GRAMMATICAL RELATIONS

by

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ABSTRACT

This study is an attempt, within the frameword of the structure-preserving hypothesis and the lexicalist hypothesis, to demonstrate two major points: (1) that underlying, or deep, grammatical relations are far more abstract than has usually been supposed; and (2) that the syntactic structures required at the level of deep structure are far less abstract, i.e. closer to surface structure, than has usually been assumed.

It is shown that the only way of resolving these seemingly contradictory hypotheses is to assume a theory in which there is no level of deep structure. The grammar proposed here contains a single set of PS rules which characterizes an infinite class of surface structures. The structure-preserving rules and the lexical insertion rules apply freely on each syntactic cycle, so that the surface forms of sentences, along with their correct semantic interpretation, are generated directly, without the necessity for a special level of deep structure.

It is demonstrated that not only is a grammar of the form proposed possible, but that it is also necessary, for two reasons: (1) it is necessary in order to state certain syntactic processes in the most general way; and (2) it is necessary in order to account correctly for the surface forms of certain sentences without having either to make ad-hoc assumptions or to assume otherwise unmotivated syntactic rules.

The results of this study strongly suggest that the form of particular grammars is largely determined by semantic considerations, and some first steps toward a verification of this hypothesis are presented in the final chapter.

Thesis Supervisor: Noam Chomsky
Title: Professor of Linguistics

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There is really no excuse for anyone's writing a thesis as long as this one, and while I accept full responsibility for its length, it is necessary for me to mention at least a few of the many people who, directly or indirectly, have helped to give it whatever merit it may possess.

My greatest debt is, of course, to my teachers Noam Chomsky and Morris Halle, without whose guidance and influence I would have been totally incapable of understanding what a theory is, let alone trying to produce one. My personal gratitude toward them is equally great. Over the last three years, both have read, commented on, and discussed extensively with me innumerable drafts, and bits and pieces of this thesis, as I have finished them, with remarkable patience. I am particularly indebted to my thesis advisor, Noam Chomsky, for his comments and suggestions on every aspect of this work. Each time that I thought I had come to a complete dead end, he produced, apparently by magic, some new idea which made the whole endeavor viable once more. To Morris Halle goes the credit for making me stick to it, encouraging me at every turn, and making sure that I knew what I was talking about.

The second greatest influence on my thinking has been the work of Joe Emonds. It is apparent on every page of this thesis that nothing I have done would have been possible without his pathbreaking work on root and structure-preserving transformations. In addition, I am grateful to him for many discussions on all manner of topics, both linguistic and otherwise, which were invariably stimulating.

To Ray Jackendoff, I can only say that if it were not for him, I would probably have given up Linguistics in despair after my first year at MIT. He showed me that there is <u>always</u> a new way of thinking about an old problem, and that the most direct way of tackling a new problem is probably the right way. His originality and insightfulness are a continual inspiration to me.

Of the other faculty members in the Linguistics Department at MIT, I am particularly grateful to Ken Hale and Hu Matthews, both of whom gave me invaluable comments on earlier drafts of this thesis, at a point when I had very little idea of what I was trying to do.

I would like to express my thanks to my colleagues Richard Brecht and Leonard Babby. They both deserve a great deal of credit for helping me to tie everything in this thesis together into a reasonably coherent theory. They have subjected every important aspect of the theory to the closest scrutiny, and I have had many hours of intense and extremely profitable discussion with both of them. In addition, they have, jointly, persuaded me that a theory which can explain Russian can probably explain anything.

I owe a special debt of gratitude to Professor Lewis Levine, from whom I took my first Linguistics course at U.N.C. I can still remember the sense of excitement and discovery with which he infused the subject. In addition, I am grateful to him for a great deal of personal encouragement, as well as for arranging a special undergraduate major in Linguistics for me. I would also like to thank my teachers Anita Marten and Karl Zimmer, both of whom stimulated me to go on in Linguistics and who gave me a great deal of help and encouragement.

It is appropriate to mention here the influence of two of the finest scholars that it has ever been my privilege to study under. I refer to Professor George Lane and the late Professor Urban T. Holmes. The former established for me standards of rigor and precision that I have never forgotten, while the latter was able to make the language and literature of any language, ancient or modern, come alive before one's eyes in the most remarkable manner.

To my parents, I am grateful for providing an atmosphere in which the value of intellectual achievement was taken for granted, and for doing everything within their power to let me study whatever I wanted to, in whatever way that I wanted to. Many times, I am sure, they must have had grave doubts about the wisdom of my decisions, and even graver doubts about the manner in which I chose to pursue my studies. I hope that this thesis will help to repay them for all the worry and anxiety that I have caused them over the years.

My wife Celia should, by all rights, be the co-author of this thesis. Not only has she read and discussed with me virtually every single page of this and earlier drafts, but she has been instrumental in helping me to clarify my thought at every critical juncture. She has come to my aid in moments of despair, as well as sacrificing a great deal of her own time and interests, in order to allow me to pursue mine. At the same time, she has somehow managed to bring up our two children Isaac and Alexander, who, for much too long now, have had only about one third of a father, if not less. I can think of no words which express adequately the extent of my gratitude to her.

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Finally, I would like to thank Shirley Hancy for the superb job which she has done on the typing of this thesis.

PREFACE

This thesis has undergone numerous changes in the three years that I have been working on it. Some of these changes are fundamental, while others are merely matters of detail. Unfortunately, the development of my thinking, and the transformations which it has undergone, are all too clearly reflected in these pages. The reader will note numerous contradictions, retractions, and breaks in the continuity of my argument.

Nevertheless, I think that the main ideas on which it is based are, for the most part, correct. In particular, I believe that the arguments put forward in Chapter V come as close to constituting a rigorous demonstration of the proposition that deep structure does not exist as it is perhaps possible to construct, given the state of linguistic theory at the present time.

In the long run, none of the particular claims of this work are nearly as important as the general approach to syntax and semantics which it is intended to exemplify. I believe that within the framework proposed here, it is possible to investigate in a rigorous manner the semantic systems of natural languages and the way in which these systems are associated with the surface syntactic forms of sentences, and to begin to deal with semantic universals in a systematic way.

The approach offered here makes it possible to avoid many of the theoretical disputes that are currently plaguing the field of Linguistics, so many of which turn out, on close inspection, to be concerned with nothing more than matters of terminology. The theory of grammatical relations proposed here offers, I believe, a genuine, and empirically testable, alternative to both the "extended standard theory" proposed by Chomsky and Jackendoff, and to the various forms of "Generative Semantics" which have proliferated in recent years.

I have only recently come to appreciate the extent to which my work represents an attempt to justify in a rigorous fashion many of the ideas concerning syntax and semantics which have long been maintained by the greatest living exponent of Prague School theory. I refer of course to Roman Jacobson, who for many years has insisted on the importance of surface structure, and who has stressed repeatedly the "necessary conjunction of _signans_ and _signatum_," at every level of linguistic organization. In particular, I would like to suggest the possibility that the ideas concerning case contained in Roman Jacobson's extremely important paper "Allgemeine Kasuslehre" can be incorporated rather naturally into the theory proposed here.

Finally, I would like to emphasize the fact that nothing in this work is to be taken as final. I regard the theory proposed in this thesis as a beginning point, not as a _fait accompli_. The approach to

semantics which it is intended to suggest is, in some respects, fairly new, but is, in other respects, very, very old.

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1. Introduction

The theory presented in this book, although influenced in one way or another by most of the significant developments within the framework of transformational grammar since the publication of Aspects of the Theory of Syntax, derives most directly from three important pieces of work. The first is Chomsky's paper "Remarks on Nominalization". The second is a well-known paper by Charles Fillmore, "The Case for Case". Third, and most important of all, is a Ph.D. dissertation by Joseph Emonds, as yet unpublished, entitled Root and Structure Preserving Transformations.[1]

On the surface, these three works would appear to have little in common. Chomsky's paper is an attempt to formulate, with specific reference to the problem of "derived nominals" vs. "gerundive nominals" in English, certain general theoretical problems regarding the status of the lexicon in grammar. Fillmore, attempting to deal with a variety of phenomena not explicitly accounted for within the framework of transformational grammar, proposes a theory which, superficially at least, appears to be rather different from that which has usually been assumed by generative grammarians. Finally, Emonds' thesis is an attempt to formulate some very general constraints on the class of operations permitted within the transformational component of a generative grammar. However, despite the fact that these papers differ greatly from one another, both in terms of the material treated and, at least in the case of Fillmore's paper, as opposed to Chomsky's and Emonds' work, in terms of their theoretical bias, I think that the insights contained in each can be combined into a theory

of syntax and the lexicon of an unexpectedly powerful kind.

Since the theory to be proposed in the succeeding chapters arises rather naturally from the considerations brought forward in the three papers just mentioned, it is perhaps worthwhile devoting a chapter to a brief sketch of the main points contained in each. In the following sections, therefore, I shall deal with each of these topics in turn: The Lexicalist Hypothesis, Case Grammar, the Structure-Preserving Hypothesis. Note that in no case is my discussion of these topics intended to be definitive or complete. Rather, my purpose is simply to review briefly the background material which is essential to an understanding of the theory presented in Chapters II-V.

2. The Lexicalist Hypothesis

The main question which underlies Chomsky's paper "Remarks on Nominalization" is the following: When is it appropriate to represent relationships between sentences by means of a transformational rule, and when is it appropriate to use other devices that are available within the theory of grammar? These latter devices would include, for example, lexical redundancy rules and rules of the semantic component. Stated more generally, of course, the question is what are the boundaries between syntax, the lexicon, and semantics, or, as Chomsky puts it, what are the general principles which determine the nature of the "trading relation" between the different "components" of grammar?

To see why this should be an important issue in linguistic theory at the present time, it is perhaps worthwhile placing the problem in its historical context. In the earliest work in transformational grammar, virtually the only means for expressing relationships between sentences

were syntactic transformations. The syntactic environments in which lexical items could appear were determined by context-sensitive phrase-structure rules, while the "lexicon" was nothing more than an unordered list of the lexical items that could appear as terminal symbols in a phrase-marker. It was soon observed, however, that phrase-structure rules are not the appropriate device for representing distributional properties of lexical items, since the features in question are typically cross-classifying, rather than hierarchical. Hence it was proposed that the lexicon be separated from the phrase-structure component of the grammar and that lexical items be inserted transformationally into phrase-structure trees in ways that would be determined idiosyncratically by each lexical item in the language.

This revision in the theory was made explicit in Chomsky's book Aspects of the Theory of Syntax. Chomsky proposed that each lexical item consist of a phonological representation, a semantic representation, plus a set of "syntactic features". The syntactic features were of three kinds: (1) 'intrinsic' features, such as "Animate", "Human", "Concrete", "Mass", etc.; (2) strict subcategorization features, which classified lexical items in terms of the purely syntactic environments, as specified by the PS rules, in which they could appear; and (3) selectional features, which classified certain lexical items in terms of the intrinsic features permitted on heads of phrases in the syntactic environments of these lexical items. The syntactic features of types (2) and (3) were, in effect, abbreviations for special transformations which inserted lexical items in the appropriate syntactic contexts.

One immediate effect of this separation of the lexicon from the phrase-structure and transformational components of the grammar was to permit, in

principle, syntactic relationships between sentences to be expressed non-transformationally by means of lexical rules operating on the class of syntactic features associated with lexical items. Some possibilities along these lines were, in fact, proposed tentatively by Chomsky in his discussion of "lexical redundancy rules". However, the full potential of the lexicon for expressing syntactic relationships between lexical items was not explored in any systematic manner after the publication of Aspects in 1965, and it is only very recently, with the publication of "Remarks on Nominalization", that the possibility of a lexical approach to certain syntactic problems has begun to be taken at all seriously.

What happened instead was that syntactic research, in general, proceeded on the assumption that the most desirable solution to any syntactic problem was a transformational solution.[2] At the same time, however, the focus of research in linguistics began to shift away from the purely formal problems of syntax into the area of meaning. Now it is clear that the syntactic distribution of particular lexical items is intimately tied up with the range of meaning that is associated with them. Under even the most minimal assumptions about the relation between form and meaning, it is obvious that to understand how the meaning of sentences is built up out of the meaning of the parts of which sentences are composed, namely, words, one must examine the way in which the meaning of words varies in different syntactic contexts. For this reason, a great deal of linguistic research came to focus, in the post-Aspects era, on the detailed description of the syntactic distribution of lexical items. However, since any syntactic relation between lexical items, as just pointed out, tended to be seen in terms of a transformational relationship between sentences, the result was

that deep structures necessarily became more and more "abstract", as descriptions of lexical distribution, couched in transformational terms, became more and more detailed. This tendency was further reinforced by the introduction of powerful devices such as Lakoff's exception mechanism (see footnote 2), which allowed, in effect, any lexical relationship to be accounted for by introducing a special "abstract" lexical item (usually a Verb, though as Chomsky has noted, one could equally well use the device to set up "abstract Prepositions", or indeed an abstract element belonging to any of the traditional parts of speech), having just the distributional properties of the two lexical items in question. By classifying such abstract elements as obligatorily undergoing various transformational rules, it became possible to ensure that the abstract underlying structure set up in this way ended up in just the right "surface" syntactic (i.e. syntactically motivated) positions. To take but a single concrete example, by assuming an "abstract Verb" CAUSE, plus a special "Predicate Raising" rule, which obligatorily combines the Verb in an embedded complement sentence with the matrix "pro-Verb", plus a few other syntactic operations, it is immediately possible to "explain" the purely distributional relationship between lexical items such as kill and die, by deriving sentences such as "John killed Bill" from underlying abstract structures of the form "John CAUSE - Bill die".

It was in this context that Chomsky's paper "Remarks on Nominalization" appeared. Chomsky begins this paper by pointing out that within the framework of Aspects, there are, in principle, a number of different ways that one might go about describing relationships between sentences. First, one might propose to relate two sets of sentences transformationally. Second,

one could appeal to the rules of the semantic component. Third, one could relate sentences to one another by means of lexical redundancy rules. Given these various possibilities, the question is not, he observes, whether it is possible to describe some given set of facts in one or another of these ways, but rather whether one of these ways, in particular, is the most appropriate way of describing the facts in question. Whether one form of grammatical description is more appropriate than another, in any given case, is of course an empirical question, and there are various criteria that one can advance in support of one decision, as opposed to another. One criterion which is particularly relevant in the cases with which Chomsky is concerned has to do with limiting the power of grammatical theory. It is in the nature of linguistic theory that one can always make a particular type of solution to some given problem work by increasing the power of the theory, i.e. by enriching linguistic theory with the addition of new devices, extending the scope of devices already needed, and so forth. However, that fact is only interesting if the phenomenon in question can only be adequately described by the introduction of new and powerful devices. Otherwise, it is clear that we desire the solution which limits as narrowly as possible the power of the devices necessary in linguistic theory. In particular, these criteria apply when we are trying to decide whether to describe some relationship between sentences by means of lexical rules, by means of semantic rules, or alternatively by means of transformational rules.

The main point of Chomsky's paper is, then, to demonstrate that a great many analyses which describe facts concerning the distributional

relationship between lexical items in essentially transformational terms fail one or another of the various criteria which might lead one to prefer one grammatical theory over another one. In particular, he is concerned with showing that the class of "derived nominals" in English, as opposed to a superficially somewhat similar class of nominal constructions, which he calls "Gerundive nominals", cannot be handled in transformational terms except by introducing devices which increase the power of grammatical theory, without a corresponding gain in explanatory adequacy. On the other hand, a treatment of the class of derived nominal forms in lexical terms can, he claims, account for the same facts equally adequately (in fact, a lexical treatment of derived nominals results, Chomsky claims, in a theory of grammar which is more limited in power, and hence more adequate, than a transformational treatment of the same phenomenon.

Space prevents, unfortunately, a detailed summary of all the arguments presented in this rich, and extraordinarily compact paper. However, the main points are as follows. Consider first the class of Gerundive nominals in English, examples of which are the following:

(1) a. the enemy's destroying the city

b. John's refusing to leave

c. our electing Bill President

If we compare nominals of this type with full sentences such as the following:

(2) a. The enemy destroyed the city.

b. John refused to leave.

c. We elected Bill President.

we find three significant facts concerning their relation: (1) The relation is productive, in the sense that corresponding to any sentence, there is a

related Gerundive form; (2) The semantic relation between a Gerundive and the corresponding sentence is constant; and (3) Gerundive nominals have the internal structure of a sentence. Consider, in contrast, the relationship between sentences such as (2) and derived nominals such as the following:

(3) a. the enemy's destruction of the city

b. John's refusal to leave

c. *our election of Bill President

Here the relation between the nominal and sentential forms is quite different with respect to all three of the criteria mentioned above: (1) The relationship is non-productive, in the sense that many sentences have no corresponding derived nominal forms, and likewise there are many derived nominal forms that have no grammatical sentential form; (2) The semantic relation between derived nominals and the corresponding sentences is far from constant; in fact, it varies greatly from case to case, and the nominal forms typically exhibit ranges of meaning that are quite restricted in comparison with the sentential forms; (3) Derived nominals have the internal structure of a NP; thus they may take Articles, Quantifiers, Adjectival modifiers, etc., require that their Object-NP's appear with the Preposition <u>of</u>, cannot take Adverbial modifiers, and so on.

Given these facts, the question that immediately arises is whether there is some principled way of explaining the differences between Gerundive nominals and derived nominals. In fact, there is, if we simply assume that Gerundive nominals are transformationally derived from underlying sentences, whereas derived nominals are generated as NP's in the base. The relationship between the Gerundive nominals and sentences - its regularity and productivity,

the fact that the semantic relation is constant, and the fact that Gerundives retain the internal structure of sentences - is exactly what we would expect under the assumption that S's and Gerundive nominals are transformationally related. The relationship between derived nominals and sentences, on the other hand, is not typical of transformationally related pairs. It would, of course, be possible to relate derived nominals and sentences transformationally, given the tremendous power of transformational rules in the present theory, but to do so would be inappropriate in this case, since it would fail to explain in a general way the special properties of these nominal forms.

