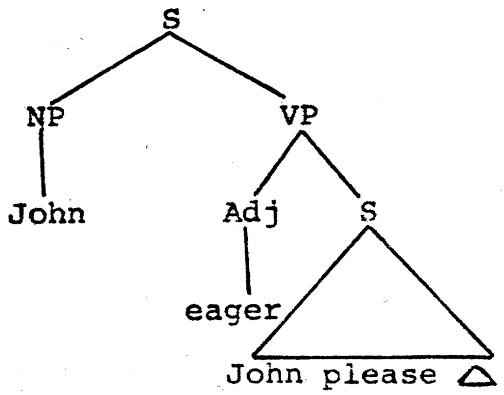
It has often been noted that the syntactic behavior and semantic interpretation of 67) and 68) is accounted for by assuming a structure like an intransitive verb for <u>easy</u>

69)



and a structure like a transitive verb for <u>eager</u>

70)



Parallel evidence for this assumption is that the correct structure is automatically provide in the case of <u>easy</u> (but not <u>eager</u>) for the derivation of

71) John is an easy man to please.

72) *John is an eager man to please.

Further evidence is given by

73) John's eagerness to please.

74) *John's easiness to please.

which, coupled with the lexicalist hypothesis, is explained by such structures as 69) and 70).

But notice that we have

75) *John is an able man to lift that trunk.

76) John's ability to please.

which argues for the deep structure hypothesis; viz., that be able is be+Adj rather than like the modal can.

In fact the existence of the nominalized form in 76) argues that be able is not like a modal. Observe that can does not have a true nominalized form (nor, in fact, do any of the modals); it is hard to even conceive of a possible one, even for productive nominal suffixes

77) *John's can-ness, can-ity
*Peter's must-ity

Contrast this with German where it can be argued that modals are verbs; here such forms do exist

78) Das Können-ability
können-can

Das Sollen-obligation
sollen-should

J. Other Auxiliaries as Main Verbs

Up to now we have considered the syntactic behavior of the category M(odal) without considering other members of the English Aux(iliary). It has been argued elsewhere in the literature that elements like have and be are V(erbs) in deep structure despite their similarity in behavior to other auxiliary elements like M(odal) with respect to transformations like Interrogation, Negation, etc. (Ross, 1969; Emonds, 1970). It is important to examine the structure of such arguments to see whether any general conclusions can be drawn about the status of the English Aux(iliary) which bear in particular on the status of M(odal).

A particularly interesting hypothesis in this respect is that advanced by Emonds (1970), in which it is argued that the be morpheme of the Prog(ressive) and of the Pass(ive) are deep structure complement-taking verbs in English. That is, consider

0a) Some children may be riding horses.
0b) There may be some children riding horses.
0c) Many soldiers were injured in the war.
0d) There were many soldiers injured in the war.

Emonds argues that both cases of be underlined in 0a) and 0b) are instances of the English Prog(ressive) morpheme be and that both cases of were underlined in 0c) and 0d) are instances of the English Pass(ive) morpheme be. He furthermore argues that both the Prog(ressive)

and Pass(ive) morpheme be's are verbs in deep structure which take noun phrase complements. He argues that this follows from two assumptions: 1) the structure-preserving hypothesis, in which it is claimed that there are very general constraints on certain classes of transformations in language. Thus, in English, e.g., movement transformations like there-insertion, which move noun phrases, are constrained to moving these noun phrases to other noun phrase nodes. 2) the standard accounts of there-insertion are incorrect and there-insertion must be modified in such a way that it is structure-preserving. Since Emonds makes a plausible case both for 1), the structure-preserving hypothesis, which is needed for independent reasons, and since his criticism 2) of standard accounts of there-insertion is, as we will see, essentially correct, it is important to see whether the conclusion he draws; viz., that Prog and Pass be's are deep structure verbs with complements holds up under closer examination.

We will, however, argue that of the underlined instances of the morpheme be in 0a)-0d), only the be underlined in 0a) is an instance of the Prog(ressive) be and that only the were underlined in 0c) is an instance of the Pass(ive) be. Furthermore, we argue that both the Prog and Pass be's are members of the category Aux and are not deep structure complement-taking verbs. And finally, we claim that the be's in 0b) and 0d) are both instances of the copula be generated in deep structure. Thus in our analysis none of the sentences 0a)-0d) are related transformationally,

whereas in Emonds analysis 0b) and 0d) are derived from structures essentially like those underlying 0a) and 0c) respectively.

In order to demonstrate our claims, it will be necessary to give a new account (the Phrase Structure hypothesis) of constructions containing the English existential there, which, we claim, is generated as a deep structure noun phrase. Then all of the conclusions in the preceding paragraph will automatically follow.

Introduction

We will examine constructions of the following form, all of which contain the existential there[10]

1) There are ghosts.

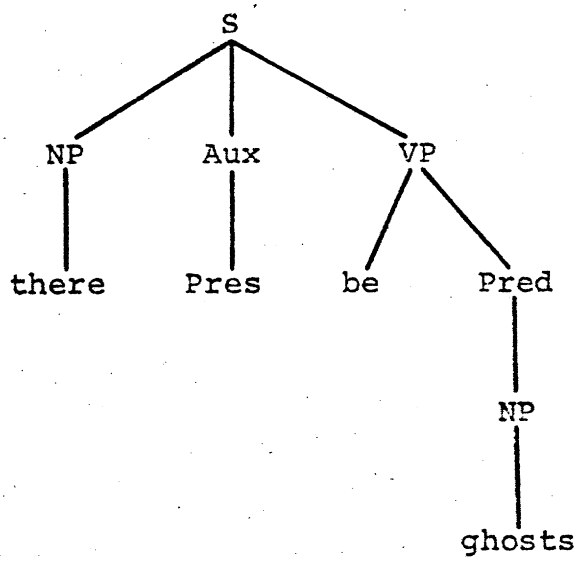
2) There is someone in the garden.

The analysis of such constructions has been the subject of considerable study and debate, both in traditional grammar and during the past decade and a half of transformational grammar. Syntactic analyses from a rich variety of viewpoints have been adopted during the history of the study of English syntax, as is witnessed from a small handful of the studies of existential there: Jespersen (1940); Poutsma (1916); Lyons (1967, 1968); Fillmore (1968); Emonds (1970); Allan (1971); Burt (1971); Kuno (1971), etc.

We will explore the hypothesis that the deep structure of

1) is

3)



Thus the deep structure of 1) is almost identical to it surface structure, which results from the automatic application of several low-level syntactic rules (Affix Placement and Agreement). We will call this hypothesis the phrase structure hypothesis.

Similarly, in the case of 2) we will argue that the deep structure is exactly as in 3) where the simple NP ghosts is replaced by the structure underlying the complex NP someone in the garden. That is, we have underlying 2)

4) There is NP

where the NP in 4) is identical to the structure underlying the NP underlined in

5) Someone in the garden is waiting to see you.

That is, precisely the same set of rules that generate someone in the garden in 5) will also generate it after be in 4) to yield

6) There is someone in the garden.

As an alternative to our phrase structure hypothesis is the transformational hypothesis in which a transformational rule of there-insertion is assumed. Various examples of the transformational analysis of there-insertion may be found in many of the studies (within the framework of generative grammar) cited above. The transformational hypothesis posits the following underlying forms for 1) and 2).

7) Ghosts be.

8) Someone is in the garden.

A transformational operation of there-insertion[11] is applied to introduce the there morpheme to yield the correct surface forms 1) and 2).

We will demonstrate that the phrase structure hypothesis accounts for the distribution of surface forms containing the existential there in a natural way and furthermore accounts in a principled way for the absence of surface forms of there-constructions containing predicate nominals, the semi-modals be going to and be to, etc. (see Part II). In fact, such gaps of occurrence will provide the crucial evidence for selecting the phrase structure hypothesis for there over the transformational hypothesis

of there-insertion.

I. The Phrase Structure Hypothesis for Existential there

We assume the following phrase structure rules

9) S--> NP+Aux+VP

Aux--> T(M)(have+en)(be+ing)

VP--> {V+NP / be+Pred}

Pred--> NP, etc.

NP--> {(Det)N / NP S}

Det--> a, the

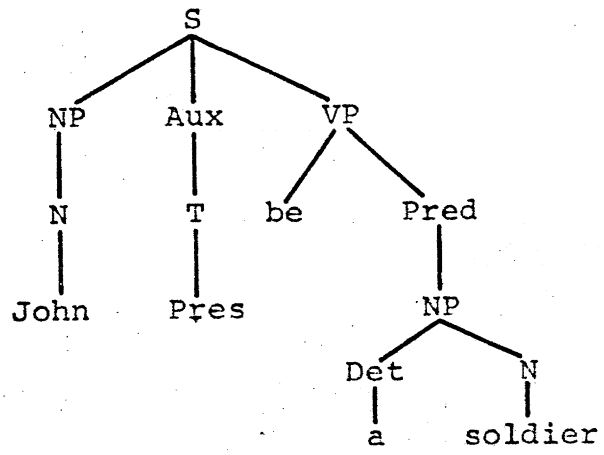
N--> [12] John, soldier, ghost, there

Then the underlying structure for

10) John is a soldier.

is

11)



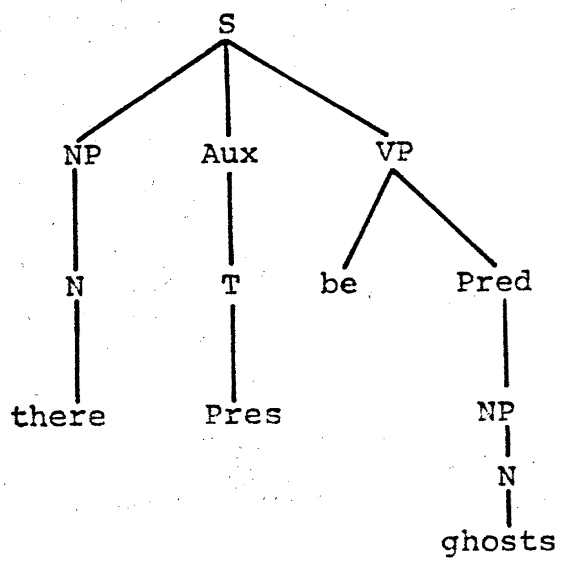
The obligatory rules of Affix Placement and Agreement apply to yield the correct surface form 10).

Now let us consider the derivation of

12) There are ghosts.

We assume the following underlying structure

13)



Again Affix Placement and Agreement[13] apply to give 12).

We place the following condition on the occurrence of there in deep structure

14) (Deep Structure)[14] Condition: there may occur only in the context ___Aux be NP

The Deep Structure Condition (henceforth DS Condition) reflects the fact that there has a very restricted distribution in English, as has often been noted. That is, we do not get

*I like there, etc.

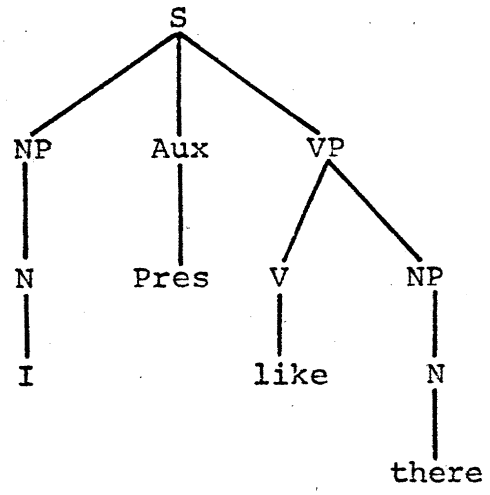
Thus since the deep structure 13) can be segmented in the following way

15) there Aux be NP

the DS Condition is met and 13) will yield a well-formed surface structure.

On the other hand, suppose we generate the following deep structure

16)



Since the there in 16) does not satisfy the DS Condition; i.e., does not occur in the context ___be NP, it is starred as ungrammatical

17) *I like there.

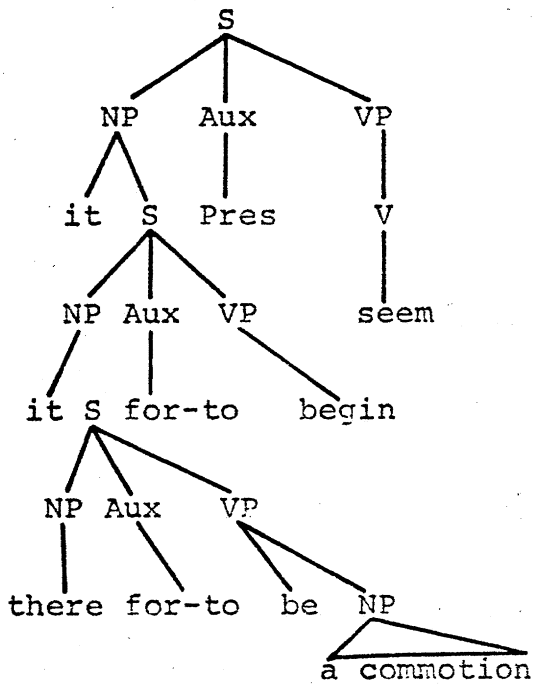
Notice that with the phrase structure hypothesis we can state the restricted distribution of there quite easily;

viz., as the DS Condition 14). The statement of the distribution of there becomes quite complex if stated at any other level than that of deep structure. Thus consider

18) There seems to have begun to be a commotion.