If, on the other hand, we assume that derived nominals are simply Nouns, which are lexically, though not transformationally, related to Verbs (or Adjectives), then nothing special needs to be said in the grammar concerning the peculiar properties of these nominal forms. For it is a general fact about derivationally related forms that the relationship is non-productive and sporadic, in comparison with transformationally related forms, and that the semantic relationship varies considerably. And, of course the fact that derived nominals have the internal structure of a NP simply follows automatically from the fact that the head of such phrases is itself a Noun in the lexicon, and is hence inserted in contexts where Nouns are generally allowed to occur.

There are, to be sure, regularities in the relationship between derived nominals and sentences. Consider, for example, the nominal forms (3) a. and b. and the corresponding sentences in (2). It is clear that just as the Subject-NP the enemy in (2) a. is the Subject of the Verb destroy, so the possessive NP the enemy's in (3) a. is the 'Subject' of the

nominal form destruction. Likewise, the NP the city is an Object-NP in both (2) a. and (3) a. The way in which these facts would be accounted for in a transformational analysis of derived nominals is obvious. Can they be accounted for under the Lexicalist Hypothesis for derived nominals, also?

The answer is clearly Yes, as long as we make the rather natural assumption that all lexical items which serve as the "heads" of phrases, i.e. Nouns, Verbs, and Adjectives, subcategorize the constituents which occur in their respective major phrase-node categories, and that grammatical relations such as "Subject-of", "Object-of", and so forth, are defined within the domain of each of the major phrase-nodes NP, VP, and AP.[3] Given this assumption, any distributional overlap, whether partial or complete, between a Noun and a Verb (and likewise, between a Noun and an Adjective, or a Verb and an Adjective) can, in principle, be accounted for by a system of lexical redundancy rules, defined over the range of possible subcategorization features that may be assigned to heads of phrases.

Furthermore, notice that in the ideal case, where the syntactic distributions of a Verb and a derivationally related Noun coincide, we can in fact achieve a simplification in the lexicon, since the lexical item, in such a case, may simply be entered in the lexicon, unspecified as to its lexical category. Thus, to take the example mentioned above, consider the Noun destruction and the Verb destroy, both of which are Transitive. We may account for this fact by listing the stem destroy in the lexicon, unspecified as to whether it is a Noun or a Verb and assigning it the subcategorization feature: [+ ___NP]. Similarly, the lexical item realize, which takes a that-complement in either its verbal or nominal

form (cf. John realized that Mary was sick, John's realization that Mary was sick), can be left unspecified as to whether it is [+Noun] or [+Verb], and assigned the subcategorization feature [+ ___ that S], thus accounting for the syntactic relation between the sentential and nominal forms without its being necessary to derive the nominal transformationally from a sentential source.

The Lexicalist Hypothesis, applied to the particular case of derived nominals, makes an important prediction, namely, we expect to find derived nominals corresponding to base forms, but not to transforms of base forms. Gerundive nominals, in contrast, we would expect to be derivable not only from structures generated in the base, but also from transforms of these structures. These predictions are borne out by the facts. Consider, for example, a sentence such as John is certain to leave, which is derived from an underlying structure of the form: [[John - to leave] - be certain]. Under the Lexicalist Hypothesis, we would expect to find Gerundive nominals parallel to sentences of this kind, but no derived nominals, as is in fact the case:

(4) a. John's being certain to leave.

b. *John's certainty to leave.

Consider, on the other hand, a sentence such as John is certain that Bill will leave, derived from a base structure of the form: [John - be certain [that Bill will leave]]. In this case, we would expect to find both Gerundive nominals and derived nominals, corresponding to sentences such as the one just cited. Again, this prediction accords with the facts:

(5) a. John's being certain that Bill will leave.

b. John's certainty that Bill will leave.

Another example discussed by Chomsky has to do with the distribution of Adverbial clauses. Sentences, unlike NP's, may occur with Adverbial clauses of various kinds. Therefore, if the Lexicalist Hypothesis for derived nominals is correct, we would expect to find that sentences containing clauses of this sort have no corresponding derived nominal forms. Examples such as the following thus constitute further evidence in favor of a lexical treatment of derived nominals:

(6) a. Bill criticized the book before he had read it.

b. Bill's criticizing the book before he had read it (shocked everyone).

c. *Bill's criticism of the book before he had read it (shocked everyone).

Note once again that while a transformational treatment of derived nominals can be made to accomodate such facts, by placing special conditions on the nominalizing transformations involved, it cannot explain the facts. The non-existence of nominals such as (4) b. and (6) c. is simply an accident, from the transformational point of view, whereas under the Lexicalist Hypothesis, these facts follow automatically from considerations of a more general sort.

Notice, however, that there are apparent counterexamples to the claim that derived nominals may only be formed from base structures. Thus we find nominals such as the following:

(7) the city's destruction by the enemy

which are obviously related to Passive sentences such as (8):

(8) the city was destroyed by the enemy

The existence of such nominal forms has, on occasion, been used to support

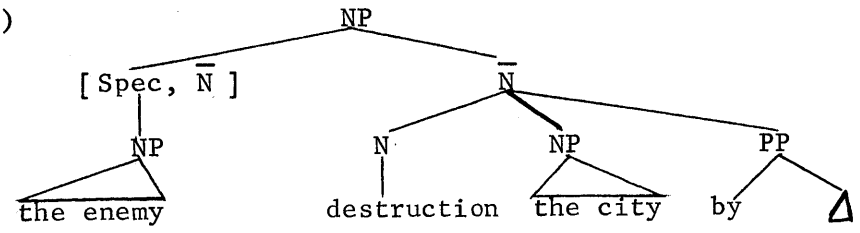
a transformational derivation of derived nominals from underlying sentences, a conclusion which, in the absence of any other way of accounting for forms such as (7), would obviously be correct.

It happens, however, that there is a motivated way of explaining examples such as (7) within the Lexicalist Hypothesis. Notice that given a framework in which the heads of the major phrase-node categories NP, VP, and AP can subcategorize the constituents within them, it is entirely natural to extend the domain of the transformational rules, as well, so that operations such as the Passive would then be applied not only in the domain of sentences, but in NP's also. Now recall that in Aspects the Passive rule is "triggered" by the phrase [by Δ]. Furthermore, Verbs must be subcategorized in the lexicon, so as to indicate whether or not they may occur with a dummy marker of this sort. Thus the Verb destroy, for example, must be entered in the lexicon with a subcategorization feature of the following sort:

(9) [+ ___ NP by Δ]

But this means, under the Lexicalist Hypothesis, that the nominal form destruction should also be able to occur in base structures containing a by-Δ phrase. In other words, we should expect to find base NP's with the following form:

(10)



But now, given that transformational rules may operate not only within the

domain of the S, but within NP's, as well, we can simply apply the Passive rule to the structure (10), automatically deriving the correct surface form (7). Thus "passive" nominals such as (7), rather than being nominals of transformed sentences, are, in reality simply the "passive" form of nominals such as (3) a.

Further support for the correctness of this approach can be derived from the observation that just as "impassivisable" Verbs such as resemble (i.e. Verbs which are not subcategorized for the dummy element by-Δ) have no surface Passive forms (cf. *Mary is resembled by John), so the related nominal forms such as resemblance lack a "passive" nominal form:

(11) a. Mary's resemblance to John.

b. *John's resemblance by Mary.

This result is exactly what we would expect under the assumption that the root resemble is unspecified in the lexicon as to whether it is a Noun or a Verb, and furthermore that it is prohibited from occurring with the element by-Δ in base structures.

Finally, there is entirely independent evidence in favor of extending rules such as the Passive to applying in NP's, since operations analogous to the two components of the Passive rule operate independently in nominals for which there are no derivationally related Verb forms. Consider, for example, pairs such as the following:

(12) a. Bill's book

b. the book by Bill

(13) a. the photograph of Mary

b. Mary's photograph

The rule which is needed to relate (12) a. and b. is obviously similar to that part of the Passive which moves the Subject into the dummy by-phrase, while the rule which relates (13) a. and b. bears obvious similarities to the second part of the Passive, which moves a Direct Object-NP into the Subject position.

This fact, that the two components of the Passive can operate independently of one another in derived nominal forms, demonstrates, incidentally, that the normal Passive rule which applies in sentences must be regarded as a combination of two separate syntactic rules, rather than as a single rule which permutes the Subject- and Object-NP's in sentences. This particular consequence of the Lexicalist Hypothesis plays a crucial role in the theory developed in the following chapters. It is therefore important to note that even without the evidence provided by examples such as (12) and (13), this result would be implied by the Lexicalist Hypothesis, because of the existence of "intermediate" nominal forms such as the following:

(14) the destruction of the city by the enemy

in which only one component of the "Passive" rule has applied. Such forms would be impossible to explain, without exceedingly elaborate and ad-hoc complications in the theory, under the assumption that the Passive is the result of the application of a single permutation rule.

For our purposes here, the Lexicalist Hypothesis is important for a number of reasons. First of all, it limits greatly the power of transformational rules. In effect, Chomsky's theory rules out the possibility of doing derivational morphology in the transformational component of a

generative grammar. At the same time it provides us with principled reasons for deciding in a large mass of cases whether a given relationship is most appropriately accounted for in the lexicon or in the transformational component. Secondly, the suggestion that transformational rules may apply in more than one "domain" is a potential source for strong arguments for or against the existence of proposed transformational rules. The point is that any time we find a rule which "generalizes" to more than one domain, we immediately have a strong argument in favor of the existence of that rule. Furthermore, this fact, combined with the fact that derived nominals can only correspond to the base forms of sentences, gives us a strong test for the validity of proposed underlying structures. Suppose, for example, that we propose an underlying structure for some class of sentences, along with a set of rules that will derive their correct surface forms. If the sentences in question, or even a subset of them, have derived nominal forms, then we can immediately ask whether the same set of rules, together with base nominal forms parallel to those proposed for sentences, yields a plausible analysis of the derived nominals in question. If the proposed analysis does, in fact, generalize to the nominal forms, then we have a strong argument in its favor. Thirdly, and perhaps most fundamentally, the Lexicalist Hypothesis suggests that lexical items - words - and the distributional relationships that hold between them, occupy a fundamental place in the grammars of natural languages. The existence of a "level" at which relationships between lexical items are stated is not, as has been implied in much recent work, simply an unnecessary consequence of a basically incorrect theory of grammar. It is, rather, a natural part of the grammar of any language, which is motivated independently of any purely

syntactic considerations. Thus it is possible, for example, to imagine a language in which syntactic transformations of the type common in English play a relatively small role, and in which, instead, the system of derivational and lexical relationships is basic. In other words, languages have different kinds of devices for relating form and meaning. Transformations are one kind of device; lexical and derivational relationships are another. To attempt to reduce one to the other only leads to a distorted view of language.

3. Case Grammar

For the purposes of this work, the importance of Charles Fillmore's paper "The Case for Case" lies not so much in the theoretical revisions which he proposes to incorporate into the theory of transformational grammar, which, on the surface, at least, appear to be rather extensive, but lies, rather, in the fact that he has drawn attention to a wide variety of syntactic relationships between sentences which have not yet been dealt with adequately within the framework of transformational grammar. To be sure, many of these phenomena had been noted previously, in various places and by various authors. However, until the publication of Fillmore's work, neither the nature of these phenomena, nor the extent to which they pose problems for standard transformational descriptions of English, was very much appreciated.

Reducing the matter to its essentials, what Fillmore has observed is the existence of an extensive, and extremely important, system of lexical redundancies in the grammar of English. The kinds of relationships noted by Fillmore are important not only because they have syntactic consequences,

but also because they clearly reflect certain significant semantic relationships between lexical items, as well. Consider, for example, the following set of sentences:

(15) a. John opened the door.

b. The door was opened by John

c. The door opened.

d. The door will open with a key.

e. A key will open the door.

f. John opened the door with a key.

We notice immediately that the same main Verb open appears in all of these examples. Furthermore, it seems apparent that each of the NP's John, the door, and a key, bears much the same semantic relation to the Verb in all of the examples, despite the fact that each may appear in a variety of syntactic positions. Thus the NP the door appears as the Subject in examples (15) b., c., and d., but is the Direct Object in examples (15) a., e., and f. Likewise, the NP a key may appear either in a PP with the Preposition with, as in (15) d. and f., or in the Subject position, as in (15) e. Finally, the NP John appears either in the Subject position (cf. (15) a. and f.), or in a PP with the Preposition by (cf. (15) b.).

The main point of Fillmore's paper is to demonstrate that the constancy of the relationship between each of these NP's and the main Verb is not accidental, but depends, in an essential way, on the nature of the Verb itself. Furthermore, he claims, the fact that these NP's may appear in different positions in surface structure is not an accident either, but is predictable, given certain grammatical processes of the general kind.

Stated in this way, Fillmore's position does not differ significantly from that advocated by most generative grammarians. It is standard, for example, to account for the relationship between examples (15) a. and b., by deriving both from a common deep structure source by means of a well-defined class of operations known as "grammatical transformations." On the other hand, many of the particular relationships noted by Fillmore have resisted adequate treatment within this framework. Thus Hall [Partee] (1965) concluded, in a discussion of examples such as (15) c.-f., that the relation between the Subject in (15) c. and d. and the Object in examples like (15) a. could not be treated within the transformational component of a generative grammar.

In order to account for such relationships, Fillmore proposes what, at first glance, appear to be rather radical revisions in the theory of grammar. He proposes, to start with, that "grammatical relations" such as Subject, Object, etc. be treated categorically, rather than configurationally. These relations, he refers to as "cases", and he assumes, further, that case relationships are universal elements which occur in the underlying representations of all natural languages. Thus the underlying representations that Fillmore proposes are in fact not equivalent to those generated by Phrase Structure rules of the usual kind, since they not only specify relations of dominance and constituency, but in addition specify categorically functional relationships between constituents.

The extent to which Fillmore's system is a genuine alternative to standard formulations of transformational grammar is unclear. Thus Chomsky (1970, 1972) has argued that Fillmore's grammar would be equivalent

to a grammar of the usual kind, containing a set of PS rules and transformations, supplemented by a system of "semantic rules" mapping deep structure constituents onto a set of universal functional relations of just the kind that Fillmore proposes. Thus where standard theories would assume "interpretive" semantic rules mapping deep structures onto a system of semantic relations, Fillmore merely reverses the direction of the arrow and maps semantic representations (i.e. systems of "case" relationships) onto syntactic structure.

One specific consequence of Fillmore's proposals is the claim that the 'Subject' relation is a "superficial", surface relation that plays no significant role in underlying representations. I shall present arguments in the next chapter that this view is false. See also Chomsky (1972) for arguments against this claim of Fillmore's.

Whatever the relative merits of Fillmore's system, as opposed to more standard formulations, may be, there are a number of important observations contained in his paper that are directly relevant to the discussion in the following chapters of this book. Most important is his observation that the environments in which lexical items may appear, expressed in his system in terms of "case frames", may often be collapsed by means of the parenthesis notation. Thus, for example, in Fillmore's framework the Verb open must be allowed to be inserted in the following environments:

(16) a. [___ 0]

b. [___ 0 + A]

c. [___ 0 + I]

d. [___ 0 + I + A]

where 0, I, and A refer to the cases "Objective", "Instrumental", and

"Agentive", respectively. These four case frames may, however, be abbreviated by means of the parenthesis notation, yielding the single frame (17):

(17) [___ O + (I) + (A)]

Regardless of the merits of the particular analysis proposed by Fillmore for the Verb open, it is clear that the possibility of collapsing environmental features in this manner represents, in general, an important fact about the syntactic distribution of lexical items, whenever such collapsing is possible. In fact, the device of parenthesization permits us to construct, as will be shown in due course, a measure of lexical generalization. More generally, it points the way toward a substantive theory of lexical redundancy rules of the kind mentioned briefly in the preceeding section.

Furthermore, Fillmore's approach, which involves, basically, a serious consideration of the different syntactic environments in which lexical items may appear, makes it quite clear that a theory of lexical representation capable of accounting for lexical relationships of this kind, is crucial not only for the theory of syntax, but for semantic theory, as well.

Like many recent theorists, Fillmore has chosen to present his statements concerning the distribution of lexical items in a way which tends (incorrectly, in my opinion) to imply that the dividing line between syntax and semantics is an unnecessary one.[4] The reason that he is able to reach such a conclusion rests partly on a misunderstanding of standard theories of syntax, and partly, as I hope to demonstrate, on the fact that his analyses are, in a number of crucial cases, only partially correct.

Nevertheless, the considerations brought forward in Fillmore's work play an important role in the development of the theory presented in this

book. Furthermore, I believe that his observations can be incorporated in a rather natural way into the theory of syntax and the lexicon developed here, thus diminishing considerably the apparent theoretical gap which separates Fillmore's system from that which has been more commonly in use among transformational grammarians since the publication of Aspects in 1965.

4. The Structure-Preserving Hypothesis

It is true to say, I believe, that despite the appearance of great diversity of opinion within the framework of transformational grammar, conceived in the broadest terms, and despite the existence of sharp disagreement on a number of issues, that nevertheless the differences between the members of different "schools" are most often more apparent than real. In particular, I would argue that the facts accounted for in a framework such as that proposed by Fillmore can be equally well accounted for in more "traditional" transformational theories.

The work which I consider to be crucial in demonstrating the truth of this statement is contained in a recent dissertation by Joseph Emonds, entitled Root and Structure-Preserving Transformations. The constraints on transformations proposed by Emonds, even if only partially correct, lead to a theory of syntax and the lexicon which is so much more powerful than any other current theory that many of the arguments which appear, at the present time, to be of such great importance will, I predict, simply fall by the wayside and disappear from view.

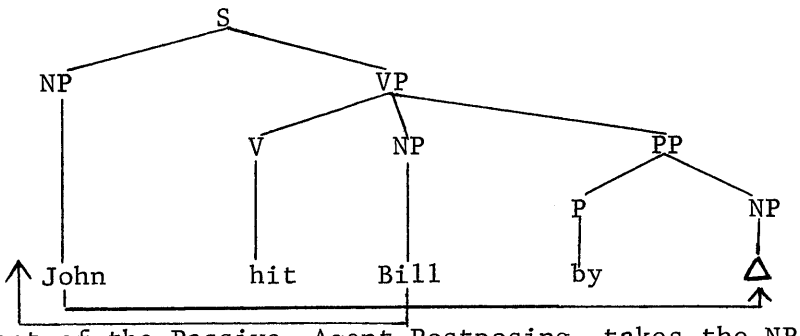
The specific constraints which Emonds proposes narrowly restrict the class of possible transformational rules permitted in the grammars of natural languages. Basically, these constraints are very simple. The rules permitted in the transformational component of the grammar may be of

only three kinds: (1) Structure-preserving rules; (2) Root transformations; and (3) Minor movement rules. The first class of rules, the structure-preserving transformations, may be defined as follows:

(18) A transformation is "structure-preserving" if it moves some constituent X to a position in a phrase-structure tree where constituents of that type are independently generated by the phrase-structure rules.

The best-known example of structure-preserving movement rules are the two rules which make up the "Passive". The effect of these transformations can be shown as follows:

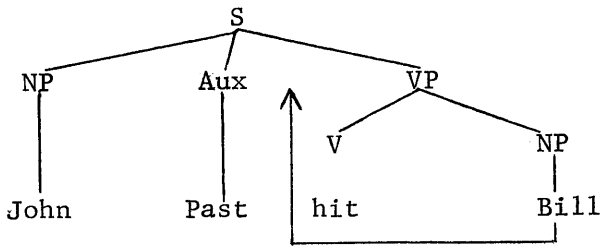
(19)



The first component of the Passive, Agent-Postposing, takes the NP in Subject position and moves it into the NP position within the PP whose head Preposition is by, as is indicated by the arrow in (19). The second component of the Passive, Object-Preposing, then moves the Object-NP John into the now-vacated NP in the Subject position. The result of these two operations (ignoring the details of the placement of the Passive Auxiliary (be+EN) is of course the Passive sentence Bill was hit by John. Note that each rule moves a NP-constituent to a position in the tree where NP's are permitted by the Phrase-Structure rules for English. On the other hand, consider a rule which would have the effect of moving some NP (the Object-

NP, say) into a position between the Auxiliary and the VP. Such a rule would have the following effect:

(20)



According to Emonds' theory, this is (except under the special circumstances to be described shortly) an impossible rule, because the phrase-structure rules for English do not generate sequences of the form: [$_S$NP - Aux - NP - VP]. Note that it is of course crucial that the PS rules be motivated independently of the transformational rules, since otherwise one could obviously generate nodes in the PS rules whose sole purpose was to provide a position into which some transformation could move a constituent.

The second class of rules, the "Root" transformations, are defined in terms of the notion "Root", which is defined below:

(21) A "Root" is the topmost S in a given sentence, or an S immediately dominated by the top-most S, or else the S which appears in Direct Discourse.

We can now define a Root transformation as follows:

(22) A "root transformation" is one which daughter-adjoins a constituent to a Root sentence.

Root transformations are thus limited in the following way: they must move a constituent to a position in which it is immediately dominated by a Root sentence, but nowhere else. Notice that root transformations are, in effect, limited to apply on the final cycle of any given derivation, or,

to put it slightly differently, root transformations may apply only in the top-most S, or in a conjunction of main clauses; they may never apply in embedded S's.

There are many well-known examples of Root transformations. Among them are Subject-Auxiliary Inversion, Topicalization, Negative-Adverb Preposing, Directional Adverb Preposing, Inversion Around Be, Left- and Right-Dislocation, and so on. Furthermore, it is an empirical fact, as Emonds demonstrates, that none of these rules may apply in embedded sentences. Notice that the hypothetical rule proposed above in (20) would be a possible rule in Emonds' theory, if it were a Root transformation.

The third class of rules are those which Emonds refers to as "Minor Movement Rules". They are very restricted in scope, and are subject to the following general constraint:

(23) A "Minor Movement rule" may affect only a node which is not a major phrase-node (i.e. a lexical category N, A, V, Prep; Particles of various sorts; and affixes), and is restricted to moving the node in question over an immediately adjacent node.

The class of Minor Movement rules thus includes the rule of Affix-Hopping, originally proposed by Chomsky in Syntactic Structures, which attaches the affixes Tns, -ing, EN, to the constituent immediately to its right; the rule of Particle Movement, proposed by Fraser (1965); as well as others.

I do not wish to go into a lengthy discussion of each of these types of rules, or the motivation for them. The reader is referred to Emonds' dissertation for a detailed analysis. However, given this classification, we may now state the Structure-Preserving Constraint as follows:

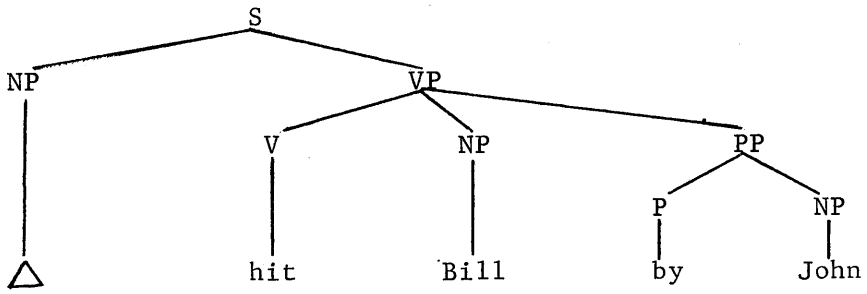
(24) The only non-structure-preserving transformations permitted in the grammars of natural languages are (1) Root transformations, and (2) Minor Movement Rules.

It is clear that (24), if correct, imposes extremely strong limitations on the class of possible transformations in natural language. Notice that a weaker form of the Structure-Preserving Constraint might simply require that the class of possible surface structures in any given language be generable by a set of PS rules. We might further require that the PS rules of the base be a proper subset of the rules required to characterize the class of surface structures, and there are other possibilities that might be explored, as well. I shall assume throughout this book, however, that the strong form of the Structure-Preserving Hypothesis is correct and that it is unnecessary to weaken Emonds' original proposal in this manner.

Let us now consider briefly how the notion "structure-preserving rule" might be characterized in more formal terms. Structure-preserving rules, it will be recalled, have the property that they may only move a node of category X to a position where nodes of this same type are independently generated by the PS rules of the base. Suppose, therefore, that we simply allow nodes to occur in deep structure dominating the terminal symbol Δ. In fact, we have already used this device in illustrating the effects of the two components of the Passive (cf. diagram (19)). We may then think of a structure-preserving transformation as one which takes the material dominated by some node X and moves it into another node of the same category which dominates the null terminal symbol Δ [5]. Thus,

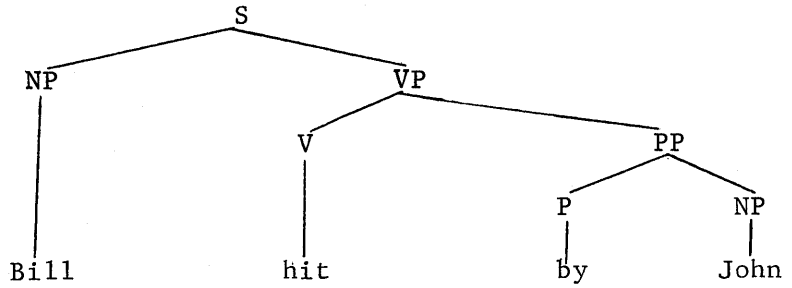
for example, the result of applying Agent-Preposing in (19) will be a derived structure of the following form:

(25)



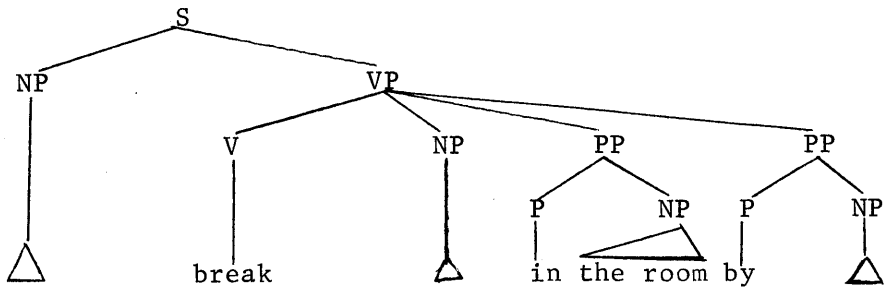
Similarly, the result of applying Object-Preposing to the structure (25) will result in the derived structure (26):

(26)



Notice, however, that unless we put some constraints on the occurrence of "empty" nodes (i.e. nodes dominating the null terminal symbol △) in deep structure, it will be possible to generate all sorts of absurd structures, including ones such as the following:

(27)



from which it will be impossible to derive grammatical surface structures.

As it turns out, though, all such unwanted structures can be excluded by means of the following general condition governing the occurrence of empty nodes in derivations:

(28) Any surface structure containing an "empty" node which has not been filled by a transformation in the course of the derivation is automatically rejected as illformed.

Applying this condition to a deep structure such as (27), we see immediately that the resulting surface structure will automatically be rejected as ill-formed, since there is no transformation, or sequence of transformations, in the grammar which could possibly ensure that all of the "empty" nodes in (27) will be filled at least once in the course of the derivation.

Observe that we specifically do not want to exclude the possibility of an "empty" node's being filled more than once in the course of the derivation. Such a constraint would, for example, make it impossible to derive Passive sentences, since the Subject-NP in (19) must, in fact, be filled twice in the course of the derivation, once by a lexical insertion rule, and once by the rule of Object-Preposing.

The explanatory power of the Structure-Preserving Hypothesis becomes evident, as soon as we observe the fact that certain ad-hoc conditions on the application of transformational rules can be eliminated entirely within the structure-preserving framework. We have already alluded to the fact that Root transformations such as Subject-Auxiliary Inversion, Topicalization, and many others do not apply in embedded S's. In a non-structure-preserving framework, this fact must be stated in an ad-hoc manner for each of the transformations in question. In a grammar which is subject

to the Structure-Preserving Hypothesis, on the other hand, this fact follows automatically, and no special conditions need to be placed on any of the transformations in question.

Let us mention briefly a slightly different type of example. There is a well-known rule in English, generally termed "Extraposition", which takes a clause dominated by the Subject-NP and moves it to the end of the sentence. This rule relates pairs of sentences such as the following:

(29) a. That Bill forgot to take out the garbage amuses me.

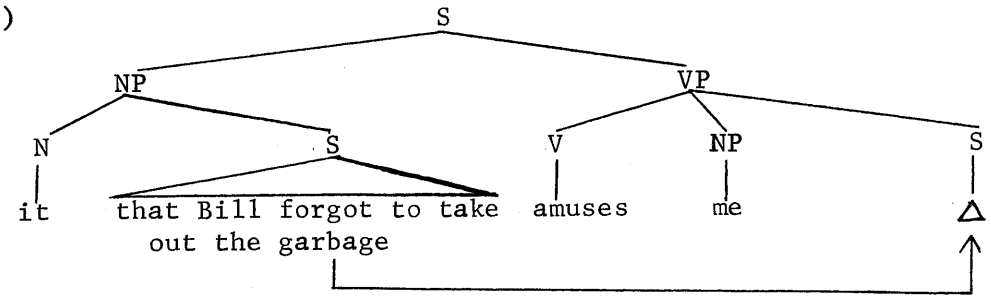
b. It amuses me that Bill forgot to take out the garbage.

(30) a. For you to do such things may upset them.

b. It may upset them for you to do such things.

If, as has been argued by Emonds (1969), there is motivation for deriving at least some clauses from a deep structure position at the end of the VP, then Extraposition may be formulated as a structure-preserving rule of the following form:

(31)



Now consider the behavior of Verbs such as prove, demonstrate, mean, etc., which have the property that they may occur with a complement S in both the Subject-NP and in post-verbal position. What we find is that in sentences containing a clause in both positions Extraposition is impossible:

(32) a. That Bill has blood on his hands proves that he is the murderer.

b. *It proves that Bill is the murderer that he has blood on his hands.

(33) a. For you to refuse to go would demonstrate that you are insincere.

b. *It would demonstrate that you are insincere for you to refuse to go.

If, on the other hand, there is no complement sentence in post-verbal position, then Extraposition is, as usual, permitted:

(34) a. That Bill has blood on his hands proves nothing.

b. It would demonstrate very little for you to refuse to go.

In a non-structure-preserving framework, the ungrammaticality of the b.-sentences in (32)-(33) can only be accounted for by means of an ad-hoc condition on the Extraposition rule. If, however, Extraposition is a structure-preserving movement rule, then this result is completely predictable, since the S-node in the VP in examples such as (32) and (33) is already filled in deep structure, Extraposition is naturally blocked, simply because two constituents cannot occupy the same node simultaneously. The structure-preserving constraint thus makes it unnecessary to place an ad-hoc condition on the Extraposition transformation.

There are other examples of this same general type, some of which I shall mention in the next chapter. It is sufficient to point out here that evidence of this kind provides strong empirical support for the validity of the Structure-Preserving Hypothesis, for without it, these

restrictions can only be accounted for by means of a set of seemingly arbitrary and unrelated conditions on the application of particular transformational rules.

5. Summary

In this chapter, I have tried to summarize, as briefly as possible, the main points contained in the three works mentioned in Section 1. which are essential for an understanding of the theory of syntax and the lexicon which I shall develop in some detail in the main part of this book. What I hope to show is that by integrating the Lexicalist Hypothesis, as well as a number of proposals implicit in the theory of Case Grammar, into the structure-preserving framework, it is possible to arrive at a theory of "deep" grammatical relations, of an unexpectedly powerful sort, the implications of which extend into nearly every area of syntax which has been discussed in the literature of transformational grammar. Aside from the results obtained by applying the theory thus arrived at to the solution of particular syntactic problems, the general approach developed here has, I believe, important consequences with regard to such important theoretical issues as the role of the lexicon in grammar, the relation between syntax and semantics, the status of deep structure and its relation to surface structure, and other problems, most of which will be dealt with in the course of the discussion. None of this would have been possible, however, in the absence of any of the contributions to linguistic theory surveyed, all too briefly, in this chapter.

Additions - Chapter I

[1]Chomsky's paper originally appeared in Jacobs and Rosenbaum (1970), but has recently been reprinted in Chomsky (1972). Fillmore's paper published in Bach and Harms (1968). Emonds' monograph, a 1969 M.I.T. Ph.D. dissertation, is available in mimeographed form from the Indiana University Linguistics Club.

[2]It seems likely that this assumption was, in many cases, motivated by a misinterpretation of a remark made by Chomsky in Aspects to the effect that the lexicon was the storehouse for all information purely idiosyncratic to individual lexical items. To say this is not, of course, to preclude the possibility that there exist systematic relationships between classes of lexical items. However, Chomsky's remark seems to have been interpreted, very often, as meaning that the lexicon (as opposed to the transformational component) was to contain nothing but statements of lexical exceptions to otherwise perfectly general syntactic rules. This view of the lexicon was later formalized (in essence) in Lakoff (1965), who formulated a powerful mechanism for handling exceptions, based on similar proposals in phonology, and then proceeded to use this device as a means for (in effect) classifying lexical items in terms of rule applicability. According to this view all syntactic generalizations of any sort must be expressed in the transformational component of the grammar, with the result that the syntactic distribution of particular lexical items must be expressed entirely in terms of the applicability or non-applicability of supposedly general syntactic rules. The obvious flaw in this theory is that it treats all lexical generalizations as exceptions, on par with the

fact that certain exceptional Verbs such as be in English are conjugated with suppletive forms, rather than in the regular manner, by adding the tense morphemes to a fixed stem. Furthermore, the theory reduces to near-vacuity the claim that transformations express significant syntactic generalizations which apply in an "across the board" manner, with few, if any, lexical exceptions. Such an approach thus eradicates completely the distinction between a true exception to an otherwise general rule, and a syntactic generalization which happens to be formulable only in terms of lexical classes defined in terms of their syntactic distribution.

The misunderstanding alluded to above is significant, historically, since it was the failure of the approach initially advocated by Lakoff which led to the theory now commonly known as "Generative Semantics".

[3]It is worth pointing out that this proposal in fact remedies a defeat in the theory of transformational grammar, which hitherto has lacked a formal definition of the notion "head of a phrase". Without such a notion, the theory makes the incorrect claim that the labels NP, VP, AP have no intrinsic connection with the labels assigned to the lexical categories Noun, Verb, and Adjective, thus predicting that it would be possible to have configurations in which a head Verb is dominated by NP or AP, a head Noun by the phrase-nodes AP and VP, and so forth. See Lyons (1968), for the first discussion of this point that I know of.

[4]See, for example, his statement in Section 7. of "The Case For Case".

[5]It is worth noting, incidentally, that the structure-preserving constraint is already anticipated in the analysis of the Passive presented

in Aspects. By allowing the PP [by Δ] to occur in deep structure as a "trigger" for the Passive transformation, Chomsky was, in effect, arguing that the Passive must be a structure-preserving rule, in contrast to rules such as Subject-Auxiliary Inversion, the form of whose output is determined by the general conventions governing the derived constituent structure produced by "attachment" transformations.

CHAPTER II

BASIC GRAMMATICAL RELATIONS

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0.0. Introduction

I have argued, in the first chapter, that the Lexicalist Hypothesis, combined with the Structure-Preserving Constraint, provides us with a theory of syntax which is more tightly constrained, and hence more adequate empirically, than any which has so far been proposed. Some, though by no means all, of the evidence in favor of such a theory was discussed there. From now on, I shall simply take for granted the existence of these constraints on the theory of grammar. The primary purpose of this study is to explore certain of the consequences which arise as a result of their incorporation into syntactic theory. Of course the results of this exploration, if correct, will necessarily tend to confirm the correctness of our initial assumptions.