If we were to state the distribution of there at the level of surface structure, we would have to modify the DS Condition 14) to accommodate cases like 18). However, consider the deep structure of 18)

19)



Here too the DS Condition 14) is satisfied and the deep structure is well-formed since there occurs in the following context

19b) $\_\_\_\ {}_{\text{Aux}}[\text{for-to}]_{\text{Aux}}\ \text{be}\ {}_{\text{NP}}[\text{a commotion}]_{\text{NP}}$

Similarly, we will see below that the distribution of *there* can be accounted for under the transformational hypothesis of *there*-insertion only if we permit a list of completely ad hoc conditions on the structural description of the rule (Part II).

Notice that the phrase structure hypothesis accounts in a natural way for the fact that *there* acts as an NP with respect to many transformations; e.g.,

20) Is there any hope? (Interrogative)
21) There's no hope, is there? (Tag question)
22) There is believed to have been a revolution. (Passive)
23) There seems to be something brewing. (It-replacement)

Our hypothesis accounts for this by generating *there* as a deep structure noun phrase.

Observe that a great variety of complex NPs containing relative clauses and other complements are generated in predicate position after *there*[15]

24) There are $_{NP}[$some people who don't like beer$]_{NP}$.
25) There are $_{NP}[$women who are always in the kitchen$]_{NP}$.
26) There are $_{NP}[$a lot of people willing to help$]_{NP}$.
27) There is $_{NP}[$someone in the garden$]_{NP}$.
28) There was $_{NP}[$a man with a hat on$]_{NP}$.
29) There are $_{NP}[$too many people owning yachts$]_{NP}$.

30) There is $_{NP}[$nothing to say$]_{NP}$.

In each of the cases above, the noun phrases are generated by rules needed independently elsewhere in the grammar; e.g., compare

31) $\left.\begin{array}{l} {}_{NP}[\text{Some people who don't like beer}]_{NP} \\ {}_{NP}[\text{A man with a hat on}]_{NP} \\ {}_{NP}[\text{Someone in the garden}]_{NP} \end{array}\right\}$ are/is waiting to see you.

Whatever rule or rules generate the NPs some people who don't like beer, someone in the garden, etc. in the context $_{NP}[\_\_]_{NP}$ are/is waiting to see you will generate these noun phrases in the context there Aux be $_{NP}[\_\_]_{NP}$ in exactly the same way.

Observe that the rules as we have given them allow the generation of

32) *There is unicorns.

33) *There are a unicorn.

alongside of the well-formed

34) There are unicorns.

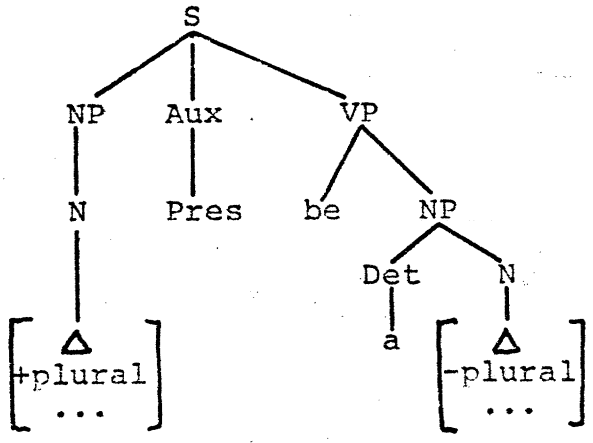
35) There is a unicorn.

That is, assume that number is introduced by context free rules of the base [16]

36) $N \rightarrow [\Delta, \alpha\text{plural}, \ldots]$, α + or -

Then we will generate trees of the form

37)



Suppose that the lexical insertion rules substitute <u>there</u> $[N, 0\ \text{plural}, \ldots]$ for the first occurrence of Δ, and <u>unicorn</u> $[N, 0\ \text{plural}, \ldots]$ for the second. Then, after Affix Placement and Agreement have applied we will get the ill-formed 33) (similar comments apply for the derivation of 32)).

Thus we need a condition which rules out strings of the form

38) * NP $[\alpha\ \text{plural}]$ -be- NP $[-\alpha\ \text{plural}]$

This condition will rule out 32), 33) while permitting 34), 35).

But there is independent evidence that such a condition is needed in the grammar. Observe that anomalous strings of the following form are generated in the syntax

39) *Two men are a doctor.

40) *A doctor is two men.

alongside of the well-formed

41) Two men are doctors.

42) A doctor is a man.

Thus quite independently of the there-constructions, condition 38) is needed to rule out 39), 40). Thus we allow structures of the form $\begin{bmatrix} NP \\ \alpha pl \end{bmatrix}$ -be- $\begin{bmatrix} NP \\ -\alpha pl \end{bmatrix}$ to be generated in the syntax.[17] Then condition 38) will rule out the inappropriate 39), 40) at the same time ruling out 32), 33) with no further statement.

Notice that the phrase structure rules 9) generate the following set of sentences

43) There $\left\{\begin{array}{l} \text{is} \\ \text{was} \\ \text{has been} \\ \text{had been} \\ \text{may be} \\ \text{*is being} \\ \text{*was being} \end{array}\right\}$ a God.

They also generate the structure underlying

44) *There was being $_{NP}[$someone in the kitchen$]_{NP}$

Thus there must be some condition in the grammar which rules out the starred examples in 43), 44). That is, in certain cases the string NP Aux be NP must be starred as ungrammatical. Let us state this condition as

45) NP Aux be NP

Aux may not contain Prog(ressive)

We observe that such a principle is needed in the grammar quite independently of 43), 44). Thus consider the following sentences

46) *John is being a doctor.

47) *Mary is being an Italian.

Thus we need Condition 45) on other grounds to rule out 46), 47); then the starred examples in 43), 44) will be similarly ruled out by this independently motivated principle.[18]

There are additional conditions of semantic interpretation which the NPs in these there constructions must fulfill which we will note here without further comment[19]

A. The noun phrase must be interpretable as indefinite :

48) There is $\begin{Bmatrix} a \\ *the \end{Bmatrix}$ women in the kitchen.

B. The noun phrase must be interpretable in one of a

fixed number of ways--existentially, locatively, etc.:

49) Existentially:

There is { a God. / *a pencil. }

There are some people who don't like beer.

50) Locatively:

There are women in the kitchen.

II. The Transformational Hypothesis for Existential there: there-insertion

In this section we will consider the transformational hypothesis; viz., that existential there is not generated in the base, but is inserted by transformation.

Most analyses of there-insertion assume that 1) is derived from the structure underlying 2)

1) There is someone in the garden.

2) Someone is in the garden.

The there is then subsequently inserted[20] by a transformation which applies to the structure underlying 2).

We will use as a basis of discussion the formulation of there-insertion in Burt (1971) which is typical of the transformational hypothesis and which has the advantage of being more explicit than many similar proposals in the literature.

We will proceed in the following way. We state the

transformational rule of there-insertion and ask what motivated the formulation of the rule. We then seek to extend the rule to cover a wider range of data.

We show that the rule of there-insertion can handle the data only at the cost of considerably complicating the grammar by the addition of ad hoc conditions to the structural description of the rule which are unnecessary in the alternative phrase structure hypothesis.

The rule of there-insertion is as follows

3) There-insertion[21] :

$$NP\text{--} \quad \begin{cases} \text{Aux-be-W} & \text{A.} \\ \text{Aux}\,[\text{X-be-Y}]_{\text{Aux}}\,\text{-Z} & \text{B.} \end{cases}$$

S.D.	1		2	3	4	5 ⇒ opt
S.C.	there		2	3+1	4	5

Condition: a) 1 has an indefinite determiner

b) Be directly follows T(ense)

We present four arguments[22] against this transformational analysis of there-insertion: 1. The Prog(ressive) Argument. 2. The Pass(ive) Argument. 3. The Semi-modal Argument. 4. The Predicate Nominal Argument. We also consider the Rule Ordering Argument which is an apparent counter-argument for the transformational hypothesis.

1. The Prog(ressive) Argument

Observe that the rule of there-insertion has the effect of moving the subject noun phrase after the be, while inserting the morpheme there into the vacated subject position. It may apply in the contexts which meet the structural description of the rule (see A. and B.). Furthermore, there are two conditions on the application of the rule.

The structural description of there-insertion corresponds in the phrase structure (henceforth PS) hypothesis to the DS Condition 14). That is, it determines the syntactic distribution of the there morpheme. To see this, consider the fact that we have

4) There are ghosts.

but not

5) *I like there.

In the phrase structure hypothesis we account for this by the DS Condition 14) which restricts there to the following context

6) ___Aux be NP

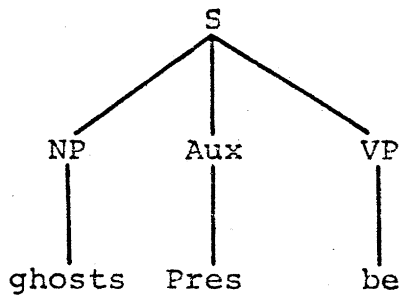
Thus the there meets this condition in 4), but fails to meet it in 5).

Similarly in the transformational hypothesis there may be inserted into a tree with the structural description

7) NP-Aux-be-W (=A. in 3))

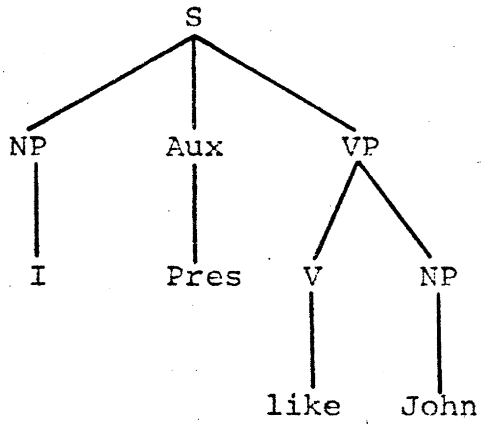
This structural description is met by the following tree (where W=Ø, the null string)

8)



but not by the following tree

9)



Thus it is impossible to derive 5) whereas 4) is correctly generated.

So with respect to constructions like 4) there is no evidence available for choosing between the PS hypothesis and the transformational hypothesis.

But now consider forms containing the Prog(ressive) as in

10) There is someone standing on the corner.

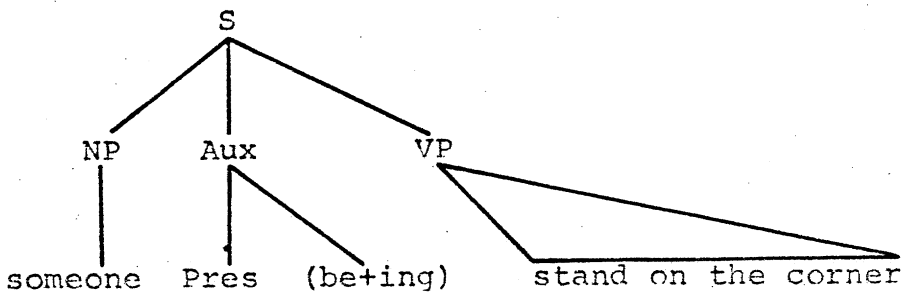
The PS hypothesis makes the claim that the be in 10) is not the Prog be, but is the copula be generated in deep structure. That is, we have the following structure

11) $_{NP}[\text{there}]_{NP}$ Aux be $_{NP}[\text{someone standing on the corner}]_{NP}$

where there is a noun phrase generated in the base. Observe that there satisfies the DS Condition 14). The noun phrase someone standing on the corner is generated by exactly the same rules that generate it in $_{NP}[\_\_]_{NP}$ is waiting to see you.

However, in the there-insertion analysis being considered 10) has the following deep structure

11)



Observe that 11) cannot be segmented into

7) NP-Aux-be-W (=A. in 3))

Thus for the case where the relevant be is in the auxiliary, we must state another context for there-insertion. This is the reason for Part B. in the structural description of there-insertion 3). That is, the tree in 11) can be segmented as follows (see Part B. of 3))

12) someone-$_{\text{Aux}}$[Pres-be-ing]$_{\text{Aux}}$-stand on the corner

NP	X		Y	Z
1	2	3	4	5

Then there-insertion applies to 12) to yield the correct surface structure 10). However, we get the correct result only at the cost of adding Part B. of the structural description to the grammar. Notice that Part A. and Part B. of the structural description of there-insertion cannot be collapsed into a single generalization.

Thus the there-insertion analysis claims that the contexts for there in A. and B. are unrelated whereas the PS hypothesis claims that they are identical (at the level of deep structure). There is nothing in this hypothesis which corresponds to Part B. of the structural description of there-insertion. Thus, although a there-insertion analysis which posits underlying phrase markers such as 8), 11) can derive correct forms, it must be

rejected on the grounds that the structural description of the rule (and thus the grammar) is needlessly complicated only to reach the level of observational adequacy.

2. The Pass(ive) Argument

Observe next sentences containing in addition the Pass(ive) morpheme be+en as in

13) There are some new houses being built.