More specifically, I shall be concerned throughout this study with two general problems: (1) The "abstractness", in one of the senses in which this term has come to be used in recent years, of grammatical relations; and (2) The nature of lexical representation. Obviously, these two questions are interrelated. Furthermore, the answers which the theory of grammar provides to them are part of the answer to the far more general question: "What is deep structure?" To take only the simplest example, recall that one justification for assuming that there is a single 'abstract' deep structure in English which underlies both the Active and the Passive is the fact that such an analysis removes the necessity for entering both the active and the passive morphological forms

of virtually every transitive Verb in the language in the lexicon, each with its own contextual features. Instead, we need only enter the active form for each Verb, along with its contextual features, since the occurence of the passive forms is completely predictable, given the existence of a passive transformation in the grammar of English. In this case, the decision to increase the "abstractness" of the grammatical relations present in the deep structure of English, as against a less abstract analysis in which, say, the Active and the Passive were analyzed as separate and unrelated constructions, coincides in a significant way with a simplification of the lexicon.

Cases of this sort, where an underlying close similarity in the distribution of two classes of lexical items (i.e. the active and the passive 'forms' of Verbs) can be revealed by a more abstract type of deep structure, are, however, only the most extreme examples of what is in fact a more general problem, namely, how to account for <u>any</u> partial similarity in the distributions of classes of lexical items. We have already noted in Chapter I that any general account of this problem, within the framework of the Lexicalist Hypothesis, must make use of the notion <u>lexical redundancy rule</u>, or its equivalent. Thus, for example, in order to account for the partial similarity of distribution between pairs such as <u>read</u> and <u>readable</u>, it is necessary to set up a redundancy rule which states, in effect, that any NP which may occur as the deep structure Subject of <u>readable</u>. Any adequate treatment of lexical representation must eventually come to grips with the problem of lexical redundancy rules. There is, as Chomsky has termed it, a "trading

relationship" between the complexity and richness of the transformational component of the grammar and the lexicon. Since there can be no a priori insight into the nature of this relationship, it is necessary to bring empirical evidence to bear on the problem. This is one reason why it is important to limit the class of possible transformational rules as tightly as possible, since an independently motivated set of constraints on transformations would provide considerable insight into the nature of this relationship. But evidently the same is true of lexical redundancy rules. One could imagine a theory in which the lexical redundancy rules were powerful enough to perform operations equivalent to those performed by the transformational component. One might even go one step further, given such a grammar, and argue that the theory of grammar would be "simplified" if we simply got rid of the transformational component altogether, leaving only a single type of rule, namely, the redundancy rules. Such a spurious simplification would, of course, be completely unmotivated. Nevertheless, unless severe constraints are placed on the types of redundancy rules allowed in the grammar, there will be no principled way of excluding grammars of this sort.

The ideal situation is obviously one in which both the class of possible transformations and the class of possible redundancy rules are so tightly constrained that the theory itself determines for any given instance of distributional overlap whether it is most appropriately handled in the transformational component of the grammar or in the lexicon. Now the structure-preserving constraint, in combination with the Lexicalist Hypothesis, already provides us with a fairly narrow set of constraints on

the class of possible transformations; so the question arises whether it is possible to constrain the power of the lexicon in a similar way. One goal of this study is to demonstrate that the application of the structure-preserving constraint to certain facts of English does, in fact, lead to a substantive and rather natural constraint on the power of lexical redundancy rules. However, in order to show this, it will be necessary to argue that the grammatical relations present in deep structure, even within the rather narrowly defined scope of a grammar which is subject to the structure-preserving constraint, are considerably more abstract than has hitherto been suspected. The argument is actually somewhat stronger than one of mere possibility, for it will become evident that the more abstract deep structures which I shall propose arise from the structure-preserving constraint in an entirely natural and convincing way. Herein lies the main difference between my proposals and those proposals for more abstract deep structures which have appeared in a great deal of the recent literature, notably those of Fillmore, Ross, McCawley, Lakoff, Postal, and others. The trouble with most of this work, interesting as it is, has been that typically there is little syntactic support for the proposed analyses, other than that which is provided by the evidence of selectional restrictions. But, as has been noted by Chomsky (1965), any analysis which is supported solely by arguments based on selectional restrictions can, in principle, be handled equally well in the lexicon, by means of lexical redundancy rules, or, alternatively, in the semantic component of the grammar. In fact, in the absence of any compelling independent syntactic justification for a more abstract deep structure, it is proper to argue that the

phenomenon in question should be taken care of by some part of the grammar other than the transformational component.

Returning to the main point, in this and the succeeding chapters, I shall attempt to show that within the framework of a structure-preserving grammar there are strong arguments supporting the view that deep structure grammatical relations are considerably more abstract than has usually been claimed. In a number of instances, the analyses which I shall propose have a superficial similarity to analyses which have been proposed for English within the framework (loosely speaking) of Generative Semantics. However, it should be born in mind that my arguments are purely syntactic and that the analyses proposed are syntactic analyses of English. They are not to be construed as making any claims about the form of universal semantic representations. To be sure, the theory which I am proposing, if correct, will turn out to have implications for the relation between syntax and semantics: these matters will be left, however, to the last chapter. In addition to the purely syntactic arguments supporting this theory, it will be shown, as mentioned above, that the theory leads to interesting claims about the form of lexical redundancy rules, leading ultimately to a reduction in the power of such rules and therefore to greater descriptive adequacy in the grammar as a whole.

1.0. Transitive and Intransitive Pairs

It is a well-known fact that in English, as in many other languages, there are Verbs which may appear in either transitive or intransitive sentences, with the Objects of the former appearing in the Subject position in the latter. Consider, for example, pairs of sentences such as the

following:

(1) a. John rolled the ball down the hill.

b. The ball rolled down the hill.

(2) a. The fairy god-mother turned the pumpkin into a coach.

b. The pumpkin turned into a coach.

(3) a. Mary dropped a pebble into the water.

b. A pebble dropped into the water.

(4) a. John grew the corn in his back yard.

b. The corn grew in John's back yard.

(5) a. Bill drained the water out of the tank.

b. The water drained out of the tank.

(6) a. The sun melted the ice slowly.

b. The ice melted slowly.

(7) a. The company improved the quality of its product.

b. The quality of the company's product improved.

(8) a. John split the log in two.

b. The log split in two.

(9) a. Mary burned the paper in the fireplace.

b. The paper burned in the fireplace.

(10) a. John opened the door slowly.

b. The door opened slowly.

(11) a. They dispersed the crowd.

b. The crowd dispersed.

In each of these examples the Noun Phrase which is the Object of the Verb in the a.-sentence appears in the Subject position in the b.-sentence. Yet

it is clear that the grammatical relation of the NP to the main Verb is the same in both cases. This is shown, for example, by the fact that the selectional restrictions governing the NP are the same:

(12) a. *The idea rolled down the hill.

b. *John rolled the idea down the hill.

(13) a. *They dispersed Bill.

b. *Bill dispersed.

(14) a. *John opened the fact.

b. *The fact opened.

Note particularly that there can be no doubt that the relation between these pairs of transitive and intransitive sentences is a syntactic relation. It has been argued by Gruber (1965) that there is in fact a common semantic characterization of the Verbs in question, which he indicates by the marker "Motional". However, the term, as he uses it, seems to be so broad as to include virtually any Verb which refers to a change of state, including Verbs which involve physical motion (roll, drop, open), changes of physical state (freeze, melt, burn), as well as Verbs involving some kind of abstract change of state (turn, transform, change, alter, switch, etc.), and even Verbs involving transfer of possession (cf. John sold the book for $20, the book sold for $20). It may indeed be the case that all Verbs which have the syntactic property in question share some abstract semantic property such as "change of state"., but the converse is certainly not true. Thus we have John bought the book for $20, but not *the book bought for $20. Likewise, John kicked the ball down the hill, but not *the ball kicked down the hill, in contrast to the

Verb roll; and John crawled into the room, but not *Mary crawled John into the room, in contrast with walk, where we have both the dog walked out of the room and John walked the dog out of the room. Thus, while it may be possible to predict certain of the semantic properties of these Verbs, given the syntactic properties which they share, it does not seem to be the case that we can predict the syntactic properties solely on the basis of a knowledge of their semantic properties.

The question is, then, how are we to account for the regular behavior of these Verbs? How, that is, are we to account for the fact that for Verbs such as roll the Subject of an Intransitive sentence has the same grammatical function as the Object of a Transitive sentence? There are two possible approaches. One is to use lexical redundancy rules; the other is to attempt to find a solution within the transformational component of the grammar. If we choose the first alternative, then the deep structures of the a. and the b.-sentences above will be essentially the same as their surface structures, and we will need a lexical redundancy rule of roughly the following form:

(15) NP_1 ___ NP_2 (by Δ) $\longrightarrow$ NP_2 ___

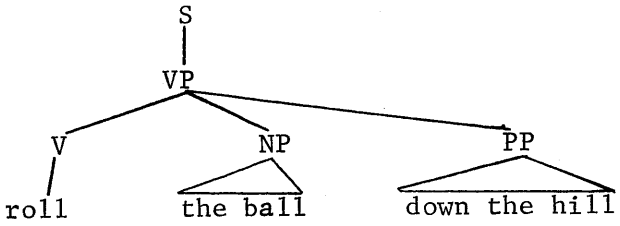
where this notation is intended to indicate that Verbs of this class which may appear in the environment on the left may also appear in the environment on the right. Notice, however, that (15) is an extremely powerful sort of rule. In order to see just how powerful, it is perhaps sufficient to observe that using such rules, it would probably be possible to eliminate the Passive transformation in favor of a "lexical redundancy rule" of the following form:

(16) NP_1 ___ NP_2 ⟶ NP_2 ___ by NP_1

The only transformation which would be needed would be a rule inserting (be+EN) in the presence of the by-phrase. It is not at all obvious how such spurious "simplifications" of the transformational component could in principle be eliminated, as long as lexical redundancy rules of this power are allowed in the grammar.

Since it would be desirable, if at all possible, to restrict the scope of lexical redundancy rules, let us consider the alternative, which would be to devise a transformational solution to the problem. Such a solution has already been considered by Hall (1965), who entertained the notion of deriving the Intransitive b.-sentences above from "Subjectless" sentences in deep structure, so that (1) b., for example, would have the following form:

(17)

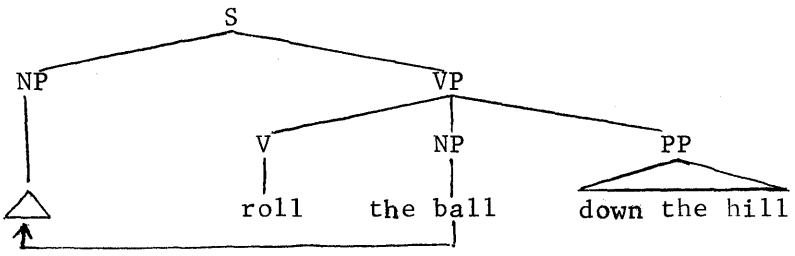


The deep Object, the ball, would then be moved by a transformation into its surface position as the Subject of the sentence. Although Hall was able to find some marginal support for the proposal, she was finally forced to doubt its validity for the following reasons: (1) There is no independent motivation for the Subject-formation rule; (2) Giving up the generalization that the Subject position in deep structure is obligatory entails a great deal of complication in the grammar, in order to prevent the generation of Subject-less variants of virtually every sentence in the

language.

Observe, however, that in a grammar which incorporates the structure-preserving constraint, (2) is no longer a problem, since it is possible now to generate empty nodes in certain positions in deep structure. This means that we can assign the following deep structure to a sentence such as (1) b.:

(18)

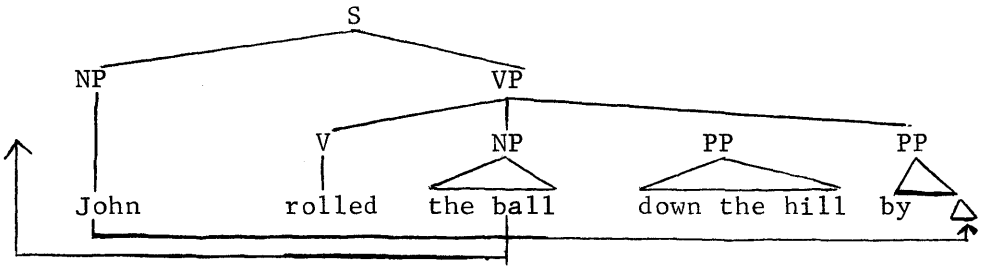


A structure-preserving rule, whose effect is indicated by the arrow in (18), will then apply, moving the Object-NP the ball into its surface position as the Subject of the sentence. Evidently, this proposal succeeds in accounting for the fact that the ball is the logical Object of roll, without our having to give up the important generalization that the Subject-NP is obligatory in English.

Even more important is the fact that it is now possible to find independent motivation for the rule which moves the Object of Verbs such as roll into the Subject position. Recall that in earlier work within the framework of generative grammar, it was generally assumed that the Passive was a single rule which replaced the dummy Object of the by-phrase with the Subject NP, and simultaneously adjoined the Object-NP to the left of the VP. More recently, however, some very strong arguments have been advanced (cf. Chomsky (1970 and Emonds (1969)) in favor of the view that the two parts of the Passive are in fact separate rules, both of which have

the structure-preserving property. Following Chomsky (1970), let us call the two components of the Passive Agent-Postposing and Object-Preposing, respectively. Then, assuming that the structure of a sentence such as (1) a. is roughly as follows:

(19)



The two rules would operate as indicated in (19) by the arrows. But now observe that the second component of the Passive, namely Object-Preposing, is identical to the operation which we need in order to move the Object into the Subject position in (18). Since Object-Preposing is needed in the grammar in any case, and since the rule which is needed to derive (1) b. from the deep structure (18) is formally identical to it, it follows that independent motivation is no longer a problem. In fact, our proposal does not add to the complexity of the transformational component at all.

But there is still further support for the deep structure (18). It has been pointed out by Chomsky (1969) that the two components of the Passive apply not only in the domain of the sentence, but also in the domain of the NP. Thus from the deep structure (20):

(20) the enemy's destruction of the city

we can derive by means of Agent-Postposing the surface form (21):

(21) the destruction of the city by the enemy

and then optionally, by means of Object-Preposing, the alternative surface form (22):

(22) the city's destruction by the enemy

Furthermore, the rule of Object-Preposing in NP's obtains independent motivation from the entirely unrelated variants:

(23) a. the picture of John

b. John's picture

the second of which is derivable from the first by the same formal operation. But now notice that corresponding to the Intransitive sentences:

(24) a. The ball moved across the table.

b. The corn grew.

we find two surface variants of the NP:

(25) a. The ball's movement across the table.

b. The movement of the ball across the table.

(26) a. The corn's growth.

b. The growth of the corn.

Thus, not only do we find an exact analogue in NP's to the application of Object-Preposing in the derivation of Intransitive sentences such as (1)-(11) b., but furthermore the putative deep structure of these sentences actually shows up in surface structure in the domain of the NP, as shown in (25) b. and (26) b.

Regarded in this light, the fact that there happens to be no surface form such as roll the ball down the hill (non-Imperative), but only the variant The ball rolled down the hill, turns out to be a consequence of the generalization that at the level of deep structure the Subject-NP is obligatory in English. In NP's, on the other hand, where a 'Subject'-NP is not obligatory, the deep structure form the movement of the ball, as

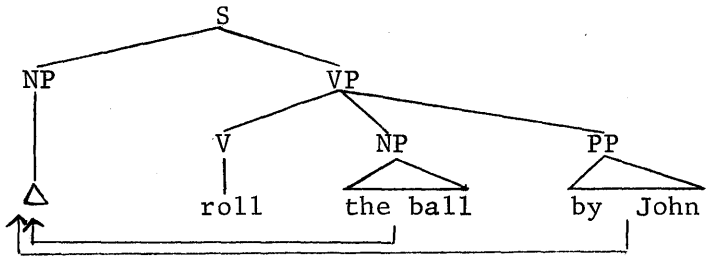
well as the variant the ball's movement (produced by the application of Object-Preposing), is allowed to emerge at the level of surface structure. Notice, however, that these generalizations only hold in a grammar which is constrained in accordance with the structure-preserving hypothesis, by virtue of which it is possible for empty nodes to be generated in deep structure. This fact is important, not only because it lends further support to the validity of the structure-preserving hypothesis, but also because it demonstrates that a theory which constrains the power of transformational rules can lead directly to interesting and substantive claims about deep structure, which cannot be verified in a weaker theory, in which the power of transformational rules is relatively unconstrained. This in turn illustrates that, at this point, the more narrowly we can constrain the class of possible grammars available to the learner of a natural language, the better our chances are of coming up with a theory which has some empirical content, i.e. which makes significant and empirically verifiable claims about the nature of the man's lingustic abilities.

2.0. The Agent of the Passive

We have just seen that there is motivation, within the structure-preserving framework, for deriving the surface Object of transitive sentences and the surface Subject of Intransitive sentences, in examples such as (1)-(11), from the same source in deep structure. At the same time it was simply taken for granted that the surface Subject of the Transitive sentences was to be derived from the Subject position in deep structure. There is, however, some evidence against this assumption. Suppose instead that we were to derive a sentence such as John rolled the ball, and likewise

its Passive variant the ball was rolled by John, from a deep structure in which the Agent-phrase was contained in the by-phrase. We would then have, instead of (19), a structure of the following form:

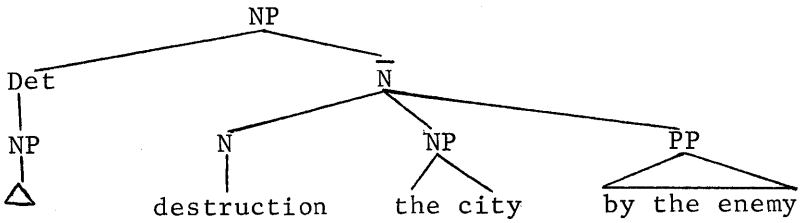
(27)



To this structure would apply one of the two operations indicated by the arrows: Object-Preposing, which would derive the Passive form, or Agent-Preposing, which would derive the Active form. This analysis has a number of advantages. First, as noted by Emonds (1969), it allows us to remove an ad-hoc condition on Object-Preposing. In order to prevent the illegitimate use of empty nodes in deep structure, it is necessary to impose the condition that any empty node must be filled (or else deleted) at some point in the derivation. This will ensure that only those nodes which are filled in by some transformation in the course of the derivation will be allowed to emerge as well-formed surface structures. But notice that if the Agent of the Passive is derived from the Subject position in deep structure, this condition will not block the ill-formed surface structure *roll the ball by John, since the Subject-NP, though empty, was filled before the application of Agent-Postposing, and hence qualifies as well-formed. This poses no problems in NP's, since we do, in fact, find intermediate forms such as the rolling of the ball by John. Thus it is necessary to specify that Object-Preposing be obligatory in Sentences, though not in NP's. If, on the other hand, we were to adopt the deep structure (27),

this condition would no longer be necessary, for if neither Agent-Preposing nor Object-Preposing were to apply, we would be left at the end of the derivation with an empty Subject-NP which had never been filled, and hence the derivation would be blocked by the condition just stated. The same thing would happen in NP's. Thus a nominal such as the enemy's destruction of the city, as well as the 'passive' form the city's destruction by the enemy, would both be derived from a deep structure of the following form:

(28)



The fact that we do get the intermediate form the destruction of the city by the enemy in NP's would then be accounted for by the fact that the NP which appears in the 'Subject' position in NP's is not obligatory, in contrast to sentences, for which a Subject-NP is required.