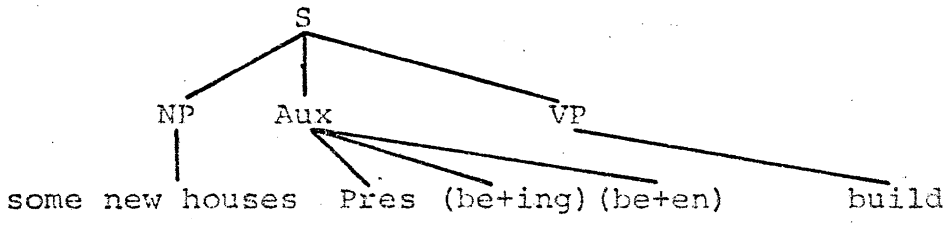
The PS hypothesis claims that the be in 13) is not the Pass(ive) be but is the copula be generated in deep structure. Thus we have the structure

14) there Aux be $_{NP}[$some new houses being built$]_{NP}$

where there is a noun phrase generated in deep structure, which furthermore satisfies the DS Condition 14). The noun phrase some new houses being built is generated by the same rules that generate it in $_{NP}[\_\_]_{NP}$ were destroyed by fire yesterday.

In the there-insertion analysis under consideration this sentence will derive (after passive has applied) from the following structure

15)



Observe, however, that the tree 15) can be segmented in two ways by Part B. of the structural description of there-insertion

16) $_{NP}[$some new houses$]_{NP}$ - $_{Aux}[$Pres-be-ing be+en$]_{Aux}$ -build

NP	X		Y	Z
1	2	3	4	5

and

17) $_{NP}[$some new houses$]_{NP}$ - $_{Aux}[$Pres-be+ing-be-en$]_{Aux}$ -build

NP	X			Y	Z
1	2	3	4		5

If there-insertion applies to the structure in 16) we get the correct surface form 13). On the other hand, if it applies to the structure in 17) we get the ungrammatical

18) *There are being new houses built.

Thus in order to exclude 18) it is necessary to add some ad hoc condition to the rule. This is the reason for Condition b) of there-insertion 3).

19) Condition: Be directly follows T(ense)[23]

This condition will reject 17) as an input to there-insertion thus preventing *18).

The ungrammatical *18) is ruled out in the PS analysis by Condition 45) which excludes Prog from Aux in certain cases as in

20) * $_{NP}[\text{there}]_{NP}$ -are being- $_{NP}[\text{ghosts}]_{NP}$

21) * $_{NP}[\text{there}]_{NP}$ -are being- $_{NP}[\text{some new houses being built}]_{NP}$

But observe that such a condition is also necessary in the there-insertion analysis. That is, to exclude

22) *There are being ghosts.

one must invoke the same principle as is required in the PS analysis. Thus alongside the general principle required in either the PS analysis or in the there-insertion analysis; viz., that in certain cases

23) Aux may not contain Prog

the there-insertion analysis has the ad hoc condition

19) Condition: Be directly follows tense.

Thus again, on the grounds of simplicity, we must prefer the PS analysis which does not require Condition 19). Even worse for the analysis of there-insertion, however, is the fact that Condition 19) gives precisely the wrong results in some crucial cases involving semi-modals, which we turn to now.

3. Semi-Modal Argument

Consider the following sentence

24) A demonstration is going to be in the gym.

We will consider what happens when there-insertion applies to 24). There are two possible analyses depending whether or not it is assumed that be going to belongs to the auxiliary or not.[24] In Case I we assume that it does; in Case II we assume that it does not.

Case I:

If be going to is an Aux, then 24) has the following two possible structural descriptions under there-insertion 3). Part A. of the structural description yields

25) $_{NP}[$a demonstration$]_{NP}$ - $_{Aux}[$Pres-be going to$]_{Aux}$ -be- in the gym

1 2 3 4

whereas part B. yields

26) $_{NP}[$a demonstration$]_{NP}$ - $_{Aux}[$Pres-be-going to$]_{Aux}$ -be in the gym

NP	X		Y	Z
1	2	3	4	5

Consider now Condition b) on there-insertion; viz.,

19) Be directly follows tense.

This condition rules out the structural analysis 25) since the relevant be does not follow Pres; Pres is followed by the be of be going to. Thus the following grammatical sentence is ruled out by condition 19)

27) There is going to be a demonstration in the gym.

On the other hand consider now 26). Here condition 19) does not rule out the structural analysis since be directly follows Pres. Thus the following ungrammatical sentence is generated

28) *There is a demonstration going to be in the gym.

Thus we get exactly the wrong results. With Condition b) we cannot generate the grammatical sentences corresponding to 25), but generate instead the ungrammatical sentence 28).

Case II:

Let us now assume that be going to does not belong to Aux.

Then Part A. of there-insertion 3) will analyze 24) in the following way

29) $_{NP}[\text{a demonstration}]_{NP}$ - $_{Aux}[\text{Pres}]_{Aux}$ -be- $_{W}[\text{going to be in the gym}]_{W}$

Note that Condition b); viz., that be must directly follow T(ense) is not applicable to this structure since be follows tense. Thus we get the ungrammatical 28)

28) *There is a demonstration going to be in the gym.

However, not only do we get the ungrammatical 28) but there is no way to get the grammatical 27), for now Part B. of the structural description cannot apply since be going to does not belong to Aux.

Of course, we can again state the facts by adding another ad hoc condition to Condition 19) (Be directly follows tense) by stating that be going to (and be to--see below) are exceptions to this condition, but doing this only brings out more clearly the ad hoc nature of Condition 19) itself which was devised only for the case where Pass be cooccurs with Prog be.

Let us see how the PS hypothesis accounts for all the facts. The grammatical

27) There is going to be a demonstration in the gym.

derives from an underlying

30) $_{NP}[\text{there}]_{NP}$ - $_{Aux}[\text{Pres-be going to}]_{Aux}$ -be- $_{NP}[\text{a demonstration in the gym}]_{NP}$ 25

where there is a deep structure noun phrase satisfying the DS Condition 14) and the noun phrase a demonstration in the gym is generated by the same rules that generate this phrase in $_{NP}[\_\_]_{NP}$ was cancelled.

The ungrammatical 28) will not be generated from

31) * $_{NP}[\text{there}]_{NP}$ - $_{Aux}[\text{Pres}]_{Aux}$ -be- $_{NP}[\text{a demonstration going to be in the gym}]_{NP}$

since the rules above which generate noun phrases of the form a demonstration in the gym in the context $_{NP}[\_\_]_{NP}$ was cancelled must exclude the noun phrase a demonstration going to be in the gym from the same context; i.e., we do not get

32) *A demonstration going to be in the gym was cancelled.

nor, for example,

33) *A nurse going to come will help you.

although we get the syntactically and semantically well-formed

34) A demonstration which was going to be in the gym was cancelled.
35) A nurse who is going to come will help you.

which clearly shows that 32), 33) are to be ruled out on syntactic rather than semantic grounds.

Thus in the PS analysis of there *28) is impossible to generate. But in the there-insertion analysis one must add another ad hoc condition to the grammar to generate the correct sentences. Furthermore, the ad hoc condition; viz., that only the second be of be going to be may be selected in the structural description violates the ad hoc condition 19) that be directly follows T(ense). Again observational adequacy is reached only at the cost of complicating the statement of there-insertion (and hence the grammar). Since nothing new must be stated about there in the PS analysis to generate all the correct surface forms, we must on the basis of this evidence select the simpler PS analysis over the there-insertion analysis.

Be to

Exactly the same point can be made about the semi-modal be to as was made for be going to above. Thus consider

36) There are to be three senators at the conference.

37) *There are three senators to be at the conference.

Again the there-insertion transformation 3) generates the ungrammatical 37), but excludes the grammatical 36), unless another ad hoc condition for be to is added to the structural description of there-insertion 3). But in the PS analysis the noun phrase three senators at the conference,

but not three senators to be at the conference will be generated in the context there Aux be ____ by the same rules that generate the former but exclude the latter in the context

38) $_{NP}[\_\_]_{NP}$ became ill.

Again there are no semantic grounds for excluding

39) *Three senators to be at the conference
*Two speakers to come tonight
} became ill.

since alongside of 39) we have the syntactically and semantically well-formed

40) Three senators who were to be at the conference became ill.
Two speakers who were to come tonight became ill.

Thus in the PS analysis it is impossible to generate the incorrect form *37). This form is excluded in the there-insertion analysis only at the cost of adding an ad hoc condition on be to to the structural description of there-insertion 3). Thus again the simpler PS analysis must be preferred over the there-insertion analysis.

4. The Predicate Nominal Argument

Notice that still another ad hoc condition must be added to the structural description of there-insertion to prevent the derivation of 41) from 42)

41) *There are some graduate students union members.

42) Some graduate students are union members.

Thus we must in effect require the following condition on there-insertion 3)

43) Condition : W may not contain Predicate Nominal

But in the PS analysis it is impossible to generate 41) since the rules of English grammar do not generate the phrase some graduate students union members as a noun phrase. That is, we do not have, for example,

44) * $_{NP}$[Some graduate students union members]$_{NP}$ will speak tonight.

This is excluded on syntactic grounds rather than semantic grounds as is seen by the existence of

45) $_{NP}$[Some graduate students who are union members]$_{NP}$ will speak tonight.

Thus in the there-insertion analysis the grammar must be complicated by the addition of Condition 43) to the statement of there-insertion 3), in order to rule out *41), but in the simpler, and hence preferable, PS analysis, nothing new need be stated at all to generate the correct forms.

5. Standard there-insertion--a Summary

At this point we may ask what sort of facts motivated the formulation of a transformational operation of there-insertion in the first place to derive there-constructions from full sentence paraphrases as in deriving 1) from 2)[27]

1) There is someone in the garden.

2) Someone is in the garden.

A. SEMANTICS

One piece of evidence on semantic grounds is the fact that 1) and 2) are synonymous. However, by syntactic arguments independent of meaning considerations, we were able to show that there is generated in the base rather than inserted by transformation. Thus once again we see that any argument for relating two constructions transformationally which is based on semantic paraphrase alone is at best quite weak in the absence of independent syntactic arguments.

B. AGREEMENT

Turning to possible syntactic evidence for the derivation of 1) from 2) the facts of agreement between be and the following noun phrases may be cited

3) There is someone in the garden.
There are some people in the garden.

4) *There are someone in the garden.
*There is some people in the garden.

But as we showed above, such examples provide no evidence for choosing between the two hypotheses since such sentences as 4) must be generated in the syntax anyway and are ruled out by a principle (Condition 38)) which takes semantic and extra-linguistic information into account.

C. SYNTACTIC DISTRIBUTION

A second piece of syntactic evidence is the fact that in 1) and in a large number of other cases the string after there is a syntactic permutation of a full sentence. Thus in 1) the string is someone in the garden is a permutation of 2). But notice that this is characteristic of strings which are generated by other transformations, such as Interrogative. Thus consider (restricting ourselves to the subset of sentences with be)

5) Is someone in the garden?
(Compare Q is someone in the garden
with there is someone in the garden)

Is someone standing on the corner
(Compare Q is someone standing on the corner
with there is someone standing on the corner)

Were any windows broken?
(Compare Q were any windows broken
with there were some windows broken)

That is, in each case the underlined string which follows the interrogative marker (later deleted) is a syntactic permutation of a full sentence

6) Someone is in the garden.
Someone is standing on the corner.
Some windows were broken.

Thus at least for this set of cases there seems as much motivation for deriving there constructions from sentence permutations as there is for the analogous interrogative cases.

But the parallel between the there-constructions and interrogatives collapses when we consider semi-modals and predicate nominals. Thus corresponding to

7) A demonstration is going to be in the gym.
Some senators are to be at the conference.
Some graduate students are union members.

we have the interrogatives

8) Q is a demonstration going to be in the gym
Q are any senators to be at the conference
Q are any graduate students union members

but not

9) *there is a demonstration going to be in the gym
*there are some senators to be at the conference
*there are some graduate students union members

If it were the case that the interrogatives in 8) were ill-formed; i.e., if we had *Are any graduate students union members?, this would be evidence that there is no interrogative transformation. The only alternative would be to place

ad hoc conditions on the interrogative transformation to guarantee that the right forms are generated. But this is precisely what is done in the transformational hypothesis of there-insertion. Ad hoc conditions on the operation of there-insertion are permitted to exclude the ill-formed sequences in 9). This would suffice as grounds for rejecting the there-insertion hypothesis in favor of the PS analysis which does not require the ad hoc conditions. Even worse though is the fact that under this analysis it is a complete accident that the string which follows there Aux be ___ is in each case a well-formed noun phrase. Thus in the there-insertion analysis it would make no difference if the distribution of data were as follows

10a) there is a demonstration going to be in the gym. (well-formed)
10b) *there are some senators to be at the conference.
10c) there are some graduate students union members. (well-formed)

In fact, if the distribution of data were as in 10) the grammar of English would be simpler since we could drop the ad hoc restrictions on there-insertion we need for be going to and predicate nominals to exclude 10a) and 10c).

In the PS analysis it is no accident that the distriubtion of data is as in 9), but not as in 10). This is expressed in the PS analysis by requiring that the string following there Aux be ___ be a noun phrase in deep structure. Thus the PS analysis predicts that the distribution of the data cannot be as in 10(which in this framework would complicate the grammar) but must be as in 9).

D. RULE ORDERING

We consider here a possible argument based on rule ordering which has been taken to show that there must be inserted transformationally. The argument can be summarized as

11) The there-insertion transformation must follow the Pass(ive) transformation.[28]

Thus it is argued that

12) There were several soldiers injured in the war.

must be derived from

13) Δ injured several soldiers in the war by Pass.