Another argument, also due to Emonds (1969), for distinguishing between Agent-phrases and Subject-phrases in deep structure, has to do with the fact that in certain cases the "pseudo-passive" is only possible when the NP which appears in the by-phrase is Animate. Consider, for example, the following sentences:

(29) a. The thief slipped into the closet.

b. The soap slipped into the closet.

c. The closet was slipped into by the thief.

d. *The closet was slipped into by the soap.

(30) a. The bird flew across the room.

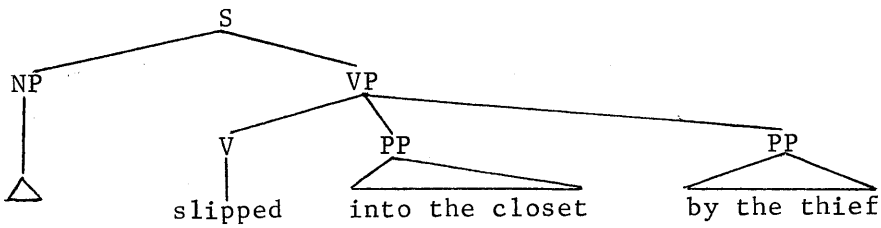
b. The book flew across the room.

c. The room was flown across by the bird.

d. *The room was flown across by the book.

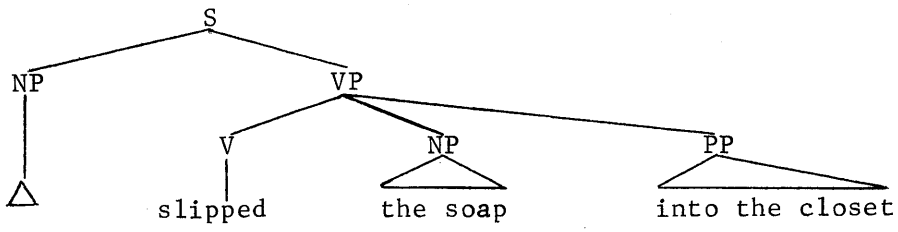
The Passive forms d. are impossible, because the NP's the book and the soap are Inanimate, and therefore incapable of being true Agents. The c.-sentences, on the other hand, are grammatical, and have only the Agentive interpretation, in contrast to the a.-sentences, which are ambiguous, having one interpretation under which the thief and the bird are true Agents and another under which they are interpreted non-agentively. These facts suggest that the a.-sentences, in the Agentive interpretation, be derived from a deep structure such as the following:

(31)



from which either a Passive or an Active surface structure could be derived. The b.-sentences, on the other hand, would be derived from structures of the following sort:

(32)



to which only Object-Preposing would be applicable. Note that slip is like roll, so that we also have the sentences:

(33) a. The thief slipped the soap into the closet.

b. The soap was slipped into the closet by the thief.

thus providing further support for the correctness of (32).

Observe that one immediate consequence of the analysis just proposed is that it is necessary to specify for the Verbs of this class that the Subject-NP in deep structure is empty, i.e. that it dominates the null symbol $\triangle$. Otherwise, it would be possible to generate such ungrammatical strings as *Bill rolled the ball by John. In fact, it is generally the case that a part of the subcategorization conditions for lexical items must state not only in what syntactic environment the item may appear, but also which of the category nodes which appear in the environments are filled and which are unfilled. Note that this is not all innovation in the theory of grammar. For example, in the standard analysis of the Passive, it is assumed that the Passive transformation is triggered by the presence of a by-phrase, whose Object-NP is unspecified, i.e. which dominates the null terminal symbol. The passive transformation then replaces this NP with the Subject-NP, as well as performing other familiar operations. It is the claim of the structure-preserving hypothesis that all transformations, with the exception of root transformations and minor movement rules, are of just this sort. The theory thus attempts to limit the types of operations available in the transformational component, with the exceptions noted above, to a subset of those which have been used in previous formulations of the theory of grammar. In order to have a consistent

notation for both the statement of structure-preserving transformations and for the statement of subcategorization conditions, let us adopt the convention that a category node which is underlined, e.g. NP, VP, V, N, etc., is to be interpreted as filled, while nodes which are not underlined are to be interpreted as unfilled. Using this notation, we can then indicate the syntactic environments for the Transitive and Intransitive uses of the Verb roll, respectively, as follows:

(34) NP ___ NP (PP) by NP

(35) NP ___ NP (PP)

(34) is to be interpreted as saying that roll may appear in a deep structure tree having an unfilled Subject-NP, a filled Object-NP, optionally a filled PP, and finally a PP with the Preposition by and a filled Object-NP. But now observe that (34) and (35) can be collapsed into a single subcategorization statement by means of the parenthesis notation:

(36) roll: NP ___ (PP) (by NP)

Now let us compare (34) and 35) with the subcategorization conditions which we would need if the Agent of the Passive were to be derived from the Subject position in deep structure:

(37) a. NP ___ NP (PP) (by NP)

b. NP ___ NP (PP)

Obviously conditions (37) a. and (37) b. cannot be collapsed in the same manner. The only way of stating the fact that there is a relationship between the two environments would be by means of a redundancy rule which would have to say, in effect, "the Verb roll may have an (unfilled) Agent phrase, if and only if the Subject position is filled." However, this

statement of the facts only obscures the real generalization, expressed directly in (36), that a Verb such as roll, unlike a Verb such as slug, which always has an Agent in deep structure, may optionally have an Agent in deep structure.

What these observations suggest is that the use of lexical redundancy rules should be restricted to just those cases in which subcategorization conditions can be collapsed by means of parentheses, braces (as we shall see later), or some combination of the two. Such a condition whould have the effect of ruling out powerful lexical redundancy rules of the kind mentioned earlier in II.2., resulting in a much narrower, and therefore more substantive theory of grammar. As a universal condition, then, on the form of lexical redundancy rules, we shall tentatively adopt the following hypothesis:

(38) Lexical redundancy rules may be used to relate subcategorization conditions, if and only if the conditions in question can be collapsed by means of parentheses and braces.

It should be pointed out that condition (38) applies only to language-specific redundancies. Thus it would not prevent, for example, the formulation of universal redundancy rules of a kind which could not be abbreviated by means of parentheses and braces.

3.0. The Deep Structure Subject

Notice that if the analysis just proposed is to be maintained, it is crucial to show that there is independent motivation for the existence of the Subject-NP in deep structure. For a structure-preserving rule, by definition, may only move a node X to a position where a node of the

same kind can be motivated in the phrase-structure rules, for reasons that are independent of the rule in question. The last clause is clearly necessary, if the notion 'structure-preserving rule' is to have any empirical content, since otherwise it would be possible to set up empty nodes in deep structure in any position whatsoever, with the result that 'structure-preserving rule' would simply be a terminological variant of the notion 'transformational rule.' We must, therefore, demonstrate that the empty Subject-NP's which we assumed in the deep structures of the preceding section were not set up ad hoc for the sole purpose of forcing the two components of the Passive into the form of structure-preserving rules. In fact, the motivation for a Subject position in deep structure is considerable, as we shall see in the course of this chapter.

3.1. Transitive Verbs with Deep Subjects

Let us begin by considering examples of the following sort:

(39) a. John hit Bill.

b. A rock hit Bill.

(40) a. John was touching the table.

b. The chair was touching the table.

(41) a. John struck the window.

b. A stray bullet struck the window.

(42) a. John revealed the secret.

b. The document revealed the secret.

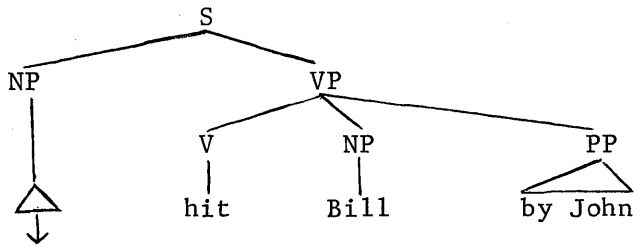
(43) a. John broke the window.

b. A piece of shrapnel broke the window.

It is a well-known fact of English grammar that a.-sentences in (39)-(43) are ambiguous, depending on whether the Subject is interpreted as agentive

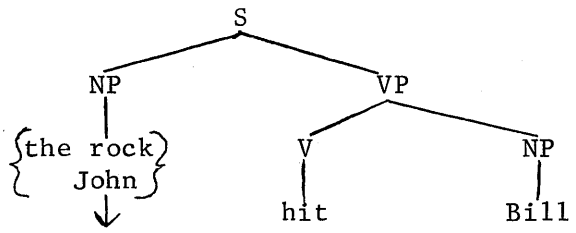
or non-agentive. Sentence (39) a., for example, can mean either that John deliberately performed some action which resulted in Bill's being struck, or simply that John's body came roughly into contact with Bill's through no volition of his own, as would be the case if, say, John had been thrown against Bill by an explosion. Similarly, (40) a. could mean either that John was engaged in touching the table, or simply that some part of John's body was in contact with the table. Notice that the b.-sentences, in which the Subjects are inanimate, are unambiguous and have only the non-Agentive interpretation. Given that we have a distinction in deep structure between the Subject-NP and the Agent-NP, it would be natural to suggest that the ambiguity of sentences (39)-(43) a. be accounted for by deriving the surface Subject from the by-phrase in deep structure in the one case, and from the Subject position in the other case. The b.-sentences, on the other hand, would have only one source in deep structure, one in which there is a deep Subject-NP. Thus sentence (39) a., in its Agentive interpretation, would derive from the following sort of deep structure:

(44)



while both (39) b. and (39) a., in its non-Agentive interpretation, would derive from a structure of roughly the following kind:

(45)



Corresponding to these two deep structures would be the following subcategorization conditions, associated with the Verb hit:

(46) hit: { NP ___ NP
NP ___ NP by NP }

Notice that, as they stand, these two subcategorization conditions cannot be collapsed by means of the parenthesis or braces notation. Whether or not this is a defect in the theory is a question that we shall return to later on.

Consider next pairs of sentences such as the following:

(47) a. John is annoying me.

b. John's bad manners are annoying me.

(48) a. Mary reminded me of my appointment.

b. Seeing Mary reminded me of my appointment.

(49) a. Bill worries me.

b. Bill's forgetfulness worries me.

(50) a. John is amusing the children.

b. John's antics are amusing the children.

(51) a. Bill frightened everyone.

b. Bill's wild behavior frightened everyone.

The a.-sentences in (47)-(51) are ambiguous in exactly the same way as the corresponding sentences in (39)-(43). That is, the surface Subject may

be interpreted either agentively or non-agentively. Furthermore, the b.-sentences, whose Subjects are non-Animate, are unambiguous and have only the non-Agentive interpretation, just as we would expect. Again, it would be possible to explain this ambiguity under the assumption that the surface Subject in these examples can be derived from either the Subject position in deep structure, or from the by-phrase.

Notice that the distribution of adverbs such as deliberately, intentionally, on purpose, with malice aforethought, and so on, provides additional support for this analysis. The occurrence of these Adverbs in the a.-sentences of both (39)-(43) and (47)-(51) invariably disambiguates them in favor of the agentive interpretation, while the b.-sentences become ungrammatical in their presence:

(52) a. John deliberately hit Bill on the head.

b. *A rock deliberately hit Bill on the head.

(53) a. John intentionally struck the window.

b. *A stray bullet intentionally struck the window.

(54) a. John broke the window on purpose.

b. *A piece of shrapnel broke the window on purpose.

(55) a. John is deliberately annoying me.

b. *John's bad manners are deliberately annoying me.

(56) a. John amused the children on purpose.

b. *John's antics amused the children on purpose.

(57) a. John frightened everyone with malice aforethought.

b. *John's wild behavior frightened everyone with malice aforethought.

These facts can be explained by means of a restriction limiting the occurrence of Adverbs of this class to sentences containing an Agent phrase in deep structure.

3.1.1. Non-Agentive Passives

There are, however, certain problems raised by the analysis just proposed. Consider, for example, the fact that many of the sentences in question have grammatical Passive forms:

(58) a. Bill was hit by a rock.

b. The table was being touched by the chair.

c. The window was struck by a stray bullet.

d. The window was broken by a piece of shrapnel.

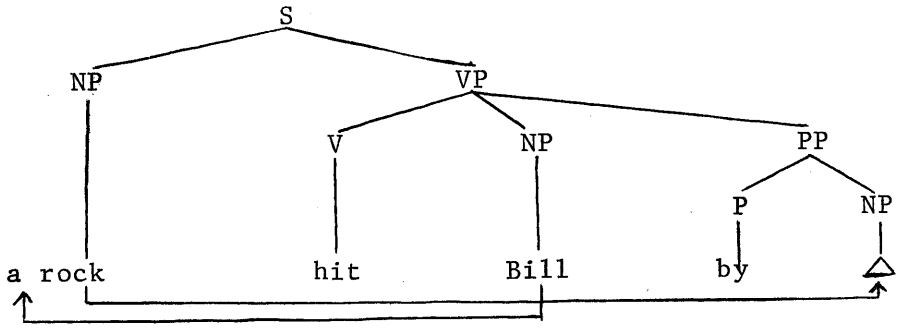
e. I was reminded of my appointment by seeing Mary.

f. I am sometimes amused by his antics.

g. We were startled by John's resemblance to Mary.

It might be argued that the existence of such sentences constitutes counter-evidence to the view that the Subject-phrase and the Agent-phrase are separate grammatical relations in deep structure. However, that is not so. All that these sentences show is that it is false to assume that the Object of the by-phrase in surface structure can have no other source than the corresponding position in the Agent-phrase in deep structure. In other words, nothing that we have said so far prevents us from including in the subcategorization conditions for these Verbs the possibility of there being an empty by-phrase. Thus we could assign the following deep structure to a sentence such as (58) a.:

(59)



The operation indicated by the arrow would then apply to (59), followed by Object-Preposing, and the result would be the correct surface structure of (58) a. Since the empty Agent-phrase in this case is optional, we can combine the subcategorization feature which is necessary with the first part of (46), giving us the revised condition:

(60) hit: { NP ___ NP (by NP) / NP ___ NP by NP }

3.1.2. Two-way rules

Notice that this analysis, if correct, requires that there be two rules in the grammar, one--Agent-Preposing--which moves the Object of the by-phrase into an empty NP in the Subject-position, and another--Subject-Postposing, say--which moves the Subject into an empty NP in the by-phrase. These two rules are obviously the same rule except that one is the reverse of the other. It might be argued, therefore, that the proposed analysis leads to what is essentially a needless duplication of rules in the grammar, and should be rejected on the grounds of descriptive inadequacy. This conclusion, however, is unwarranted, for it rests on a particular interpretation of the notion "structure-preserving rule." This counter-argument is only valid if it is assumed that structure-preserving rules are, in the obvious sense, one-way rules--if, in other words, such rules

are only allowed to move lexical material from a position beneath one node to a position beneath another (empty) node of the same kind. However, there seems to be absolutely no reason to constrain the operation of structure-preserving rules in this fashion. In fact, it seems entirely natural to suppose that rules of the structure-preserving type, whose only real effect is to transfer lexical material from beneath one node of category X to a position beneath another node of the same category, should be defined in such a way as to allow them to operate in either direction. Structure-preserving rules thus stand, in this respect, in direct contrast to Root transformations, such as Subject-Auxiliary Inversion, Topicalization, and so on, which could not naturally be formulated so as to apply in either direction.