However, there-insertion cannot apply to the deep structure string 13) since the be morpheme necessary for its application has not yet been inserted by the Pass(ive) transformation. Thus, it is argued, there must be inserted by transformation following Pass(ive).

However, this argument can be seen to be fallacious when it is recognized that the be in the string in 12) is the deep structure copula be rather than the passive be. That is, we have the structure

14) $_{NP}[\text{there}]_{NP}$ - $_{Aux}[\text{Pres}]_{Aux}$ -be- $_{NP}[\text{several soldiers injured in the war}]_{NP}$

where *there* is a deep structure noun phrase satisfying the DS Condition 14) and, furthermore, the noun phrase *several soldiers injured in the war* is generated by the same rules that generate it in $_{NP}[\_\_]_{NP}$ *were discharged*.

Thus data as in 12) does not argue for the transformational insertion of *there*. Such data is handled in the PS analysis where *there* is generated in deep structure and, as we have seen, this analysis handles additional data which is beyond the scope of the *there*-insertion analysis unless ad hoc conditions on the rule are introduced into the grammar.

It thus appears that there is no evidence--either semantic, based on agreement, on the permutability of sentence constituents, or on rule ordering--from which one can conclude that *there*-constructions derive from structures underlying their full sentence paraphrases.

6. The Structure-preserving Formulation for there-insertion

In an important study of *there*-insertion Emonds (1970) noticed the defects implicit in the standard accounts of *there*-insertion. He proposed remedying the standard transformational account by some very general assumptions about general constraints on transformations in syntactic theory; viz., the "structure-preserving" hypothesis. According to this hypothesis, movement transformations; e.g., ones that move NPs, are constrained to substituting a constituent labeled X for another with label X (i.e., an NP for an NP), where the second X is empty. Thus 1) is derived from 2)

1) There is a God.

2) God Aux be $_{NP}[\_\_]_{NP}$

where the rightmost NP is an empty NP node generated in deep structure. The there-insertion transformation moves the NP a God onto the empty NP node, thus satisfying the structure-preserving constraint.

Emonds can explain the absence of

3) *There are graduate students union members.

since no empty NP node can be generated in the predicate position which is already filled by the NP union members

4) Some graduate students are union members.

Thus there-insertion is inapplicable since there is no empty node to move the subject onto. Emonds accounts for the semi-modal cases in similar ways.

The fact that the output of there-insertion is always a structure which is independently generated by the phrase structure rules; viz., there Aux be NP is thus accounted for by Emond's structure-preserving hypothesis. Under this hypothesis, certain transformations, such as there-insertion, are structure-preserving while other so-called "root" transformations, such as Subject-Aux Inversion are not.

However, observe that in any case where the output of a

transformation is a structure which is independently generated by phrase structure rules there is an additional possibility; viz., that the structure is directly generated in the base by the phrase structure rules. Furthermore, everything else being equal, the phrase structure alternative is to be preferred since it involves rules which are independently motivated for other constructions. The transformational alternative, on the other hand, involves the postulation of a new rule in the transformational component. Thus in the PS analysis we do not need to add any rules at all to the grammar to handle the there-constructions; these are generated by phrase structure rules (see 9), Section I), which are needed in any case to generate such sentences as John is a soldier. The structure-preserving formulation of there-insertion involves the postulation of a new transformation in the grammar, viz., there-insertion in addition to the phrase structure rules 9) which are needed for independent reasons.

However, the structure-preserving formulation of there-insertion fails in other ways. Thus there is no way to prevent the generation of sentences like 5) without recourse to ad hoc conditions like we discussed above.

5) *There are being some new houses built.

In the PS hypothesis this construction is ruled out by the same principle that rules out *there is being a God, which is needed in the grammar in any case. But the structure-preserving

formulation of there-insertion must derive 5) from

6) Some new houses are being built.

where the first occurrence of be is the Pass(ive) be and the second occurrence of be is the Prog(ressive) be. But since Emonds (1970) explicitly allows empty NP nodes to be generated in deep structure after the Pass and Prog be's which he regards as verbs in deep structure, there is no way to prevent the generation of 5) without some ad hoc condition like we discussed in connection with standard there-insertion to the effect that if there are two be's in a string satisfying the structural description of the rule, the first be must be chosen. Thus with this ad hoc condition on there-insertion we get

7) There are some new houses being built.

However, under the alternative PS hypothesis, the fact that 7) is well-formed while 5) is not is explained without recourse to any ad hoc conditions in the grammar.

Thus the structure-preserving formulation of there-insertion is to be rejected both on the grounds that it involves the addition of an otherwise unnecessary transformational rule to the grammar and on the grounds that the statement of the rule involves the addition of an ad hoc condition to the grammar to exclude 5).[29]

III. The Auxiliary as Main Verb Hypothesis

We may now return to our main theme--the auxiliary (e.g., be, etc.) as main verb hypothesis. There are a number of accounts in the literature of transformational grammar which argue that elements like have[30] and be are not auxiliaries, but are V(erbs) in deep structure despite their similarity in behavior to other auxiliary elements like M(odal); e.g., with respect to transformations like Interrogation, Negation, etc. (Ross, 1969; Emonds, 1970)

In this section we will consider the hypothesis advanced by Emonds that the Prog(ressive) and Pass(ive) be morphemes are main verbs

1) John is eating dinner. (John-T (be+ing)-eat dinner)
2) Two windows were broken. (Two windows-T (be+en)-break-by Δ)

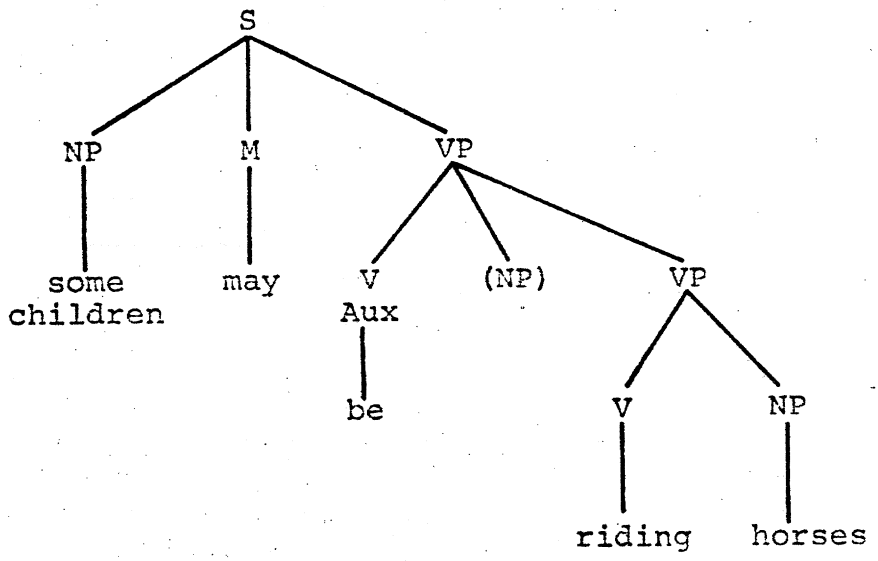
He argues that the structure-preserving formulation of there-insertion (see II.6), if correct, would have interesting implications for deep structure constituency, in particular, for the Prog(ressive) and Pass(ive) morphemes be. Thus consider the progressive in

3) Some children may be riding horses.
4) There may be some children riding horses.

If 4) is derived from 3) by there-insertion, then the NP some children in 4) must have been moved into an empty NP spot $_{NP}[\_\_]_{NP}$ to satisfy the structure-preserving constraint.

That is, be takes NP complements in underlying structure and thus 4) has the following deep structure

5)



which we can represent linearly as

6) $_{NP}[\text{some children}]_{NP} - _{M}[\text{may}]_{M} - _{VP}[_{V}[\text{be}]_{V} - _{NP}[\_]_{NP} - _{VP}[\text{riding horses}]_{VP}]_{VP}$

Similarly 3) has a deep structure like 5) except that the empty NP node is missing.

In much the same way we can represent 7)

7) There were many windows broken.

with the following deep structure

8) $_{NP}[\text{many windows}]_{NP} - _{VP}[_{V}[\text{be}]_{V} - _{NP}[\_\_]_{NP} - _{VP}[\text{broken}]_{VP}]_{VP}$

Thus in order to maintain the "structure-preserving" hypothesis, Emonds postulates empty NP nodes after the Prog and Pass morphemes be in 6) and 8) in order that there-insertion can move the subject onto these nodes. Thus, in effect, be becomes a V(erb) which allows (empty) NP complements (see 5)).

However, we have given a number of syntactic arguments in Part II that the structure-preserving formulation of there-insertion (in fact, there-insertion in general) is empirically inadequate and must be replaced by the phrase structure hypothesis for there . As we have shown, the underlined be morpheme in 9) is in both cases the copula be generated in deep structure, rather than the be of Prog and Pass

9) There may be $_{NP}[$some children riding horses$]_{NP}$

There were $_{NP}[$many windows broken$]_{NP}$

Thus we must conclude that no inferences can be drawn from the "structure-preserving" hypothesis in order to substantiate the claim which has appeared in much of the literature of transformational grammar that the auxiliary be is generated by the same set of rules which generate other English V(erbs) and their complements (see, e.g., Ross, 1969; Emonds, 1970).

FOOTNOTES (TO CHAPTER II)

1. We assume here that when wh-movement applies, a trace is left in place of the phrase moved. (see Chomsky, forthcoming (b)) Thus consider the sentence who do you feel he thinks may examine the doctor. Here the surface subject who (from someone) is the subject of may examine the doctor before it is extracted by the operation of wh-movement. Since a trace is left behind in the subject position of may examine the doctor, we can state the rules given below for surface subjects (that the surface subject is "permittee," etc.) uniformly.

2. In what we have termed the "imperative" use of will, a request for an action is involved, as in the "request" usage of may. Thus these usages of may and will are sometimes quite close in meaning as in may I please have a cigarette? and will you please give me a cigarette. We will see, however, in Part H, that there are good reasons for regarding these constructions as semantically and syntactically distinct.

3. One of the modals can allows both a "request" usage (like may) and an "imperative" usage (like will). We have both can I please open the door? (request) and can you please open the door (imperative). Thus we can construct the following paradigm

	FIRST PERSON SUBJECT	SECOND PERSON SUBJECT
MAY/ *MIGHT	"request"	*
WILL/ WOULD	*	"imperative"
CAN/ COULD	"request"	"imperative"

That is, if one of these modals has a first person subject, the construction Modal-NP-please-VP has the "request" interpretation. If it has a second person subject, then it has the "imperative" interpretation.

Other modals, such as must and shall do not enter into this construction

* {Must / Shall} {I / you} please open the door?

4. We have formulated the restriction on the noun phrase subject in terms of the "addressee" rather than, say, "second person" because of examples like will someone please examine his Majesty where the indefinite third person pronoun someone is interpreted as the addressee of the utterance. Note that in general that certain pronominal forms such as someone (any one) have the property that they may refer either to a third person or the addressee. Thus in is anybody coming to my birthday party tonight? the question may be addressed to, say, Bill, to ask whether Tom, Sam, Dave, etc. are coming. Or else the question may be addressed to a group of people and the anybody may refer to the addressees.

In a similar fashion, nominal expressions like his Majesty, his Grace, etc. may refer to a third person as in have you saddled the horse for his Majesty? (said to the stable boy) or be used to address the king himself as in I hereby anoint his Majesty (said to the king). But in will someone please examine his Majesty (said before the king and his doctors) it is the noun phrase subject which is interpreted as addressee rather than the noun phrase object, a fact which follows from the restriction above that the subject of constructions with "imperative" will must be interpreted as addressee. That the surface subject is here involved is clearly seen from the passive example will his Majesty please be examined by someone which does not mean the same thing as its active counterpart just considered. Here it is his Majesty which is interpreted as the addressee and not someone.

Observe that it is not in general the case that the "imperative" will allows third person subject noun phrases as in ?*Will John please cut the grass (said to Bill), although no doubt an interpretation can be imposed here, as with many ill-formed utterances. But there are cases where a third person noun phrase is appropriate, if it can be interpreted as the addressee as in will the guy standing over there in the corner please help out over here or even if the addressee is not known to the speaker as in will the owner of the blue Pontiac please come up to the front of the store or will Albert Smith please come forward and claim his prize. Thus the sentence will my mother please come up and stand beside me is even appropriate when addressed to an audience

of people in which the mother is sitting, but not if addressed to her alone.

5. Observe that sentences like will you please be arrested by the police (be baptized by a priest) have a particular interpretation close to will you please let yourself be arrested by the police (be baptized by a priest). In general these constructions have an interpretation similar to those discussed by Perlmutter (1968) like I tried to be arrested by the police and be examined by the doctor.

6. As noted earlier constructions with may as in

1) John may go home.
   A) permission
   B) possibility

have two interpretations. However, the corresponding question has only the "permission" interpretation

2) May John go home?
   A) permission
   *B) possibility

This is also seen from the ungrammaticality of

3) *May John possibly go home?
   *May John have already left?

Thus there is an interpretive principle which rules out the "possibility" interpretation of may in interrogative surface structures. One might alternatively seek some deep structure explanation for the missing reading; i.e., one could say that there is an interpretive rule on deep structures which rules out particular underlying forms such as

4) *Q I may go home. (=possibility)

*Q John may have already left. (=possibility)

But this seems to be little more than a notational variant of a principle of surface structure interpretation; it says in effect that a particular reading of a modal is going to be ruled out because its deep structure contains markers (viz., Q) which will trigger certain transformations (viz., the interrogative transformation) so that the modal will end up in a particular surface structure (viz., an interrogative structure).

To see that it is a notational variant and nothing more, observe that alongside of

5) John may have already left.

we have

6) John $\left\{\begin{matrix}\text{might}\\ \text{can}\\ \text{could}\end{matrix}\right\}$ have already left.

But whereas we do not have

7) *May John have already left?

we do get

8) {Might / Can / Could} John have already left?

But any interpretive rule on deep structures which rules out

9) *Q John may have already left.

and permits

10) Q John might have already left.

cannot possibly claim to have provided any semantic grounds on the basis of which 7) is excluded, and hence is just a notational variant of a surface principle of interpretation.

Similarly, consider

11) *May John possibly have already left?

Here again, instead of a surface structure interpretive principle, one may say that there is a deep structure interpretive principle which rules out

12) *Q John may possibly have left.

But in view of such sentences as

13) Is it possible that John may have already left?

this same deep structure interpretive principle must permit underlying forms like

14) Q it is possible that John may have already left.

thus reducing to vacuity the claim that this principle is more than a variant of the surface structure interpretation rule.

Notice that one who additionally supports the view that 15) derives from 16)

15) John may possibly have already left.

16) It is possible that John may have already left.

can no longer rule out

11) *May John possibly have already left?

at the deep structure level at all, but must do so with a special condition on a transformation, say the one which forms possibly.

It is furthermore the case that one who advocates the view that

17) *May John go home? (=possibility)

is ruled out at the deep structure level

18) *Q John may go home. (=possibility)

would also expect such constructions to be ruled out in all such contexts; e.g., in indirect questions

19) I {wonder / asked} if Q Sentence.

For it has been often noted that direct questions in general share syntactic properties of indirect questions. For example we have

20) Luckily Bill came.
*Did Bill luckily come?
*I wonder if Bill luckily came.

21) Bill probably came.
*Did Bill probably come?
*I wonder if Bill probably came.

22) Bill must take castor oil.
A) necessity
B) logical entailment

Must Bill take castor oil?
A) necessity
*B) logical entailment

I wonder if Bill must take castor oil.

A) necessity

*B) logical entailment

23) *Did who leave?

*I wonder if who left?

Quite plausibly, one might seek to account for these properties by assuming some underlying marker, such as Q or some other feature, which the two constructions share. But consider within this context a case pointed out by Emonds (Chomsky, 1970 (a))

24) I shall open the window. (=future prediction)

Shall I open the window? (=Should I...)

The modal shall has the interpretation of "future prediction" (=will) in declaratives and the interpretation of should in interrogatives.

Again, we are faced with two alternatives: to say that the modal shall is interpreted as should in interrogative surface structures, or to say, as a notational variant, that

25) *Q I shall open the window. (=future prediction)

is excluded by a principle of deep structure interpretation.

But underlying

26) I wonder if I shall open the window. (=future prediction)

must be

27) I wonder if Q I shall open the window. (=future prediction)

Thus the deep structure interpretive principle must be further restricted to rule out

28) *#Q I shall open the window. (=future prediction)

where # is a sentence boundary. But this clearly shows that this deep structure interpretive principle makes no systematic claims at the deep structure level and is hence a mere variant of the surface structure interpretive rule.

7. In what follows, we will leave out of consideration the "request" interpretation of may discussed above in Part C.

8. It has been noted that in affirmative declaratives in English, will is interpreted only as "future prediction"

29) I will eat my supper.

*1) volition

2) future prediction

whereas in the corresponding negative, a volitional interpretation is present as well

30) I won't eat my supper.

1) volition (=refuse to)

2) future prediction

These facts can be stated quite naturally by a surface structure interpretive rule to the effect that will is interpreted volitionally in negative environments. However, this data has sometimes been construed as supporting the existence of two wills, a $will_V$ of "volition" and a $will_F$ of "future prediction."

There are indications that the volitional interpretation of will in 30) is much more general than a lexical property of a particular modal. As Chomsky points out (1970 (a)) this accords with the fact that in other languages the refuse interpretation is associated in negated sentences with the carrier of future tense, as in Jean ne mangera pas sa soupe. [fut] ("John won't eat his soup") where no modal at all is present.

Observe that in English as well, the "volitional" interpretation is not exclusively associated with the modal will. That is, we have sentences like

32) I'm not doing the dishes tomorrow.

which has an interpretation like I won't do the dishes tomorrow. However, because of the presence of the progressive, we cannot derive such sentences as 32) from I won't be doing the dishes tomorrow. since the will here has only an epistemic interpreta-

tion of "future prediction" as we observed earlier. Although one might say that will deletes obligatorily here to yield 32), we would not be able to state the generalization discussed above, that the root interpretation of a modal is excluded by the progressive.

Thus in order to uphold this generalization, we must say that the progressive morpheme in the presence of an appropriate negative environment has the "volitional" interpretation of refuse. We may associate the volitional interpretation in 32) with a specific lexical item will only at the cost of the generalization. (A similar dilemma is discussed in 3.B.II.b. with respect to will-deletion in if-clauses.)

9. See also discussion of strike-regard in Chomsky, 1965, p. 229.

10. The existential there is not the same as the demonstrative there as in there goes the rocket which is different in both semantic interpretation and in syntactic properties. For example, there (demonstrative) is stressed in there's Bill, but there (existential) is not in *there's a God. With pronouns there (existential) allows only the word order be-pronoun as in well, there's Mike, Bill, Pete, and then there's you, but not *there you is/are. With there (demonstrative) the order is Pronoun-be as in there she goes (but not *there goes she.) Furthermore, there (existential) may be embedded as in Bill said that there is a God but not there (demonstrative) as in *Bill said that there goes/went the rocket.

11. A variant in Fillmore (1968) involves rules of copying and pronominalization.

12. This rule is only for purposes of illustration. For a more empirically accurate formulation of the rule in terms of features, see Chomsky (1965).

13. See below for the statement of agreement.

14. We do not consider idioms here such as there arose a great clatter, there ensued a controversy, etc.

15. We will not discuss the rules which generate the noun phrases to the right of there since these are needed elsewhere in the grammar in any case, quite independently of the facts about there, but a few comments may be in order. Although one might make a case that some of the noun phrases in 24)-30) derive from underlying full relative clauses; e.g., 26) there are a lot of people willing to help from there are a lot of people who are willing to help, such an analysis seems dubious for many of the other examples. Thus corresponding to 29), 30) there is no *there are too many people who are owning yachts and *there is nothing which is to say.. And although in some cases there is a full relative clause as a possible source as in X) there is someone who is in the garden for 27) there is someone in the garden, many speakers feel a difference in meaning between the two expressions. If this is the case, then here too the derivation of

such noun phrases as someone in the garden from underlying full relative clauses is questionable. We can in this view regard the difference in meaning of X) and 27) as a piece of evidence that "reduced relatives" are not in fact derived from underlying full relative clauses. (for similar evidence, see Williams (1971)) We will not pursue the matter further here since the formulation of the phrase structure hypothesis does not depend on the rules involved and the choice between the phrase structure hypothesis and the transformational hypothesis is moreover independent of such rules as well (see Part II).

Observe that it is not uniformly possible to extract embedded noun phrases in 24)-30) by the operations of interrogation and relativization. Thus we cannot question a hat in there was a man with a hat on to get *what was there a man with on? nor the noun phrase yachts in there are too many people owning yachts to yield *which yachts are there too many people owning? However, in some cases interrogation yields more acceptable results as, for example, in ?what cities are there people living in? from there are people living in some cities, which is more acceptable than *what cities is John acquainted with people living in? from John is acquainted with people living in some cities.

Similar remarks apply to cases where the head noun is questioned or relativized. Thus for many speakers ?who is there living in the city? is more acceptable than *who is John acquainted with living in the city? Although it is not

clear what principles can account for these judgements, a promising avenue of investigation is the study of the general constraints on movement transformations such as the A over A principle, etc., which partially determine when phrases can be extracted from including phrases of the same category. For several approaches to this important question, see Chomsky (forthcoming); Ross (1967).

Notice that in our analysis 27) there are some people in the garden is structurally ambiguous. It may derive from either there Aux be $_{NP}[$some people in the garden$]_{NP}$ or there Aux be $_{NP}[$some people$]_{NP}$ $_{Loc}[$in the garden$]_{Loc}$ where Loc is a sentence adverbial (i.e., S --> NP+VP+Adv), parallel to such constructions as John is $_{NP}[$a hypocrite$]_{NP}$ $_{Loc}[$at home$]_{Loc}$ and John met $_{NP}[$Mary$]_{NP}$ $_{Loc}[$at the dance$]_{Loc}$.

Notice that we have optional preposing in all of these cases: in the garden there are some people, at home John is a hypocrite, and at the dance John met Mary. Similar observations hold for sentential time adverbials as in there is a concert at six, John is a hypocrite on Sundays, and John met Mary last night.

Moreover, it might well be that the analysis of there presented here is too restrictive in another way. That is, we have assumed that both purely existential forms like there are ghosts and forms like there is someone in the garden are to be derived solely from structures like there Aux be NP. But as Chomsky (personal communication) suggests, some of the there-constructions may possibly derive from reduced clefts; i.e., from structures of roughly the form there Aux be NP-S. In this way one could account for the distinction between the purely existential forms like there are ghosts and quantified expressions like there are prime numbers between one and ten (note: ≠*prime numbers are between one and ten) which have the logical form of quantifier: thing quantified.

Furthermore, by deriving there-constructions from reduced clefts, one could account for the fact that the intonation center in there-constructions is sometimes parallel to that in clefts; compare there is someone in the garden with it is John that is in the garden.

16. See Chomsky (1965), p. 232.

17. Our decision to allow 39), 40) to be generated in the syntax is supported by the following sets of examples

1a) Two halves are a whole.
1b) A whole is two halves.
1c) *Two halves is a whole.
1d) *A whole are two halves.

2a) Two fourths are a half.
2b) A half is two fourths.
2c) *Two fourths is a half.
2d) *A whole are two halves.

3a) John and Mary are the happy couple.
3b) The happy couple is John and Mary.
3c) *John and Mary is the happy couple
3d) *The happy couple are John and Mary.

(Note that 1c), 2c) are acceptable to some speakers--compare also two and two is four, but this does not affect our main point)

Observe that we have the configuration

X) NP -be- NP

α plural $-\alpha$ plural

in 1a), 1b), 2a), 2b, 3a), 3b) as can be seen by the agreement with be. This shows that we must generate structures of the form X in the syntax (whereas 1c), 1d), 2c), 2d), 3c), 3d) are excluded in the syntax). For consider

4a) *A half is two wholes.
4b) *Three fourths are a half.

Thus, were one to allow 1a), 1b), 2a), 2b) in the syntax while excluding 4a), 4b) one would have to permit arithmetic computations in syntax to generate the correct sentences.

Observe that condition 38) is stated most generally at the level of deep structure. Thus consider

5) There $\left\{\begin{matrix}\text{are}\\ *\text{is}\end{matrix}\right\}$ believed to be agents in the garden.

6) There $\left\{\begin{matrix}*\text{are}\\ \text{is}\end{matrix}\right\}$ believed to be an agent in the garden.

The starred example in 5) has the following deep structure

7) $*\Delta$ believes $_{S}[_{NP}[\text{there}]_{NP}$ Aux be $_{NP}[\text{agents in the garden}]_{NP}]_{S}$

[-plural] [+plural]

(Assume agents in the garden is an underlying NP for purposes of illustration--but see note 15).) The structure in 7) is then ruled out by condition 38) in the same way as 32), 33), 39), 40) above were.

In Ross's discussion (Ross, 1969**b**)of the rule of VP deletion and the controversy over whether a transformational rule of deletion or an interpretive rule is involved, he regards as "particularly troublesome" for interpretive rules examples of the following nature

8) Some people think there are no such rules, but there $\left\{\begin{matrix}\text{are.}\\ *\text{is}\end{matrix}\right.$

He argues that: 1. to generate sentences like 8) one will be

forced to duplicate the there-insertion transformation in the phrase structure rules and 2. that number agreement must be formulated such that *he are fat is semantically anomalous. However, given the phrase structure analysis of there, neither 1. nor 2. follows. That is, as we have shown, there is good reason for generating there is/are (NP) freely in the syntax. Secondly, there is no way that *he are fat can be generated since he is marked [-plural], yielding he is fat by ordinary number agreement. Thus *he are fat is syntactically anomalous rather than semantically anomalous in this analysis.

Thus given the phrase structure hypothesis for there, examples like 8) provide no evidence against interpretive rules, but are neutral with respect to the choice between VP-deletion and a rule of interpretation.

18. Condition 45) must be modified to allow cases where the second NP (the predicate nominal) is [-stative] as in John is being a fool. A further condition is that the first NP (the subject nominal) be [+animate]. Thus we have neither *a stone is being an object/a fool nor *there is being a God/a fool. Actually these modifications must be stated in much more general form to rule out predicate adjective constructions as *John is being tall while allowing John is being foolish.