Given this definition of the notion "structure-preserving rule," it follows that the two rules which we have been calling Agent-Preposing and Subject-Postposing, respectively, are in fact the same rule. The direction in which the rule operates is determined by t e form of the deep structure to which it applies. Thus, if the Subject-NP in deep structure is filled, as is the case in (59), and the Object of the by-phrase is unfilled, then the rule will move the lexical material in the Subject position into the by-phrase; if the Object of the by-phrase is filled in deep structure and the Subject-NP is unfilled, then the rule will operate in the opposite direction. Notice that which NP is filled and which is unfilled has already been determined, in the case of hit, touch, remind, etc., by the subcategorization conditions which we have assigned to them. Thus condition (60) determines that hit may appear in any of the three deep

structure configurations (44), (45), and (59). Only Agent-Preposing may apply to (44) (or, alternatively, Object-Preposing); neither Agent-Preposing nor Subject-Postposing may apply in (45); and only Subject-Postposing, followed by Object-Preposing, may apply in (59).[1]

3.1.2.1. Independent Motivation for Two-way Rules

The need for structure-preserving rules which can apply in either direction arises at other points in the grammar. For example, it is pointed out in Bowers (forthcoming) that in addition to the rule of Object-Preposing, which applies in NP's and which relates the derived nominals in (61):

(61) a. The destruction of the city.

b. The city's destruction.

as well as nominals with a relational head Noun, such as (62):

(62) a. The picture of John.

b. John's picture.

there is also considerable motivation for a rule which has just the reverse effect. This rule is needed to account for the relationship between triples of the following sort:

(63) a. the refusal by John to leave

b. John's refusal to leave

c. the refusal of John to leave

(64) a. the attempt by the prisoners to escape

b. the prisoners' attempt to escape

c. the attempt of the prisoners to escape

The NP's John and the prisoners in these examples are clearly derived from

the Agent-phrase in deep structure, as is shown by the fact that they can only be Animate:

(65) a. *the refusal of the rock to leave

b. *the rock's refusal to leave

c. *the refusal by the rock to leave

(66) a. *the attempt by the rock to escape

b. *the rock's attempt to escape

c. *the attempt of the rock to escape

as well as by the fact that they can occur with Adjectives such as deliberate, intentional, etc.:

(67) a. the deliberate refusal by John to leave

b. John's deliberate refusal to leave

c. the deliberate refusal of John to leave

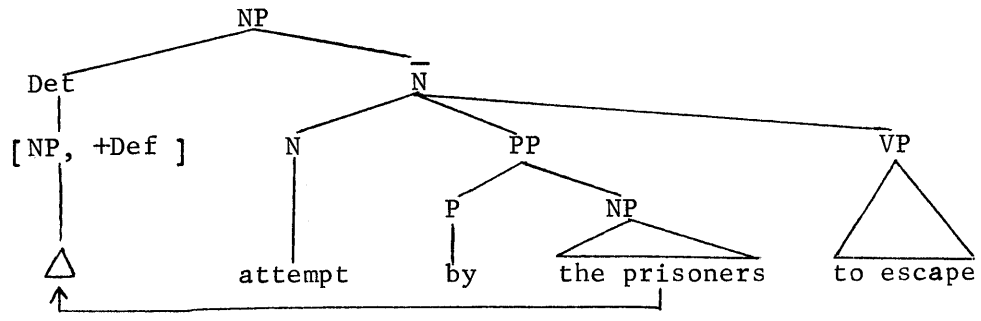
(68) a. the deliberate attempt by the prisoners to cause a riot

b. the prisoners' deliberate attempt to cause a riot

c. the deliberate attempt of the prisoners to cause a riot

Assuming, then, that in deep structure these phrases are derived from structures corresponding to the a.-sentences, of the following form:

(69)



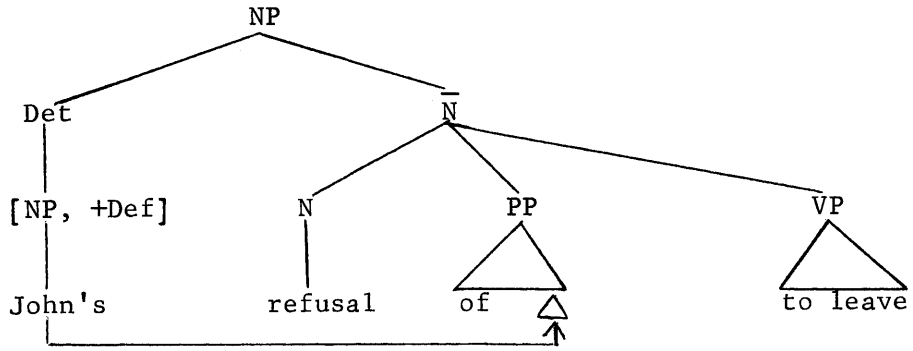
then clearly, the b.-sentences can be accounted for quite straightforwardly by means of Agent-Preposing applying in the NP, as shown in (69). But what

about the c.-sentences? If we were to assume that Object-Preposing could apply in NP's in the reverse direction, and that Nouns such as refusal and attempt were subcategorized in the lexicon with an empty of-phrase, then it would be possible to avoid the ad-hoc rule changing by to of that was proposed in Chomsky (1970) to account for this data. We would thus have the following subcategorization condition for refusal:

(70) refusal: (NP)___ (of NP) by NP S

After the application of Agent-Preposing, we would have the following sort of structure:

(71)



to which the inverse of Object-Preposing would automatically apply, as shown in the diagram.[2]

Notice that under the structure-preserving hypothesis, this analysis immediately accounts for the following difference between the Nouns refusal and attempt, when the NP contains an Object rather than a sentential complement:

(72) a. the refusal of the offer by John

b. John's refusal of the offer

c. *the refusal of John of the offer

(73) a. the attempt on John's life by the prisoner

b. the prisoner's attempt on John's life

c. the attempt of the prisoner on John's life

In (72) the of-phrase is already filled in deep structure, and the inverse of Object-Presposing is therefore prevented from applying. In (73), however, the PP-Object of attempt must appear in an on-phrase, and so the of-phrase can remain empty, thus allowing the inverse of Object-Preposing to apply. These facts cannot be explained if the c.-sentences are derived by means of a by to of rule. Note that the well-known ambiguity of the phrase the shooting of the hunters can only arise when the Noun shooting has no Object, because shooting patterns like refusal:

(74) a. the shooting (of the hunters) by the rancher

b. the rancer's shooting (of the hunters)

c. *the shooting of the rancher of the hunters

d. *the shooting of the hunters of the rancher[3]

Furthermore, there is entirely independent evidence for the existence of an inverse to Object-Preposing. Note that under the Lexicalist Hypothesis we would expect to find, corresponding to sentences containing simple Predicate Adjectives, nominals in which the Subject appears as a Possessive NP. This expectation is borne out, as the following examples show:

(75) a. the table is wide

b. the table's width

(76) a. Mary is beautiful

b. Mary's beauty

(77) a. Bill is perverse

b. Bill's perversity

But now observe that we also find the following surface structure alternates, in which the 'Subject' of the nominal has been moved into the 'Object' position:

(78) a. the width of the table

b. the beauty of Mary

c. the perversity of Bill

Note also that when the Object of a transitive Adjective requires the Preposition of, we do not get postposing of the Object in the nominal, whereas when the Object takes some other Preposition, we do:

(79) a. Bill is afraid of heights

b. Bill's fear of heights

c. *the fear of Bill of heights

(80) a. the child depends on its parents for security

b. the child's dependence on its parents for security

c. the dependence of the child on its parents for security

Again, this result is predicted by the structure-preserving hypothesis. There is still further motivation for the inverse to Object-Preposing, to which we shall return in Section 3.2.

3.1.2.2. Formalizing the notion "two-way rule"

It appears, then, that there is considerable support for the idea that

some structure-preserving rules may apply in either direction, or, to put it slightly differently, that there exist pairs of structure-preserving rules which are inverses of one another, in the obvious sense.

Clearly, a rule which has an inverse is more general than one which does not, and we would like this fact to be reflected in the grammar in some formal way. There is thus a parallel here with the use of braces and parentheses in phonology to capture the fact that certain rules are more general than other rules. Recall that in section 2.0. we introduced a notation for indicating in subcategorization frames whether a node was to be filled or unfilled in deep structure. This same device can be used in stating structure-preserving transformations. Thus we could state Agent-Preposing, for example, in the following manner:

(81) X - NP - V - Y - by NP - Z $\Longrightarrow$ X - NP - V - Y - by NP - Z

Rule (81) is to be interpreted as meaning that the lexical material dominated by the NP which is the Object of the Preposition by is to be moved into the empty NP in the Subject position, leaving the Agent-NP empty. Now observe how the inverse rule, Subject-Postposing, would have to be formulated:

(82) X - NP - V - Y - by NP - Z $\Longrightarrow$ X - NP - V - Y - by NP - Z

Clearly, these two rules can combine into a single rule simply by replacing the single-headed arrow by a double-headed arrow, as follows:

(83) X - NP - V - Y - by NP - Z $\Longleftrightarrow$ X - NP - V - Y - by NP - Z

The same device can be used to collapse Object-Preposing in NP's with its inverse:

(84) X - [NP, +Def] - N - NP - Y $\Longleftrightarrow$ X - [NP, +Def] - N - NP - Y

A rule such as Dative Movement, on the other hand, which only operates in one direction, would be stated with a single-headed arrow:

(85) X - NP - NP - $\begin{Bmatrix}\text{to}\\ \text{for}\end{Bmatrix}$ NP - Y $\Longrightarrow$ X - NP - NP - $\begin{Bmatrix}\text{to}\\ \text{for}\end{Bmatrix}$ - NP - Y

Notice that this notation automatically precludes the use of structure-preserving permutation transformations, since there would be no way of indicating that the lexical material beneath two filled nodes of the same category had exchanged positions. This is a point to which we shall return later. It appears that there are good reasons for wishing to include permutation transformations altogether from the theory of universal grammar - or at least to make the statement of such rules extremely costly in terms of the evaluation measure. We simply note here that the notation just proposed, in addition to reflecting the greater generality of "two-way" rules, as opposed to "one-way" rules, also has the effect of excluding permutation rules.

3.1.3. Passivized Adjectives

We return now to consider briefly another problem which is raised by the analysis of the Verbs presented in Section 3.1. It has been noted by a number of people (cf., for example, Postal (1968), pp. 35-47) that the true Passive of Verbs such as annoy, frighten, worry, amuse, etc., where we are speaking now only of the non-Agentive interpretation, can, in many instances, be confused with a similar construction in which the apparent Passive VP is really an AP. That such constructions really are AP's is proven by the fact that they can take Adjectival modifiers such as very, so, too, enough, and so on. Thus compare the following:

(86) a. *The window was very struck by the stray bullet.

b. *I was very reminded of my appointment by seeing Mary.

(87) a. Everyone was very frightened by John's wild behavior.

b. I was so bored by his stories that I fell asleep.

c. Mary was too startled by John's appearance to be able to speak.

d. We are very annoyed by your bad manners.

Notice that these Passive Adjective forms can only occur when the NP in the by-phrase is interpreted non-Agentively, i.e. when it derives from the Subject position in deep structure. This is shown by the fact that when the Agentive interpretation is made unambiguous by the introduction of an Adverb such as deliberately, the Adjectival modifiers so, too, etc. cannot occur:

(88) a. *Everyone was deliberately very frightened by John.

b. *We were very bored by John on purpose.

c. *Mary was deliberately so startled by John that she screamed.

d. *We were intentionally very annoyed by John.

(Actually, it is generally the case that AP's cannot occur with deep structure Agent-phrases, a fact which in itself further supports the Agent/Subject distinction that we are trying to motivate.) We next observe that just those Verbs which have a Passive Adjective form also have derived Adjectives with the suffix -ing:

(89) a. John's wild behavior was very frightening to everyone.

b. His stories were so boring to me that I fell asleep.

c. John's appearance was too startling to Mary for her to be able to speak.

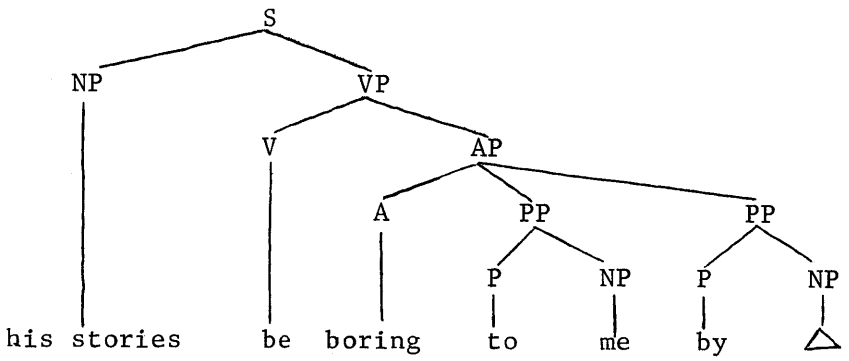
d. Your bad manners are very annoying to us.

e. *The stray bullet was very striking to the window.

f. *Seeing Mary was very reminding to me of my appointment.

Notice that sentences (89) a.-d. provide independent evidence in favor of the view that the Subjects of the corresponding sentential forms are derived from the Subject position in deep structure, since, according to the lexicalist hypothesis, we would expect to find derived Adjectives corresponding to base forms such as John's wild behavior frightened everyone, his stories bore me, etc. Furthermore, since the Verbs frighten, bore, startle, annoy, and so on, are subcategorized with an optional empty Agent-phrase in deep structure, we might expect to find that the corresponding derived Adjectives frightening, boring, startling, annoying, could also occur in deep structure with an optional empty Agent-phrase. Supposing, then, that boring can occur in a deep structure tree of the following sort:

(90)



it is easy to see that we can account for the Passive Adjective forms in (87) by simply extending the rules of Agent-Postposing and Object-Preposing so as to allow them to apply in the domain of the AP, as well as in the domain of the S and the NP. The term "Passive Adjective" thus turns out to be entirely appropriate, for these Adjectives are in fact just the result of applying the two components of the Passive to an AP, just as nominals such as the city's destruction by the enemy are the result of applying the

Passive to a NP. Later on, in Chapter III, we shall considerably refine and extend this analysis, to cover a wider range of data. The point of importance here is that the existence of Passive Adjectives, far from casting doubt on our analysis, in fact, when taken in conjunction with the Lexicalist Hypothesis, provides further support for it.

3.2. Impassivizable Verbs

Finally, as further motivation for the existence of the grammatical relation Subject-of in deep structure (as opposed to the Agent relation), we turn to a brief consideration of the class of Verbs that Lees (1963) refers to as "middle" Verbs. Typically, these Verbs lack a grammatical Passive and may not occur freely with Manner Adverbials. Not all of the Verbs which Lees assigns to this class will be analyzed here as containing deep structure Subjects; many, as we shall see in a later section, must be analyzed as having Indirect Objects in deep structure. Setting aside the latter for a moment, let us consider examples of the following sort:

(91) a. John weighs 170 lbs.

b. The suit fits me perfectly.

c. Leaving at 3:00 suits me fine.

d. John resembles Mary slightly.

e. The book costs $20.

f. This word means 'book'.

g. A disaster befell John.

h. John owes me a dollar.

i. He envies you your talent.

j. He begrudges me every penny.

k. That meal didn't agree with me.

l. He strikes me as pompous.

None of these sentences, as already noted, can be passivized:

(92) a. *170 lbs. is weighed by John.

b. *I am fitted perfectly by the suit.

c. *I am suited fine by leaving at 3:00.

d. *Mary is resembled slightly by John.

e. *$20 is cost by the book.

f. *'Book' is meant by this word.

g. *John was befallen by a disaster.

h. *You are envied your talent by him.

i. *I am begrudged every penny by him.

j. *I wasn't agreed with by that meal.

k. *I am owed a dollar by John.

l. *I am struck by him as pompous.

In itself, of course, this fact is not sufficient to establish that the surface Subjects of these Verbs derive from the Subject position in deep structure, since they could equally well be derived from the Agent-phrase, or perhaps have some other source entirely. Note, however, that if the Subjects of these sentences <u>did</u> derive from the Agent-phrase in deep structure, then the only possible way to account for the lack of a Passive would be to assign an <u>ad-hoc</u> rule-feature to the Verbs of this class, making Agent-Preposing obligatory, in other words, to treat them as exceptions to the general rule that Verbs which have both a deep structure Agent and a deep structure Object may appear in surface structure in either the Active or the Passive form. Since it is doubtful whether an exception mechanism

of this sort is the correct way of handling a set of 'deviations' as systematic as this, it seems a priori unlikely that the Agent source can be the correct one. Rather, we should look for a deep structure source which would automatically preclude the possibility of the Passive forms being produced. The deep structure Subject position is, of course, just such a source, as long as we insure in the subcategorization conditions for these Verbs that they may not occur with an empty by-phrase.

Further support for the view that these Verbs do not have Agents in deep structure can be derived from the fact that none of them may occur with Adverbs such as deliberately, on purpose, etc.:

(93) a. *John deliberately weighs 170 lbs.

b. *John resembled Mary on purpose.

c. *Bill intentionally owed me a dollar.

d. *He deliberately envies you your talent.

e. *He intentionally strikes me as pompous.

f. *A disaster befell John on purpose.

Notice furthermore that the Subjects of those Verbs in (91) which have a derived nominal form also appear in the Subject position in the nominal:

(94) a. John's weight.

b. John's resemblance to Mary.

c. the book's cost

d. the word's meaning

e. John's envy

just as the Lexicalist Hypothesis predicts, under the assumption that the deep structure source of the surface Subjects in (91) is the Subject

position. (Note, incidentally, that these nominals provide further evidence in favor of the existence of the inverse of Object-Preposing, since we have the following alternants:

(95) a. the weight of the package

b. the resemblance of John to Mary

c. the cost of the book

d. the meaning of the word

e. the envy of John

Finally, observe that many of these Verbs also have derived Adjective forms in which the Subject appears as the Subject of the AP:

(96) a. Leaving at 3:00 is suitable to me.

b. The book is costly.

c. This word is meaningful.

d. He is envious of {you / your talent.}

e. He is begrudging of every penny.

f. That meal was disagreeable.

Again, taken in conjunction with the Lexicalist Hypothesis, these facts support an analysis of the Verbs in question which assigns them a deep structure Subject.

I conclude, then, that Verbs such as those in (91), in contrast to Verbs such as hit, touch, amuse, frighten, etc. are subcategorized in the lexicon simply as follows:

(97) resemble: NP ___ NP

3.3. 'Gestural' Verbs

Before leaving this section, we shall consider briefly one other

class of Verbs which seems to provide some further support for the Agent/Subject distinction, although admittedly the evidence is less persuasive here than it was in the previous cases.

Consider first examples of the following sort:

(98) a. John { grunted, groaned, cried, yelled, squeaked, winked, blushed, beamed, laughed, shivered, etc. }

b. The lion roared.

c. The bird chirped.

d. The snake writhed.

e. Bill squirmed.

f. The rhinocerous snorted.

At first glance it would appear as if the surface Subjects of these sentences could most simply be accounted for by deriving them from the Subject position in deep structure, and this may in fact turn out to be the correct solution. However, there are at least some reasons for deriving them from the Agent position. Notice, for one thing, that Verbs

of this class may occur with Adverbs of the deliberately class:

(99) a. John grunted deliberately.

b. Bill groaned on purpose.

c. Harry laughed intentionally.

d. The lion roared deliberately (to frighten us).

e. The mouse squeaked on purpose (to attract its mate).

Thus if we wish to preserve the generalization that Verbs of this class occur with deep Agents, but not with Subjects, it would appear that they must derive from the Agent position in deep structure.

Further support for this view might be derived from the fact that many of these Verbs may appear optionally with a PP-Object, in which case they may be passivized, producing pairs such as the following:

(100) a. John yelled at Bill.

b. Bill was yelled at by John.