19. Note that when the noun phrase in question is definite, these there constructions have a different interpretation as in we have John, Bill, Peter and--then there's Harry. See

Postal (1970b) for a discussion of a number of constructions in English that similarly require noun phrases with an indefinite interpretation.

20. See note 11.

21. We have modified 3) slightly in ways irrelevant for the following discussion.

22. See Emonds (1970) for a discussion of 1.-4. and a different proposal for a transformational rule of *there*-insertion. See also II., 6.

23. What is meant is that the first *be* after T(ense) is selected. Literally interpreted, condition 19) would not allow *there*-insertion to produce *there may be someone in the garden* since *may*, not *be*, follows T(ense) in underlying structure.

24. See Part I. for discussion of semi-modals.

25. We assume here that *be going to* belongs to Aux. It is important to note, though, that the phrase structure analysis does not depend on whether *be going to* belongs to the Aux or not. If we were to assume *be going to* were, say, an intransitive verb, like *seem*, then the appropriate sentences below will still be generated.

26. For a similar example consider a) there is nothing more to be said(about this matter). Observe that the standard analysis permits the underlying b) nothing more is to be said (about this matter) which, however, has a different meaning. That is, a) means that the topic being talked about has been exhausted, while b) is a request for silence.

There is only one source for a) in the phrase structure analysis; viz., there-Aux be-$_{NP}$[nothing more to be said]$_{NP}$. That is, we assume that we must independently generate underlying complex noun phrases of the form nothing to do (say), nothing to be said, nowhere to go, etc. to account for such sentences as I have nothing to say, there is nothing to say, there is nothing to be said, there is nowhere to go. Observe that we do not have as possible sources the strings *nothing is to say, nothing more is to be said (except in other sense above), *nowhere is to go. Thus the phrase structure analysis correctly accounts for the semantic interpretation of a) (but not the there-insertion analysis, unless we permit the ad hoc condition for be to under discussion).

27. It is important to note that the standard there-insertion proposals in fact always allow two sources for 9), a full sentence paraphrase as in 10) and a noun phrase as in 11)

9) There is someone in the garden.
10) Someone is in the garden.
11) Someone in the garden be.

Intransitive structures like 11) must be postulated in order to generate such sentences as

12) There is a God.
13) There are women who are always in the kitchen.

which derive from underlying

14) A God be.
15) Women who are always in the kitchen be.

In fact then, for the there-insertion analysis too, we must generate the full range of nominal phrases in the context ___Aux be, including someone in the garden be to which there-insertion applies, yielding 9).

Thus there is someone in the garden (9)) has two possible sources; viz., 10) and 11). But as we have already demonstrated, it is the full sentence paraphrase, source 10), rather than the noun phrase source 11) which entailed the adding of ad hoc conditions to the grammar. In the phrase structure hypothesis for there, these problems do not arise, for in this analysis 9) and 10) are not syntactically related

9) There is someone in the garden.
10) Someone is in the garden.

As we noted before the difference in meaning between there is someone who is in the garden and there is someone in the garden felt by some speakers (see note 15) suggests

that noun phrases like someone in the garden, etc. are not derived from underlying full relative clauses. To see this, consider the fact that we must generate 16) alongside 15)

16) Women who are in the kitchen be.

If "reduced relatives" are derived from underlying full relative clauses, then 17) will derive from 16) by "relative reduction."

17) Women in the kitchen be.

which will yield 18) by there-insertion

18) There are women in the kitchen.

However, for certain speakers, 18) is not synonymous with 19)

19) There are women who are in the kitchen.

Thus in the there-insertion analysis too, it follows that if 18) and 19) are different in meaning then "reduced relatives" like women in the kitchen do not derive from full relative clauses. This was what we meant above (note 15) by saying that the choice between the phrase structure hypothesis and the transformational hypothesis is independent of whether or not there is a rule of "relative reduction" which derives noun

phrases such as women in the kitchen from underlying full relative clauses.

28. See Perlmutter (1970), Burt (1971).

29. Note that the comments in this section do not argue against (or for) the structure-preserving hypothesis per se, but are irrelevant to this issue since no transformational operation of there-insertion exists.

There is, moreover, a formulation of there-insertion which could avoid the ad hoc condition needed to exclude 5) in Emonds analysis. We could assume that there-insertion applies to deep structures of the form NP Aux be $_{NP}[\Delta]_{NP}$ where Δ is a dummy element. In this analysis 5) can be ruled out by the same condition discussed in connection with the phrase structure analysis. However, the phrase structure analysis is to be preferred over this variant of there-insertion. The fact that "subject-of" can be defined the same way for both a God is good and there is a God by deriving the latter from a deep structure $_{NP}[\text{a god}]_{NP}$ Aux be $_{NP}[\Delta]_{NP}$ is no argument for such an analysis of there-insertion. Rather the internal syntactic evidence in English argues for the deep structure there Aux be NP; furthermore, the English order dummy element-V(existence)-NP has many cross-language parallels. Thus compare German (and similarly many other languages) es gibt einen Gott, "there is a God." Notice that German lacks even the superficial syntactic evidence that einen Gott is the subject of geben. Thus einen Gott is in

the accusative case.

Moreover, there is no superficial subject-verb agreement; i.e., there is only es gibt Götter, "there are Gods," but no *es geben (pl.)Götter. Thus the fact to be explained is why existential constructions pattern typically as dummy element-V(existence)-NP in deep structure.

30. The have of John has come, not the have of John had a good time, which is a verb in deep structure.

CHAPTER THREE

(IMPLICIT) MODALITY IN ENGLISH COMPLEMENT CONSTRUCTIONS

CHAPTER III

(IMPLICIT) MODALITY IN ENGLISH COMPLEMENT CONSTRUCTIONS

A. Introduction

We list below a variety of constructions to contrast what we will term *implicit* modality with *explicit* modality

	I. EXPLICIT MODALITY	II. IMPLICIT MODALITY
1)	Declarative:	
	The Red Sox *will* play the Yankees tomorrow.	The Red Sox play the Yankees tomorrow.
2)	Imperative:	
	{*Will* / *Could*} you (please) open the window?	Open the window.
3)	Complements	
a)	*if*-complement:	
	if you *will* open the door...	If you open the door...
b)	*that*-complement:	
	I hope that the Red Sox *will* play the Yankees tomorrow.	I hope that the Red Sox play the Yankees tomorrow.
c)	*to*-complement:	
	The Red Sox expect that they *will* play the Yankees tomorrow.	The Red Sox expect to play the Yankees tomorrow.
	*The Red Sox expect to *will* play...	

d)	relative complement:	It doesn't matter to the Red Sox who plays the Yankees tomorrow.
		The first team that plays the Yankees tomorrow...

The examples in the first column may be said to be instances of explicit modality in that each construction contains an overt modal (underlined); e.g., will, could, etc. The examples in the second column on the other hand illustrate what is meant by implicit modality; for many of the examples of II a paraphrase containing an explicit modal choice can be constructed which is roughly synonymous, as a point by point comparison of column I and II shows. Compare, e.g.,

4) I hope that the Red Sox will play the Yankees tomorrow.

5) I hope that the Red Sox play the Yankees tomorrow.

In fact for all of the constructions given, arguments can be found throughout the literature of transformational grammar for deriving the constructions in column II from underlying structures containing explicit modals.

For example, Lakoff (1969) has proposed that 6) below be derived from an underlying 7)

6) The Red Sox play the Yankees tomorrow.

7) The Red Sox will play the Yankees tomorrow.

by means of a rule of will-deletion, the operation of which is determined by presuppositions that the speaker has about the real world.

Many transformational grammarians have similarly assumed the existence of an underlying will in imperative constructions such as

8) Open the window.

One piece of evidence put forth for this hypothesis is the existence of tags on imperatives as in

9) Open the window, will you?

Again Hall (1964) and Ross (1970) have put forth arguments supporting the view that if-clauses as in 10) derive from more abstract structures as in 11)

10) If you eat your spinach, I'll treat you.

11) If you will eat your spinach, I'll treat you.

(where the will here is a particular lexical item denoting "futurity," see below.)

Finally, arguments (see Vendler, 1964; Dean, 1968; Rosenbaum, 1967) for deriving a variety of complement constructions from underlying structures with explicit modals, e.g., 12) from 13), have been given

12) I expect to go.

13) I expect--I will go.

We wish to argue, however, that in the examples above there are no underlying modals later deleted by transformational operations. Rather, we argue that in each case the specific modal interpretation of futurity, possibility, etc.--is due to a rule of semantic interpretation, rather than to an underlying modal. Thus in

14) John expects to go.

and

15) It is possible for John to go.

the interpretation of futurity in the complement of 14)--"John will go"--on the one hand and the interpretation of possibility in the complement of 15)--"John can go"--on the other is due to semantic features on expect and possible, respectively.

Note that in all of the cases we consider, only the modal will is involved, although in some cases as in 15) another underlying modal, in this case can, is appropriate. In many cases, in fact, it is at best unclear what the appropriate underlying modal is--compare

16) John forgot to open the door.

≠that he (will, must, can, should, etc.) open the door. The fact that there are few convincing cases even on grounds of semantic paraphrase for modal deletion rules for other modals then will is an argument against the existence

of such rules in general in the grammar of English.

Our approach, then, will be to take the strongest evidence in favor of modal deletion rules, the case of will-deletion--both with respect to clarity of data and arguments presented in the literature--and we will then argue that in each case a rule of will-interpretation rather than a transformational rule of will-deletion is involved.

B. Will-interpretation vs. will-deletion

I. Declaratives Lakoff (1969) has noted the deviance of 17)b as compared with 17)a

17)a. The Red Sox play the Yankees tomorrow.

b. *The Red Sox do well tomorrow.

He proposes to account for this example among others by assuming underlying structures with the modal will along with a rule of will-deletion.

18)a. The Red Sox will play the Yankees tomorrow.

b. The Red Sox will do well tomorrow.

In order that the rule apply correctly, hence only in 18)a, it is necessary, following Lakoff, to take the presuppositions of the speaker about the real world into account.[1] Thus in the case of 18)a, the speaker knows with fair certainty and presupposes that the Red Sox will in fact play, whereas in the case of 18)b, not knowing the outcome of the game, the

speaker does not have the same degree of certainty in presupposing that the Red Sox will do well and win (or lose). Hence by taking into account such judgments about the real world one is able to constrain the rule of will-deletion to apply only to 18)a, but not 18)b. Although there are many problems with formulating such a principle coherently, let us assume that something of the sort is correct. But then consider such examples as

19) I know that { the Red Sox will do well tomorrow.
*the Red Sox do well tomorrow.

20) I hope that { the Red Sox will play the Yankees tomorrow.
the Red Sox play the Yankees tomorrow.

In 19), the speaker is presupposing that the Red Sox will do well. However, contrary to expectations, the rule of will-deletion cannot apply. In 20), on the other hand, the speaker is not presupposing the complement, that the Yankees will play the next day; yet here, again unexpectedly, the rule of will-deletion operates. Even worse, in the complement of hope, will-deletion can always apply, regardless of the choice of complement verb or presuppositions of the speaker about the real world. In fact, the class of verbs which allow will-deletion in their complement seems to be quite restricted--hope, assume, suppose, etc.

21) { I hope / Assume / Suppose } that John will know the answer tomorrow.
that John knows the answer tomorrow.

22) I {believe / think} that John will know the answer tomorrow.

*I {believe / think} that John knows the answer tomorrow.

Further evidence that grammatical factors are involved, rather than real world presuppositions on the part of the speaker, can be seen from the following two examples

23) I hope {that I will know the answer tomorrow. / that I know the answer tomorrow. / to know the answer tomorrow.}

24) I expect {that I will know the answer tomorrow. / *that I ~~will~~ know the answer tomorrow. / to know the answer tomorrow.}

In 23) will-deletion applies freely in both that and to complements of the verb hope. In 24), however, will-deletion is apparently restricted to the to-complement of the verb expect. Thus, given the existence of a rule of will-deletion, a certain class of verbs must be marked as undergoing will-deletion and further information about complementizer choice must be available for the proper operation of the rule. Having established that syntactic factors rather than real world presuppositions on the part of the speaker underly the distribution of the data in 17)-20), we will turn to other examples in column II, which suggest that what is involved in these cases is a semantic rule of will-interpretation rather than a syntactic rule of will-deletion.

II. If-clauses[2]

Arguments have been put forth (Hall, 1964; Ross, 1970) for deriving 25) from 26)

25) If John knows the answer tomorrow, he'll get an A.

26) If John will know the answer tomorrow, he'll get an A.

where the underlined modal will is that of "futurity," to distinguish it from the will of "volition" as in

27) If you will eat your spinach, I'll give you desert.

The two main arguments put forth for this derivation are

I. The future time adverbial argument; viz., that

28) *John knows the answer tomorrow.

is anomalous as a simple declarative. The occurrence of this sentence in 25) could thus be explained if 25) is derived from 26) which contains the grammatical sentence

29) John will know the answer tomorrow.

II. The two will's argument; viz., will is interpreted only as the will of volition when it occurs in if-clauses as in

27) If you will eat your spinach, I'll give you desert.

30) *If you will resemble your father, I'll reward you.

where in 30) the stative verb resemble excludes the volitional interpretation. These facts are thus explained by claiming that there are two lexical items, $will_F$ (future prediction) and $will_V$ (volition), where the former is obligatorily deleted by will-deletion to exclude 30).

Before turning to the "future time adverbial argument," we observe that the anomaly of

28) *John knows the answer tomorrow.

is not sufficient grounds to exclude it as a source of the if-clause in

25) If John knows the answer tomorrow, he'll get an A.

The alternative which we adopt is to generate sentences like 28) freely. Then interpretive semantic rules will mark 28) as deviant when it occurs in isolation, whereas in the case of 25), this marking will be nullified by features, say on if, which supply the proper environment to provide a normal interpretation of the if-clause in 25). We are in effect saying that whether or not John knows the answer tomorrow is marked deviant by the semantic rules depends in part on information from higher sentences. But this situation has correspondences throughout the grammar. Thus the following sentences are deviant in isolation.

31) *John has any money.
*John can help laughing.
*It is a lot of fun to shave himself.
*John is taller than he is. ($John_i$ = he_i)
*I weigh as much as I do.

Yet they are interpretable in the appropriate syntactic contexts.

32) I don't think that {John has any money / John can help laughing.}

John finds that it is a lot of fun to shave himself.
$John_i$ thinks that he_i is taller than he_i is.

I'm glad that I weigh as much as I do.

In all of these cases in 29) there is the option of considering the sentences syntactically well-formed and ruling them out (for instance, when not embedded) through the filtering effect of interpretive semantic rules. (See Jackendoff, 1967, 1969).

a. The Future Time Adverbial Argument

Returning to the example under consideration, suppose it is argued that

28) *John knows the answer tomorrow.

is syntactically deviant and thus must be excluded somehow on syntactical grounds. Thus (see Hall, 1964; Ross, 1970), observing that tomorrow is a future time adverbial, it is claimed that the source of the if-clause in 25) is 29)

25) If John knows the answer tomorrow, he'll get an A.

29) John will know the answer tomorrow.

the will deleting by a transformational rule of deletion applying obligatorily to yield 25).

We will set aside the question as to whether the syntax is to be complicated to state the co-occurrence restrictions between time adverbials and various members of the auxiliary so as to allow

33) John will know the answer tomorrow.
John does the dishes tomorrow.

and to exclude

28) *John knows the answer tomorrow.

rather than as in the alternative proposed above to filter out the inappropriate co-occurrences of time adverbial and auxiliary by semantic rules. (It may be that even extra-linguistic considerations are involved.) Assuming that such co-occurrences can, however, be stated syntactically, consider

34) If I can hear your voice by tomorrow, we will know the operation was a success. (ear-patient to doctor)

Here the if-clause contains

35) *I can hear your voice by tomorrow.

which must be ruled out from the syntax in the will-deletion analysis on grounds similar to

36) *I hear your voice by tomorrow.
*John knows the answer tomorrow.

But the source for the if-clause in 34) obviously cannot be

37) *I will can hear your voice by tomorrow.

But if its source is *I can hear your voice by tomorrow, then the original motivation for a rule of will-deletion has been lost and we can similarly allow *I hear your voice by tomorrow, etc. in order to generate 38)

38) If I hear your voice by tomorrow, we will know the operation was a success.

If John knows the answer tomorrow, he will get an A.

b. The Two Wills Argument

Furthermore, the assumption of a rule of will-deletion operating in if-clauses leads to a loss of generalization in the grammar. To see this let us consider the argument that there are two wills, one of "futurity" and one of "volition," where only the first appears in if-clauses (see Hall, 1964; Ross, 1970). Observe that when will appears in if-clauses, it may receive only a volitional interpretation

(the "root" interpretation, see Hofmann, 1966), but not that of future prediction (the "epistemic" interpretation).

39) a. If you will eat your spinach, I'll give you a desert.
b.*If it will rain } , we'll stay home.
*If there will be a fight }

Thus, it is claimed, there are two wills--one of volition, as in 39)a which never deletes and one of future prediction, which obligatorily deletes to yield

40) If it rains } we'll stay home.
there is a fight }

We claim, however, that the absence of the epistemic interpretation of "future prediction" is a special instance of a more general fact; viz., that the epistemic interpretation of a modal is always excluded in these if-constructions. Compare

41) John may be examined by the doctor tomorrow.

1) permission (root)
possibility (epistemic)

If John may be examined by the doctor tomorrow, I will be eternally grateful.

1) permission
*2) possibility

42) John might come

*1) permission (root)
2) possibility (epistemic)

*If John might come, I'll help him out.

43) John must take drugs.

1) necessity (root)
logical entailment (epistemic)

If John must take drugs, I will give him money for them.

1) necessity
*2) logical entailment

That is, for all modals the epistemic interpretation is excluded [3] and the root interpretation is allowed. Thus the data provides no motivation for the postulation of two syntactically separate wills, a will of "future prediction" and a will of "volition," the former later deleted obligatorily, since one does so only at the cost of breaking down the generalization that the sentence receives only a root interpretation if a modal appears in the if-clause into two parts--one for may, must, can and a deletion rule for the will of "future prediction."

C. The Idioms Argument

A final argument (see also Dean, 1968) for a semantic rule of will-interpretation as against a syntactic rule of will-deletion is based on the consideration of certain idioms.

44) He will be right back.

45) It will do you some good.

46) It (the sweater) will do.

Observe that the will in each of the examples is the will of "future prediction" rather than that of "volition" and that in each case this will is obligatory.

47) *He is right back.
*It does you some good.
*It (the sweater) does.

But notice that we do not have[4]

48) *We will go on a picnic, if he is right back.
*I will help you, if it does you any good. (if it will do you any good)
*You may have the sweater if it does. (if it will do)

In a theory which countenances will-deletion, one would expect all cases of will (of "future prediction") to be able to delete; thus here expressions such as right back must be marked as exceptionally not undergoing will-deletion.

But the non-existence of 48) is compatible with a theory which has a semantic principle of will-interpretation, since it would not in general be expected in such a theory that the features on the modal will which account for the interpretation of futurity in the sentence

44) He will be right back.

are necessarily identical to those which account for a similar interpretation in if-clauses of the form: If S, then S. Thus what are exceptional cases in a theory of

will-deletion are quite compatible with a theory of will-interpretation.

III. That-complements

Observe that one might employ arguments similar to those given above to argue for the operation of a will-deletion rule within that-complements of certain verbs. Thus compare

49) I hope that John arrives tomorrow.
Assuming (assume) that John arrives tomorrow.
Supposing (suppose) that John arrives tomorrow.

Thus one might propose on semantic grounds that the complements in 49) derive from deep structures of the form

50) John will arrive tomorrow.

Syntactic arguments for such a view would follow from a consideration of such sets as

51) I hope that I know the answer tomorrow.
*I know the answer tomorrow.

as compared with

52) *I { believe / think } that I know the answer tomorrow.

However, it can be seen in all of these cases that there is no motivation for supposing will-deletion; compare such examples as

53) Assume that I can hear your voice by tomorrow.

54) I hope that I can hear your voice by tomorrow.

Again we do not have

35) *I can hear your voice by tomorrow.

But if we rule out 35) then there is no source for the complement of 53), 54). For there is likewise no

37) *I will can hear your voice by tomorrow.

But by adopting the alternative that we choose; viz., to generate 35) in the syntax, and allowing it to be filtered out by interpretive semantic rules if it occurs in isolation, we have lost all motivation for a rule of will-deletion, for we likewise can generate

36) *I hear your voice by tomorrow.
*John knows the answer tomorrow.

to derive the class of examples which motivated will-deletion in the first place.

55) I hope / Assume } that { I hear your voice by tomorrow. / John knows the answer tomorrow.

36) and 37) will then be filtered out by interpretive rules of the semantic component.

IV. To-infinitives

Consider now

56) I hope to know the answer tomorrow.

Since we already need a rule of future will-interpretation for the verb hope with a that-complement, it is reasonable to assume that the interpretation of futurity in 56) is given by the same rule of interpretation as for the that-complement case. That is, it would be uneconomical to assume that the future interpretation of the complement in

57) I hope that I know the answer tomorrow.

$$\begin{bmatrix} F \\ G \\ \dots \end{bmatrix}$$

is due to the features F, G, ... on hope but that in

56) I hope to know the answer tomorrow.

the same interpretation is due to an underlying will

57) I hope--I will know the answer tomorrow.

Completely parallel arguments can be given for the interpretation of such infinitival expressions as (see column II).

58) The first person to know the answer tomorrow ...

Whatever rule of future interpretation is responsible for the reading of futurity of the relative in 59) must plausibly also account for that of the infinitive in 58).

59) The first person who knows the answer tomorrow...

That such a rule of interpretation is needed is seen from such expressions as

60) The first person who can hear my voice by tomorrow...

where there is neither

61) *△ can hear my voice by tomorrow. Nor
*△ will can hear my voice by tomorrow.

Thus we have two cases where a rule of interpretation accounts for both the future interpretation and the occurrence of a future time adverbial in an infinitive

56) I hope to know the answer tomorrow.

58) The first person to know the answer tomorrow...

Now consider the case of expect. We have

62) I expect that he will know the answer tomorrow.

but not

63) *I expect that he knows the answer tomorrow.

Since 63) is out, there will be no interpretation of futurity assigned to it. But for

64) I expect to know the answer tomorrow.

we again have a choice between a rule of will-interpretation

and a rule of will-deletion. We once more argue on the basis of simplicity that since we must have rules of future interpretation for other cases of infinitive expressions such as in 56), 58), such a rule is what accounts for the occurrence of the future time adverbial and the future interpretation of 64) as well. Thus the deep structure of 64) will be

65) I expect--I for-to know the answer tomorrow.
$\begin{bmatrix} F \\ G \\ \dots \end{bmatrix}$ H

The features, F, G, H, ... are to account for the interpretation of futurity and the occurrence of the future time adverbial tomorrow (for the feature H on for-to, see below).

In order to distinguish 66) from 67) below, we see that only certain verbs like expect are marked with the features F, G, ...but others, like forget, are not

66) John expected to arrive in Chicago tomorrow.
$\begin{bmatrix} F \\ G \\ \dots \end{bmatrix}$

67) *John forgot to arrive in Chicago tomorrow.

But observe that not only verbs, but also complementizers must be marked somehow as to whether an interpretation of futurity is allowed. Thus for hope, we need not distinguish

the that-complementizer from the for-to complementizer, since in both cases an interpretation of futurity is permitted.

68) I hope that I know the answer tomorrow.

56) I hope to know the answer tomorrow.

But for expect we must distinguish the for-to complementizer from the that-complementizer (hence the H in 65)

64) I expect to know the answer tomorrow.

69) *I expect that I know the answer tomorrow.

Compare 69) with 68)

68) I hope that I know the answer tomorrow.

In 68) future interpretation is permitted with a that-complement.

We have argued for a principle of will-interpretation in infinitival complements, since such a principle is needed for a wide variety of other constructions, such as for conditionals and relative clauses and, moreover, is needed for other complements (e.g., some of the that-complements and derived nominal complements) of the verbs under consideration--hope, expect, etc.[5] Thus we can dispense with a special rule of will-deletion to account for the one remaining case of infinitive complements, since it can be handled by an already existent mechanism.

FOOTNOTES TO CHAPTER III

1. Lakoff is correct in assuming that the deviance of

17b.) *The Red Sox do well tomorrow.

is explicable on the basis of knowledge about the real world. Hence we can explain the oddness of 17)b on the grounds that it presupposes an omnipotent bookmaker (or perhaps, more naturally, that the game has been fixed). Similarly, the oddness of sentences like

28) *John knows the answer tomorrow.

presupposes an omnipotent psychologist. Strictly speaking, then, neither 17)b nor 28) is syntactically or semantically deviant, but is deviant for reasons depending on real world knowledge and hence independent of grammar.

2. See Culicover, MIT Dissertation, 1971, for discussion of imperative constructions.

3. Apparent exceptions to this observation such as

1) If it may rain today, we'd better buy rubbers.
If he might object, I won't ask him.
If John must know the answer, why don't you ask him?

generally have a special flavor paraphrased by

2) If you are right in saying that S, ...

or

3) Given that S, ...

characteristic of so-called "concessive" if-clauses.

4. For some reason the negatives corresponding to 48) are more acceptable to some speakers: If John isn't right back,..., if the sweater doesn't do,..., etc.

5. See also Dean (1968) for a discussion of an interpretive principle called the "matrix-lopping hypothesis" proposed to handle some of the cases under consideration.

Actually the principle of will-deletion as formulated in Dean is incorrect on other grounds. The statement of the will-deletion rule is such that the will in a subordinate clause is deleted in the presence of a will in the main clause as in

4) If it will (---> ∅) rain, we will stay home.

Thus, schematically, the transformation is:

5) T_{will} : $[W \text{ will } X]_{SUB}$ $[Y \text{ will } Z]_{MAIN}$
$\Downarrow$
$\emptyset$

But to require an explicit matrix will as well, as this

rule does, involves a number of serious complications of the grammar.

For example, to uphold this generalization, to account for sentences like

6) I may meet the girl he marries.

we must postulate an explicit will in the complement of may (along with other modals)

7) I may (I will)(I meet) the girl he will marry.

Furthermore, in order to derive

8) Assume the girl I marry is faithful to me.

the rule would operate on the following deep structure

9) You will assume that the girl I marry will be faithful to me.

where the second will would delete by will-deletion, the first by imperative formation. However, the rule as it stands must also assume an underlying will in the matrix of sentences as

10) Let's assume that the girl I marry is faithful to me.