(101) a. Mary laughed at Bill.

b. Bill was laughed at by Mary.

(102) a. Bill winked at Mary.

b. Mary was winked at by Bill.

(103) a. The lion roared at us.

b. We were roared at by the lion.

(104) a. The workmen whistled at Mary.

b. Mary was whistled at by the workmen.

This evidence is of course not conclusive, since the Verbs could always be subcategorized with a deep structure Subject and an optional empty by-phrase, which would account equally well for the pseudo-Passive forms in the b.-sentences.

Note, however, that a number of these Verbs may appear with both Animate and Inanimate Subjects in surface structure. Compare the following, for example, with the sentences in (92):

(105) a. The engine roared.

b. The kettle whistled on the stove.

c. The bedsprings squeaked.

d. The leaves on the trees shivered violently.

e. The timbers groaned.

f. The chair creaked.

The examples in (105) differ in two ways from those in (98): (1) They cannot occur with deliberately, intentionally, etc.; (2) They cannot have Prepositional Phrase Objects, as is shown by the ungrammaticality of the following examples:

(106) a. *The engine roared at me.

b. *The kettle whistled at the cook.

c. *The bedsprings squeaked at Bill.

d. *The timbers groaned at us.

e. *The chair creaked at Mary.

This naturally suggests that the reason for these differences lies in the fact that roar, in the sense in which it is used in (98) a. and b., is derived from a deep structure containing an Agent-phrase, whereas roar, as it is used in (105) a., has a Subject in deep structure. We could then associate the presence of a Prepositional Phrase Object and the ability to occur with Adverbs of the deliberately class with the presence of an Agent-phrase in deep structure, and the absence of both with the presence of a deep Subject. I suggest, therefore, that roar has the following mutually

exclusive subcategorization conditions:

(107) roar: (a) NP ___

(b) NP ___ (at NP) by NP

Notice that these two conditions cannot be collapsed by means of parentheses or braces. Intuitively, this makes sense, because the sense in which an engine can be said to roar is clearly quite different from the sense in which an animal or a human being is said to roar. The former is a description of a noise, while the latter is an action, whose result is a noise of a certain kind. On the other hand, the use of the parentheses in (107) b. is quite appropriate, since the specification of an Object adds to the meaning of the sentence (obviously), but does not alter the sense of the Verb. Note that in contrast to roar, whistle, squeak, etc. Verbs such as laugh, yell, and grunt have only the subcategorization condition (b), while the Verb creak, and perhaps some others, has only condition (a) in its lexical representation.

There is one fact which might seem to be counter-evidence to the analysis just presented. That is the fact that none of the Verbs which I claim have Agents in deep structure show up in the by-phrase in the derived nominal forms. Rather, they invariably occur in the Subject position, or, since the inverse of Object-Preposing is applicable to them, in the Complement on the head Noun as the Object of the Preposition of. Thus we have the following examples:

(108) a. Mary's cries.

b. *the cries by Mary

c. the cries of Mary

(109) a. the lion's roars

b. *the roars by the lion

c. the roars of the lion

(110) a. the birds' chirping

b. *the chirping by the birds

c. the chirping of the birds

(111) a. the workmen's yells at the girls

b. *the yells at the girls by the workmen

c. the yells of the workmen at the girls

(112) a. the engine's roar

b. *the roar by the engine

c. the roar of the engine

Observe, however, that in our framework, this is not really a problem, as long as we subcategorize these nominals with an obligatory empty 'Subject'-NP in deep structure:

(113) roar [+Noun]: (a) NP ___

(b) NP ___ (of NP) (at NP) by NP

Condition (b) in (113) will ensure that the Agent-NP is always moved into the Subject position by means of Agent-Presposing. These examples do not, ttherefore, contradict the Lexicalist Hypothesis, since both the sentence and the nominal will have identical deep structures.

It should be noted, finally, that the non-existence of a pseudo-Passive form in the nominal, e.g. *the girl's yells at by the workmen, *the hunters' roaring at by the lions (cf. (111) and the roaring of the lions at the hunters, respectively), is due to a much more general restriction which

prevents any pseudo-Passives from occurring in derived nominals, as was observed by Emonds (1969).

I conclude that while the class of 'Gestural' Verbs does not provide any strong evidence in favor of the ideas presented in the previous sections, the analysis proposed here nevertheless fits very naturally into the general framework, and at the same time succeeds in explaining a number of facts in an interesting way. Observe that even if the particular analysis given here turns out to be wrong, the facts still support the general approach that we have been developing. Suppose, for example, that we conclude that the Subjects of both (98) and (105) should be derived from the Subject position in deep structure, relegating the Agentive/non-Agentive distinction, in this instance, to the interpretive semantic component. The effect of this decision would be to allow the two parts of the subcategorization condition (107) to be further collapsed, as follows:

(114) roar: NP ... (at NP (by NP))

Condition (114) states that roar may optionally occur with an at-phrase Object, and furthermore that it may have an empty by-phrase, just in case there is also an at-phrase present. Suppose, on the other hand, that we decide to derive all surface Subjects of roar from the by-phrase in deep structure. We would then have the following subcategorization condition:

(115) roar: NP ___ (at NP) by NP

(115) states that a filled Agent-phrase is obligatory, but that there may also be an optional at-phrase. Notice that both (114) and (115) will

ensure that a filled by-phrase occurs in surface structure only when there is an at-phrase present. Either analysis, therefore, would further support principle (38) governing the use of lexical redundancy rules, and both analyses would in turn correctly reflect the intuition that there is only a single 'sense' of the Verb roar involved here. How these Verbs are to be treated is thus a question concerning the grammar of the particular language, namely English, and does not affect the general principles that we have proposed.

3.4. Intransitive Verbs with Deep Structure Objects

In section 2. we tentatively proposed a universal principle limiting the use of lexical redundancy rules to just those cases in which the subcategorization features in question could be collapsed by means of parentheses or braces, and it was observed that given the analysis of the preceding section this principle would permit the Transitive and the Intransitive uses of Verbs such as roll to be related by means of lexical redundancy rules. Clearly, however, the principle is more general than would appear from this example. Verbs such as roll are actually somewhat special in that the two subcategorization conditions in question are both associated with the same phonological form. But there are many examples of related Transitive and Intransitive sentences in which the two Verbs have entirely different phonological forms. Consider, for example, the following pairs:

(116) a. John killed Bill.

b. Bill died.

(117) a. John left the book on the table.

b. The book remained on the table.

(118) a. Harry kept his employees at work until 8:00.

b. Harry's employees stayed at work until 8:00.

(119) a. Harry persuaded Bill that the earth was flat.

b. Bill believed that the earth was flat.

(120) a. Harry sent a letter to Mary.

b. The letter went to Mary.

That the Object of the a.-sentences is the same as the grammatical relation of the Subject of the b.-sentences to the Verb is shown, for example, by the fact that they have identical selectional restrictions:

(121) a. *John killed the stone.

b. *The stone died.

(122) a. *John left sincerity on the table.

b. *Sincerity remained on the table.

(123) a. *Harry persuaded the idea that the earth was flat.

b. *The idea believed that the earth was flat.

(124) a. *John kept the corn at work until 8:00.

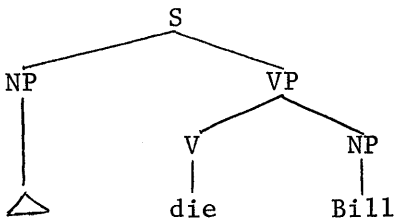
b. *The corn stayed at work until 8:00.

Note also that just as the truth of the sentence John rolled the ball down the hill implies the truth of the sentence the ball rolled down the hill, so the a. sentences in (116)-(120) imply the b.-sentences. Thus, if it is true that John killed Bill, then it must be the case that Bill died; if John left the book on the table, then the book must have remained on the table; and so on.

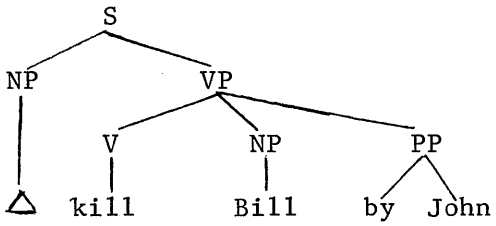
These observations suggest that pairs such as kill and die, leave and remain, and so on, are related in much the same way as the Transitive and

Intransitive uses of roll, and that the Subjects of the b.-sentences should be derived from the Object position in deep structure. We would thus have the following deep structures for (116) a. and b., respectively:

(125)



(126)



and associated with these Verbs, the following subcategorization conditions:

(127) kill: NP ___ NP by NP

(128) die: NP ___ NP

Just as in the case of Transitive and Intransitive roll, these two subcategorization conditions can be collapsed into the single condition (129):

(129) NP ___ NP (by NP)

by means of the parentheses notation. Notice that if we take into account sentences such as Bill died of pneumonia, and amend the condition for die accordingly:

(130) die: NP ___ NP (of NP)

that we can still collapse the subcategorization features (127) and (130) by combining the use of braces and parentheses:

(131) NP ___ NP $\left\{\begin{matrix}\text{by NP}\\(\text{of NP})\end{matrix}\right\}$

If this analysis is correct, then by principle (38) the lexical items kill and die may be related by redundancy rules in the lexicon.

Notice, however, that (38) does not permit a simplification of the

lexical entries for kill and die, whereas in the case of roll we can actually combine the two lexical entries for Transitive and Intransitive roll into a single one:

(132) roll: NP ___ NP (by NP)

This reflects the fact that in the case of roll the two subcategorization conditions are associated with the same phonological form, whereas in the case of kill and die, they are associated with different phonological forms. Thus whenever two subcategorization conditions which are collapsible by means of the braces and parentheses notation are associated with the same phonological form, not only can we relate them by means of lexical redundancy rules, but we can also simplify the lexical entry, reflecting the fact that there is a generalization regarding the possible syntactic environments in which the phonological form roll can appear, as contrasted with, say, the more limited environments in which the phonologically unrelated forms kill and die can occur.

3.4.1. Some Remarks on Derivation

Notice that derivationally related forms such as read and readable are somewhere in between totally unrelated phonological forms such as kill and die and phonologically identical items such as read (Transitive) and read (Intransitive). It is interesting to observe that the Lexicalist Hypothesis, which claims that derivationally related forms should have parallel base structures (and hence at least partially similar subcategorization conditions), can be combined with the approach to lexical redundancy that we have been constructing here in a rather interesting way.

It has often been noted that lexical items such as read and readable

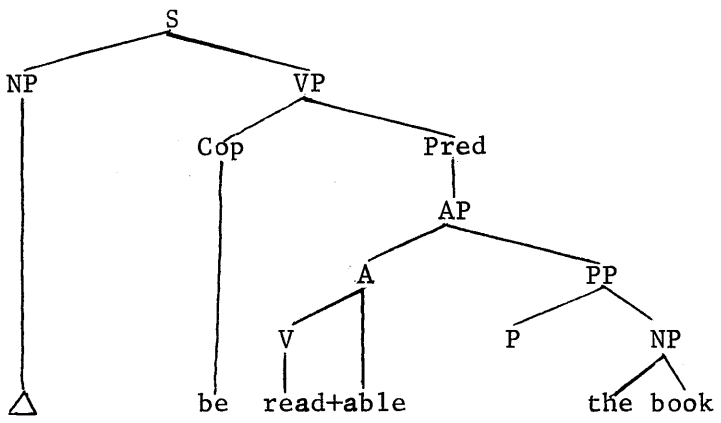
are related to each other in the following way: any NP that may occur as the Object of read may also occur as the Subject of readable. Thus we can have John read the book and the book is readable, but neither *John read the piano nor *the piano is readable. There must, therefore, be a lexical redundancy rule which relates the Object of read to the Subject of readable. But notice that this is just the sort of redundancy rule which is excluded by condition (38), since the two subcategorization conditions:

(133) a. read: NP ___ NP by NP

b. readable: NP ___

cannot be collapsed by means of parentheses or braces. Suppose, however, that a sentence such as the book is readable were assigned a deep structure of the following sort:

(134)



Clearly, a trivial extension of the rule of Object-Preposing, allowing it to apply in AP's as well as S's and NP's, will suffice to move the Object of readable into its correct surface position as Subject of the sentence. But if (134) is correct, then the subcategorization feature for readable will now be as follows:

(135) readable: NP ___ NP

and since the two conditions (133) a. and (135) can now be collapsed by means of the parenthesis notation, principle (38) will allow us to relate the two items by means of a lexical redundancy rule. Such a rule might have the form:

(136) [NP ___ NP by NP] ⟶ [NP ___ +able NP]

Furthermore, given (136), we might propose combining the lexical entries for read and readable roughly as follows:

(137) read: NP ___ NP (by NP)

thus expressing the fact that the partial similarity in the environments of these two items is accompanied by a partial similarity in phonological form., as well. A similar device could be used to express the relation between elect and election, for which, as noted by Chomsky (1970), we have both of the sentences we elected Bill to the presidency and we elected Bill President, but only one corresponding nominal: our election of Bill to the presidency, *our election of Bill President. Thus we might have the lexical redundancy rule:

(138) [NP ___ NP $\left(\begin{Bmatrix}\text{to NP}\\ \text{NP}\end{Bmatrix}\right)$ by NP] ⟶ [NP ___ +ion NP (to NP) by NP]

and the accompanying lexical entry:

(139) elect: NP ___ NP $\left(\begin{Bmatrix}\text{to NP}\\ \text{NP}\end{Bmatrix}\right)$ by NP

Notice that there is syntactic support for the deep structure (134), since we have the derived nominal form:

(140) the readability of the book

to which Object-Preposing may apply, deriving:

(141) the book's readability

The subcategorization frame for readability must therefore have the form:

(142) readability: (NP) ___ NP

and it can in turn be combined with (137) to give:

(143) read (+able (+ity)): (NP) ___ NP (by NP)

along with a redundancy rule relating readable and readability, as follows:

(144) [NP ___ +able NP] ⟶ [(NP) ___ +able+ity NP]

Note that this proposal accounts for cases (not dealt with explicitly in Chomsky (1970)) where a lexical item and its nominal form have only partially similar subcategorization features, as well as for the fact that derivational processes can occur in sequence. In a fuller analysis, of course, there would have to be an indication, in the subcategorization conditions, of the lexical category to which the successive forms read, readable, readability belong.

Returning to the main point of this digression, note that with the analysis (134) (which does not itself complicate the grammar, since Object-Preposing can be extended to account for the surface form) it can now be seen that in terms of the environments which they share, the relationship between read and readable is formally very similar to that which holds between kill and die, and also that which holds between transitive and intransitive roll. Thus it is not surprising to find that the attempts which have been made (cf. Chapin (1967)) to account for sentences such as the book is readable within the transformational component generally try to derive them from deep structures which contain an embedded Passive, in order to capture the intuition that the relation of the surface Subject to the Adjective readable is similar to the relation of the Object to the

Verb read in a sentence such as someone read the book. Convincing arguments against a transformational treatment are to be found in Chomsky (1970). We simply note here that the deep structure (134), in conjunction with the lexical redundancy rule (136), accounts for the same intuition without suffering from the defects inherent in a fully transformational approach. Notice also that this analysis fits in well with the analysis of the Passive Adjective presented in section 3.1.2. In terms of their syntactic structure, sentences such as (89) are 'active' forms of the Adjective, those in (87) are 'passive', and those containing Adjectives such as readable correspond to 'intransitive active' Verbs whose Subjects derive from the Object position in deep structure. The obvious meaning differences between the three types is of course explained by the fact that they have different suffixes, which play a role in the semantic interpretation of these Adjectives.

4.0. Indirect Objects

We turn next to a detailed consideration of the grammatical function that I shall refer to, following the traditional terminology, as the 'Indirect Object' relation. Generally speaking, it seems to have been taken for granted by generative grammarians that the Indirect Object-NP which often occurs between a Verb and its Direct Object is a purely surface structure phenomenon. In English, there is some reason for this assumption, since a great many surface Indirect Objects are in fact derivable from other positions in deep structure. Thus it is well-known that pairs of sentences such as the following are transformationally related, though the details are far from clear:

(145) a. John bought a book for Mary.

b. John bought Mary a book.

(146) a. John gave a book to Mary.

b. John gave Mary a book.

The rule which relates the a.-and the b.-sentences above is usually referred to in the literature as Dative Movement, or, in works such as Fillmore (1965), which treat (145) and (146) as different rules, as To-Dative Movement and For-Dative Movement, respectively.

These rules are of particular interest in connection with the Structure-Preserving Hypothesis, because, as they are usually stated, they fail to obey the Structure-Preserving Hypothesis. On the other hand, they cannot be root transformations, because they can occur freely in embedded sentences. It would perhaps be possible to treat them as Minor Movement Rules, but that is undesirable, since the rules of this class seem to be limited to cases where one of the elements to be permuted is not a major phrase-node. The question that arises, then, is whether or not it is possible to state Dative Movement as a structure-preserving rule. If the answer is no, then the rule is a clear counter-example to the structure-preserving hypothesis. Emonds (1969) (and again, in Emonds (1970), in his discussion of this problem, argues that the Dative Movement rules should be stated as structure-preserving permutation rules, which interchange the two NP's and at the same time delete the Prepositions to and for. However, this conclusion is undesirable for a number of reasons. First, there is very little evidence that permutation rules are necessary in the theory of grammar. We have already seen, for example, that the Passive, which was traditionally stated as a permutation rule, is best treated as the result

of two independent rules of Object-Preposing and Agent-Postposing. The evidence in favor of the latter solution is considerable. Second, even under the structure-preserving hypothesis, permutation operations are an extremely powerful device, whose use we would like to limit as far as possible. Allowing permutation operations in the theory of grammar would, for example, permit a grammar, in principle, to contain a rule which permuted the Subject of a sentence with its Object. However, as we have already seen, there are strong arguments against treating the Passive, for example, in this manner. Later on, we shall argue that another rule of this sort which has received some attention in the literature, namely Postal's rule of 'Psych-Movement', is equally invalid, when stated as a permutation rule. We do not, of course, exclude the possibility that some combination of <u>independently motivated</u> rules could produce an effect similar to that of Psych-Movement. The question is whether or not the grammar should be constrained in such a way as to allow such an effect only when the separate parts of the permutation can be independently motivated, or whether the grammar should have the power to produce such effects whether or not the independent parts of the permutation can be separately motivated.[4]

The Dative-Movement rules are therefore of considerable interest, not only in connection with the validity of the structure-preserving hypothesis itself, but also because of the evidence which they provide concerning the status of permutation operations in the theory of grammar.