Furthermore, the existence of such constructions as

11) On the assumption that the girl I marry is faithful to me...

in conjunction with the lexical hypothesis is incompatible with the claim that the will in the subordinate clause is deleted in the environment of a will in the main clause.

Consider again the matter-predicates

12) It doesn't matter to me who knows the answer tomorrow.

As Baker suggests, such sentences have semantic properties in common with if-conditionals, but if this is so, then what it suggests is that if-conditionals and matter-predicates have some feature in common responsible for the future interpretation of the relative clause. There is, as far as I can see, little justification for a syntactic derivation of these constructions from if-clauses with explicit wills in deep structure. There likewise seems to be no grounds for otherwise postulating a will in the deep structure of the matrix sentence with matter which a rule such as T_{will} would require.

13) I hope that the girl I marry is faithful to me.

Rather what is the case is that items like if, may, matter, assume, hope (in contrast to know, think) share features which provide the appropriate environment for future interpretation.

Similarly, we would claim that the interpretation of such sentences as

14) I expect to meet the girl he marries.

is not due to the wills in an underlying structure

15) I expect that I will meet the girl he will marry.

But rather the non-specific interpretation of the girl he marries is due to features on expect (and to, or both).

CHAPTER FOUR

MODALS AND LANGUAGE UNIVERSALS

THE CONTROL PROBLEM AND THE BY PHRASE CONSTRAINT

CHAPTER IV

MODALS AND LANGUAGE UNIVERSALS
THE CONTROL PROBLEM AND THE BY PHRASE CONSTRAINT

A. Introduction

In Chapter II we observe restrictions on the permissible surface subjects in such constructions as

1) {Will you / his Majesty / *I} please step this way? (imperative interpretation)

where the surface subject is interpreted as the "addressee" and

2) May {I / yours truly / *you} please open the door. (request interpretation)

where the surface subject cannot be second person.

In the next few parts we will show that this set of restrictions is not a completely new and ad hoc set of conditions that must be added to the grammar but is a sub-part of a well-studied (but yet unsolved) problem in grammar known as the "control problem." (Postal, 1970)

B. The Control Problem

The control problem is in part of the problem of determining to what matrix noun phrase the understood subject of an infinitival complement refers; i.e., for example,

in 3) the understood subject of go is the subject noun phrase I

3) I want to go.

That the statement of the control problem depends on the matrix verb is seen by such contrasting examples as

4) Peter forced John to go.

5) Peter promised John to go.

where for force the understood subject of the infinitival is understood to be John, while for promise, it is Peter.

That the control problem has as its domain pronominalization constraints as well was shown by Postal with such examples as

6) Peter promised John that he would go.

where he here refers to Peter, not John.

There have been various proposals toward a solution of the control problem, some involving conditions on transformations (Rosenbaum's "minimal distance principle," 1967), conditions on deep structures (Perlmutter, 1968), and involving semantic notions of goal, theme, etc. (Jackendoff, 1969).

Let us point out that the statement of the control problem is still more complex, as can be seen by comparing the sentences (Jackendoff, 1969).

7) I promised John that {I would give him the money. / he would receive the money from me.}

Here it appears that the complement subject may be identical to either the matrix subject or indirect object, depending on the nature of the complement verb. Examples like 7) indicate that one may be forced to radically alter if not abandon any account of control in terms of minimal distance. As we shall see in the next part in certain cases even the choice of the complement modal plays an important role.

C. Modal Constraints in the Control Problem

We will now give examples illustrating the ways in which the choice of complement modal plays a role in the correct formulation of the control problem. When the modal will/would (please) is present in the if-clauses of the verb ask, the subject pronoun of this clause can refer only to the indirect object.

8) Peter is asking $Bill_1$ if he_1 {will / would} please open the door.

9) *Mary is asking Paul if she_1 {will / would} please open the door.

Postal (1970) has termed this the would-constraint.

Making observations similar to Postal's, when the modal may/might (please) appears in the embedded clause, the subject pronoun of the if-clause refers to the subject of ask, but

not to the indirect object.

10) Peter$_1$ is asking Bill if he$_1$ {may / might} please open the door.

11) *Peter is asking Mary$_1$, if she$_1$ {may / might} please open the door.

We may analogously term this the might-constraint.

Up to now we may summarize our observations in the following way.

In the schemata

12) NP ask NP if NP Modal please VP

if the modal in the if-clause is will/would, then the subject of the complement is co-referential with the indirect object; i.e.,

13) NP ask NP$_1$ if NP$_1$ {will / would} please VP;

(The would-constraint)

if the modal is may/might, then the subject of the complement is co-referential with the matrix subject; i.e.,

14) NP$_1$ ask NP if NP$_1$ {may / might} please VP.

(The might-constraint.)

Now notice that if we have the modal can/could in the if-clause, we have interpretations identical with the will/would interpretation, on the one hand,

15) I am asking $Paul_1$ if he_1 {can / could} please open the door.

and the may/might interpretation on the other

16) $Mary_1$ is asking Paul if she_1 {can / could} please open the door.

Thus we can state the following constraint for can/could; when it occurs in

12) NP ask NP if NP Modal please VP

(The could-constraint)

the complement subject may be co-referential with either the matrix subject or indirect object. When the subject of the if-clause is co-referential with the direct object, the sentence is interpreted in the same way as if will/would were the modal; if the subject of the predicate is instead co-referential with the matrix subject, the sentence is interpreted as though may/might were the modal.

D. Semantics and the Control Problem

Observe that the restrictions on the choice of surface subject in such direct discourse cases as 1), 2), etc.

1) Will {you / *I} please step this way?

are directly reflected by the constraints (the would-constraint, might-constraint, etc.) which we stated in Part C. Thus

corresponding to 8), 9) below

8) Peter is asking Bill$_1$ if he$_1$ {will / would} please open the door.

9) *Mary is asking Paul if she$_1$ {will / would} please open the door.

We have in direct discourse

17) {Will / Would} you please open the door, Peter is asking Bill.

{*Will / *Would} I please open the door, Mary is asking Paul.

Similarly, corresponding to 10), 11)

10) Peter$_1$ is asking Bill if he$_1$ {may / might} please open the door.

11) *Peter is asking Mary$_1$ if she$_1$ {may / might} please open the door.

we have

18) {May / Might} I please open the door, Peter is asking Bill.

{*May / *Might} you please open the door, Peter is asking Mary.

Finally, corresponding to 19)a we have 19)b

19)a Mary is asking Jane if she {can / could} please open the door.

19)b {Can / Could} {you / I} please open the door, Mary is asking Jane.

What we have in effect shown is that a certain set of restrictions on the subject noun phrase in direct discourse constructions containing modals are reflected in the restrictions on pronominal reference in the corresponding indirect discourse cases. Once we recognize that the restrictions are parallel, one can then raise the question about how this similarity can be represented in the grammar.

One possibility is that the restriction on I in

20) Will $\left\{\begin{matrix}\text{you} \\ \text{*I}\end{matrix}\right\}$ please open the door.

is not ruled out syntactically at all but that both sentences in 20) are generated in the syntax and the deviant sentence is ruled out by a semantic principle which states that one cannot command one's own self. In this case, serious consideration must be given to the possibility that the control problem as a whole is part of semantics and thus

21) Peter_1 is asking Paul_2 if he $\left\{\begin{matrix}1 \\ 2\end{matrix}\right\}$ will please open the door.

are both syntactically generated but the case where he and Peter are assigned the same indices is ruled out on semantic grounds (by a semantic principle analogous to the would-constraint as stated earlier.)

A second possibility along syntactic lines is suggested by a large body of literature dealing with the so-called "performative" verbs such as ask, tell, vow, etc. Thus one

might propose that direct questions derive from indirect questions (from complements to higher, abstract, performative verbs); i.e.,

22) May I please open the door.

is derived syntactically from, for example.

23) I am asking you if I may please open the door.

Then the restrictions observed on the choice of the surface subject noun phrase in direct discourse becomes stated as a part of the control problem for constraining pronominal coreferentiality. This explanation of the facts depends on the independent syntactic arguments available for the derivation of 22) from 23); these are somewhat unconvincing--for the pros and cons of this issue see Ross, 1970; Anderson, 1968; Fraser.

E. The By Phrase Constraint

Recall in the discussion of the control problem (the could-constraint, 12)) that the complement subject pronoun he may refer to either the matrix subject as in

24) Peter_1 asked Paul if he_1 could please see the doctor.
(request interpretation)

or to the matrix indirect object as in

25) Peter asked Paul_1 if he_1 could please see the doctor.
(imperative interpretation)

But the request interpretation is weak (or out) in

26) *Paul is being asked by Peter$_1$ if he$_1$ could please see the doctor.

Thus we have only the imperative interpretation

27) Paul$_1$ is being asked by Peter, if he$_1$ could please see the doctor.

Superficially, the only difference between 26) and the other sentences is that the would-be antecedent is in the agent phrase by Peter.

Similarly, the following sentence containing may is anomalous

28) *I am being asked by Peter if he may please be allowed to shave himself.

Let us state as a first approximation that

29) the (implicit) subject of the complement may not be co-referential to a by phrase noun phrase (the By Phrase Constraint).

We next ask whether the By Phrase Constraint as stated is an ad hoc condition limited to complements containing modals (recall the would-constraint, might-constraint, etc. in the control problem) or whether the phenomena under consideration is of greater generality.

Note that the following sentence is ambiguous

30) The doctor asked the nurse to see the patient.

with the understood infinitival subject referring either to the matrix subject (with the request interpretation) or the matrix indirect object (with the imperative interpretation). But

31) The nurse was asked by the doctor to see the patient.

is interpreted only with the nurse as complement subject (with the imperative interpretation). Similarly,

32) Peter asked me to be allowed to shave himself.

is interpreted only with Peter as the implicit subject (the request interpretation) but the passive is impossible in

33) *I was asked by Peter to be allowed to shave himself.

But these facts are exactly what we expect from the By Phrase Constraint 29).

Consider the verb promise. We have

34) John promised me that { he would shave himself. / *I would shave myself.

35) John promised me to shave { himself. / *myself.

where John is the controlling noun phrase in both cases (the would-constraint).

But we have

36) ?*I was promised by John that he would shave himself.
*I was promised by John to shave himself.

which again follows from the By Phrase Constraint, since the antecedent is contained in a matrix agent by-phrase.[1]

Up to now we have considered only "modal" verbs such as ask and promise with an implicit or explicit modality in the complement. But the By-Phrase Constraint is much more general and extends into other verb classes. Consider the class containing tell and complain:

14) John told me about having shaved himself.
*I was told by John about having shaved himself.

15) John complained to me about having bit his tongue.
*I was complained to by John about having bit his tongue.

Here, too, both of the deviant sentences can be accounted for by the By Phrase Constraint.

It may be possible to extend the By Phrase Constraint proposed above to explain the sentences below, containing while, in order to, and by adverbial complements.

16) Bill killed Mary, while shaving himself.
*Mary was killed by Bill, while shaving himself.

17) Bill killed Mary, in order to amuse himself.
*Mary was killed by Bill, in order to amuse himself.

18) Tom excited Mary by shaving himself.
*Mary was excited by Tom by shaving himself.

If this is the case, observe that the By Phrase Constraint does not correlate with any obvious semantic constraint. Thus the constraint rules out

19) *A razor was used by Bill in order to shave himself.

but does not exclude the semantically parallel case

20) A razor was used by Bill to shave himself with.

Similarly, it has been noted (Chomsky, 1965, p. 229) that the passive is absent in

21) John strikes them as pompous.

22) *They were struck by John as pompous.

which might well be accounted for by such a principle as the By Phrase Constraint; i.e., the understood subject of pompous cannot refer to the noun phrase in the by-phrase. Again, the semantically similar

23) They were struck by John's pomposity.

and

24) They regard John as pompous.

both exist, casting doubt on any simple explanation of a semantic nature.

Finally, consider the case of remind (discussed in Postal, 1970)(b)

25) John always reminds me of his gorilla.

This sentence can mean roughly

1. I perceive that John is similar to his gorilla.
2. John causes me to remember his gorilla.

But the passive has only the latter interpretation

26) I am always reminded by John of his gorilla.

as predicted by the By-Phrase Constraint. But assuming that 25) is the deep structure for 26), then it appears that the By Phrase Constraint cannot always be formulated in terms of co-referentiality of "syntactic" noun phrases.

We have thus demonstrated that what we formulated above as the By Phrase Constraint is not an ad hoc constraint limited in applicability to the complements of the modal verbs under consideration in this study but is of great generality, applying in a wide range of constructions in English, thus making it a candidate for a condition on the functioning of rules, in this case of whatever rules, transformational or interpretive, that account for assignment of co-reference. One might further speculate as to the feasibility of combining the By Phrase Constraint with another similar constraint in English discussed in Ross (1970); Grinder and Postal (1971) which excludes sentences like

27) *Max$_i$ said that Erica was kissed by him$_i$.

But we leave this question open for further investigation, as well as that question to what extent the By Phrase Constraint (and for that matter, the solution to the control problem) is language-specific and to what extent it is language independent and thus part of the innate schemata available to the language learner.

FOOTNOTES (TO CHAPTER IV)

1. Apparently, derived nominals are excepted from the constraint under discussion

1) I was promised assistance by John.

but

2)*I was promised to assist me by John.

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