In this section I shall argue (1) that the Dative Movement rules are structure-preserving, and (2) that they can be stated as ordinary structure-preserving rules, i.e. they do not have to be stated as structure-

preserving rules. Clearly, in order to establish (2) (and hence also (1), which follows from (2)), it is necessary to show that there is independent motivation for a deep structure Indirect Object node in the grammar of English. In other words, it must be shown that there is motivation for a VP expansion rule in the base of roughly the following form:

(147) VP $\longrightarrow$ V (NP_1) (NP_2) (PP)* (S)

The subscripts on the two optional NP nodes in (147) are merely an informal indication of the fact that the definition of the two grammatical relations Direct Object and Indirect Object must make reference to the linear order of the two NP's which appear in the expansion rule for VP. Thus the Indirect Object must be defined as the left-most NP dominated by VP. Having established the existence of the Indirect Object relation in deep structure, I shall go on to show that it plays a far more important role in English syntax than has hitherto been suspected, or than would be apparent from a superficial examination of the surface structure of English sentences.

4.1. Motivation for the Deep Structure Indirect Object Position

The first argument in favor of establishing an Indirect Object node in deep structure has to do with the fact that there exists in English a large class of idioms which have a non-literal interpretation only when the Indirect Object occurs next to the Verb. Consider, for example, the following pairs:

(148) a. We gave him the works.

b. *We gave the works to him.

(149) a. Give me a break.

b. *Give a break to me.

(150) a. That will teach him a lesson.

b. *That will teach a lesson to him.

(151) a. Can you lend me a hand?

b. *Can you lend a hand to me?

(152) a. We read John the Riot Act.

b. *We read the Riot Act to John.

(153) a. I can't spare you the time.

b. *I can't spare the time to you.

(154) a. I'll drop him a line.

b. *I'll drop a line to him.

(155) a. I'll give you a ring.

b. *I'll give a ring to you.

(156) a. Just don't give us any trouble, see?

b. *Just don't give any trouble to us, see?

(157) a. The cop gave John a hard time.

b. *The cop gave a hard time to John.

(158) a. I floated Bill a loan.

b. *I floated a loan to Bill.

(159) a. John's boss gave him the sack.

b. *John's boss gave the sack to him.

(160) a. Just don't give me any of your lip.

b. *Just don't give any of your lip to me.

Some of these examples are simply ungrammatical when the Indirect Object

occurs in the to- or for-phrase, while others can occur there, but have only a literal interpretation in that position. On the other hand, there are, as far as I can determine, no idioms in English such as that the Indirect Object must be in the to- or for-phrase in order for the phrase to be interpreted non-literally. There are, of course, idiomatic constructions containing a to- or a for-phrase, e.g. to take someone to task for, to keep one's nose to the grindstone, to go for a Burton, and so on. Note, however, that the NP's that occur in these phrases as the Object of the Preposition are not animate, and would therefore not be subject to Dative Movement in any case, and so do not contradict the claim just made.

The reason that these facts are relevant to the existence of the Indirect Object position should be obvious. Since idioms are phrases whose meaning cannot be derived from the meaning of their parts, they must be listed in the lexicon as wholes. On the other hand, idioms also clearly have a constitiuent structure which is identical (with a few well-known exceptions) to normal non-idiomatic phrases which are produced by the grammar, and must therefore be entered in the lexicon with their constituent structure. (See Katz (1972) for a discussion of the mechanisms that are necessary.) Suppose now that there is no deep structure Indirect Object position in English. It will then be necessary not only to list idioms such as those given above specially in the lexicon, but it will also be necessary to add an ad-hoc condition to the Dative Movement rules making them obligatory, just in case the Object of the to- or for-phrase is marked as an idiom. In contrast, suppose that there is an Indirect

Object position in deep structure. In that case, the idiom can simply be listed in essentially its surface form in the lexicon, and inserted directly into deep structure without the necessity for placing an ad-hoc condition on the Dative-Movement rules. In those cases where the idiom has no grammatical counterpart in which the Indirect Object is in the to- or for-phrase, as in (149), for example, this will be accounted for by the normal selectional restrictions. On the other hand, in those cases where the idiom also has a literal counterpart, for example (150), (152) and (159), the Dative Movement rules will be able to apply freely to the non-idiomatic deep structure containing the to- or for-phrase to produce ambiguous sentences such as John's boss gave him the sack, which can mean either "John's boss fired him" or "John's boss handed him a sack".

The only other way of accounting for these facts, in the absence of a deep structure Indirect Object position, would be to read the meaning of these idiomatic constructions off of an intermediate level of structure, which is neither the level of deep structure, nor the level of surface structure. The disadvantages of this solution are, however, obvious.

Notice, too, that if the Dative Movement rules did apply obligatorily to an idiomatic to- or for-phrase, this would be just the reverse of the normal situation with idioms, namely, that the application of a transformation robs the phrase of its idiomatic interpreation. Thus if we apply the Passive to the idiom John kicked the bucket, giving the surface structure the bucket was kicked by John, the result can no longer be interpreted idiomatically, only literally.[5]

Actually, the situation is even worse than I have indicated, if there is no Indirect Object position, for notice that the Indirect Object is

not, properly speaking, itself a part of the idiom. Thus in the phrase give X a break, X is not, in fact, a part of the idiom. Therefore, if we were to insert such idioms into deep structure in the form give a break to X, there would not even be any indication in the PP to X that it was being used in an idiomatic expression. It follows that the obligatory application of the Dative Movement rules in these cases would have to depend on some indication that the phrase give a break was idiomatic. In other words, the fact that Dative Movement is obligatory in these cases is due not to the fact that the Dative-phrase is part of an idiomatic expression, but simply to the fact that it is being used with an idiomatic expression. Again, this situation contrasts with the normal one, represented by kick the bucket; for while it is reasonable to suppose that parts of idioms should behave idiosyncratically with respect to transformational rules, it is not at all clear that idioms should be allowed to interfere with transformational processes which do not affect any part of the idiom itself. Thus, for example, we do not find the application of the Extraposition transformation affected in any way by the presence of an idiomatic expression in the VP, so that we have both To have to live with your relatives would drive me nuts and it would drive me nuts to have to live with your relatives. If this is generally the case, then the argument for generating the Indirect Objects which occur in idioms such as (148)-(160) in their surface position next to the Verb would be even stronger.

Even in the absence of any other evidence, the behavior of idioms such as those in (148)-(160) would provide a strong argument in favor of

the existence of a deep structure Indirect Object node. In fact, however, the existence of these idioms is only possible because there are productive patterns in English containing Indirect Objects, for which there exist no grammatical counterparts in which the Indirect Object appears in a to- or for-phrase. Consider, for example, the following sentences:

(161) Give me { a break / a chance / a new opportunity / etc. } (*to me).

(162) He gives me { the creeps / the shivers / the shakes / etc. } (*to me).

(163) I can't spare you { a penny / a minute / the time / a bit of attention / a room / the use of my saw / etc. } (*to you).

(164) He did me { a good turn / a favor / a lot of good / a kindness / etc. } (*for me).

(165) His actions cost him { his job / his reputation / his life / his wife / his good name / etc. } (*to him).

(166) That decision lost me { a lot of friends / my reputation / a fortune / a valuable piece of land / etc. } (*for me).

(167) Don't give me { any of your lip / that shit / any backtalk / your stupid opinions / any of that crap / your views on the war / etc. } (*to me).

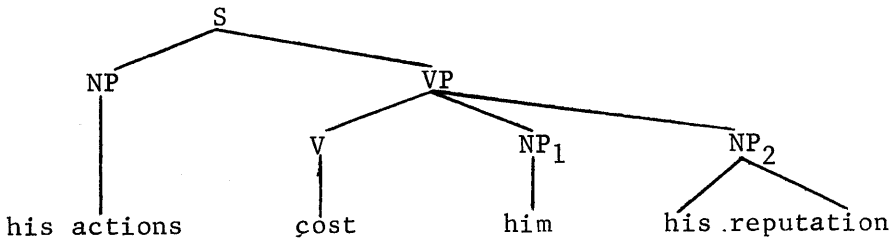
(168) We { permitted / allowed } the children only one piece of pie (*to the children).

Clearly, it would be senseless to speak of these patterns as 'idioms', at least under any useful definition of that term. Expressions of this sort are, I have the impression, sometimes referred to as 'idiomatic', but it seems to me that if this intuitive judgement can be given any precise meaning at all, it must be interpreted as referring to the fact that the range of NP's which may appear in such contexts is relatively tightly

constrained by lexical and semantic restrictions of various kinds. The important point to observe is that in all of these sentences it is impossible for the Indirect Object to appear in a to-phrase or a for-phrase, thus providing us with independent evidence for the existence of an Indirect Object position in deep structure. Any attempt to account for these examples by means of conditions on the application of the Dative Movement rules would either be ad-hoc, or, if one tried to achieve some measure of generality by, for example, trying to relate these ad-hoc conditions to some semantically defined class of NP's, hopelessly complex.

I conclude that there is strong evidence in support of a base rule of the form (147), and that a sentence such as (165) consequently must derive structure of roughly the following form:

(169)



4.2. The Dative Movement Rules

It follows immediately that the Dative Movement rules are not only structure-preserving, since they move an NP to another position where the phrase-structure rules will independently generate an NP anyway, but also that they do not need to be stated as permutation rules. Thus the two rules, To-Dative Movement and For-Dative Movement, can be stated simply as follows:

(170) $X - \underline{V} - NP_1 - \underline{NP}_2 - \left\{\begin{matrix}to\\for\end{matrix}\right\} - \underline{NP} - Y \Longrightarrow X - \underline{V} - \underline{NP}_1 - \underline{NP}_2 - \emptyset - NP - Y$

Furthermore, Verbs such as give and buy, respectively, will be subcategorized in the following manner:

(171) a. give NP ___ (NP_1) NP_2 to NP by NP

b. buy: NP ___ (NP_1) NP_2 for NP by NP

If there is no empty Indirect Object node in deep structure, then we will derive sentences (145) a. and (146) a.; if there is an empty Indirect Object node present, then we will derive (145) b. and (146) b. The two possible deep structure configurations in which Verbs such as give and buy may appear can obviously be collapsed by means of the parentheses notation, as is shown in (171), thus providing further support for principle (38) governing the use of lexical redundancy rules in the lexicon, since there is clearly only one 'sense' of the Verb involved in both cases.

4.2.1. Some Related Constructions

One argument advanced by Emonds (1970) in favor of stating Dative Movement is a permutation transformation is that the rule could then be used to account for the relationship between sentences such as the following:

(172) a. They supplied rifles to the rebels.

b. They supplied the rebels with rifles.

(173) a. The hotel presented a large bill to John.

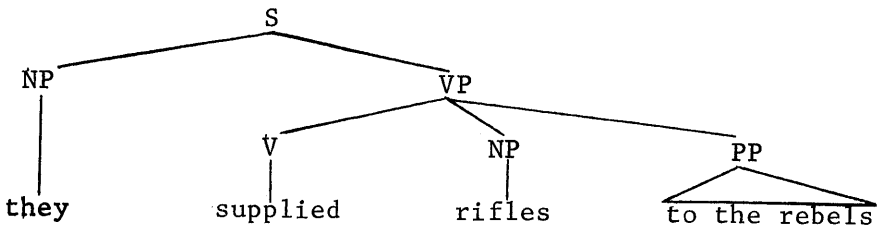
b. The hotel presented John with a large bill.

(174) a. They blamed the accident on Bill.

b. They blamed Bill for the accident.

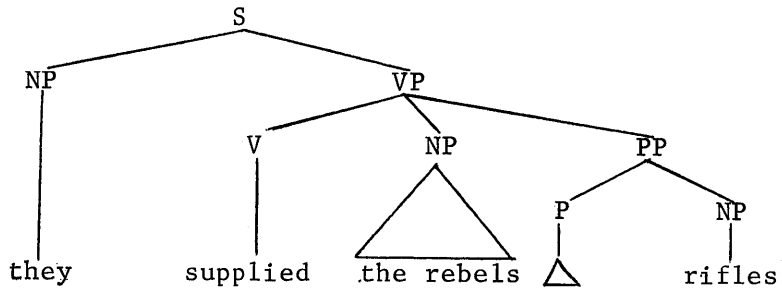
Assuming that (172) has the underlying structure:

(175)



the Dative Movement rule would then permute the NP's rifles and the rebels, and at the same time delete the Preposition to, giving the derived structure (176):

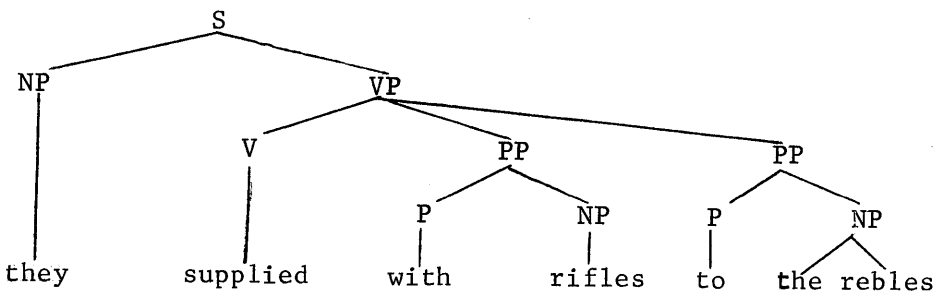
(176)



The empty Preposition, Emonds observes, could then be filled in with the Preposition with, giving us the surface structure variant (172) b. This rule would of course have to be lexically governed by the particular Verb.

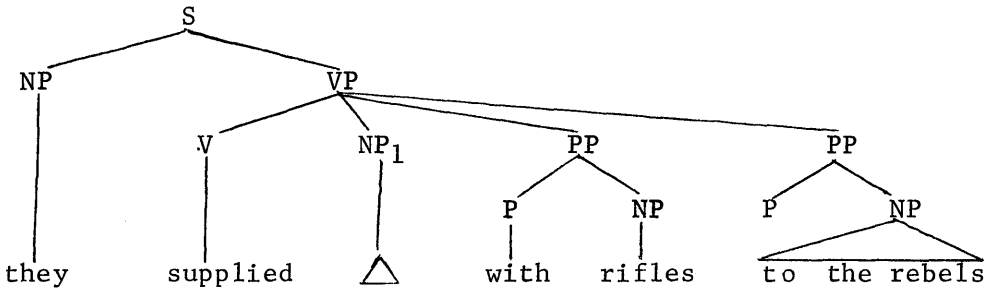
Observe, however, that these sentences can be accounted for equally well with the analysis just presented. We need only assume, instead of a lexically governed rule of Preposition Insertion, a lexically governed rule which optionally deletes a Preposition when it occurs immediately after the Verb. If we assume the following deep structure:

(177)



then the Preposition-Deletion rule will apply to <u>with</u>, yielding sentence (172) a. If, on the other hand, we have the deep structure:

(178)



then To-Dative Movement will obligatorily apply, after which the environment for Preposition-Deletion will no longer be met, so that we will end up with (172) b. Note that Preposition-Deletion must be ordered <u>after</u> Dative Movement.

Notice, furthermore, that there is independent motivation for a rule of Preposition Deletion. There are certain Verbs for which To-Dative appears to be obligatory, just in case there is no Direct Object. Thus we have paradigms of the following sort:

(179) a. The insurance company paid the money to John.

b. The insurance company paid John the money.

c. The insurance company paid John.

d. *The insurance company paid to John.

(180) a. Bill told the story to Mary.

b. Bill told Mary the story.

c. Bill told Mary.

d. *Bill told to Mary.

(181) a. Mary teaches French to the children.

b. Mary teaches the children French.

c. Mary teaches the children.

d. *Mary teaches to the children.

The a.- and the b.-sentences are related by the usual rule of To-Dative Movement, but when there is no Direct Object, the Indirect Object may only appear without the Preposition to, as in the c.-sentences. The environments in which pay, for example, may appear are thus as follows:

(182) a. NP ___ (NP_1) NP_2 to NP by NP

b. NP ___ NP_1 to NP by NP

Observe that there is no way of collapsing these two environments by means of parentheses; our notation does not allow us to state, in other words, that the empty Indirect Object NP must be present just in case the Object is not present. Suppose, however, that the absence of the d.-sentences is not due to the obligatory application of Dative Movement, but rather is due to the operation of Preposition Deletion, when the to-phrase appears immediately to the right of the Verb. If that were the case, we would then have the following environments for Verbs such as pay, teach, and tell:

(183) a. NP ___ (NP_1) NP_2 to NP by NP

b. NP ___ to NP by NP

Now it is easy to combine the two environments into a single statement, as follows:

(184) pay: NP ___ ((NP_1) NP_2) to NP by NP[6]

As was noted above, the Preposition Deletion transformation must be lexically governed. This accounts for the fact that there are Verbs similar to pay, tell, etc., in that they may occur without Direct Objects,

for which Preposition Deletion is impossible:

(185) a. I spoke to Bill.

b. *I spoke Bill.

(186) a. He lied to me.

b. *He lied me.

(187) a. He listened to me.

b. *He listened me.

I conclude, then, that the arguments put forward by Emonds in support of Dative Movement as a structure-preserving permutation transformation can equally well be used to support the view that Dative Movement is an ordinary, i.e. non-permutation type, transformation.

4.2.2. Dative Movement and Particle Movement

There is, however, another argument advanced by Emonds to support his view that Dative Movement is most economically stated as a permutation rule which we must show can be accomodated by our analysis. This argument has to do with the interaction of Dative Movement with the rule known as Particle Movement. The latter rule relates surface variants such as the following:

(188) a. John looked up the information.

b. John looked the information up.

(189) a. The waiter brought over a drink.

b. The waiter brought a drink over.

The question that arises is: which is the basic form? A priori it looks as if either the a.-sentences or the b.-sentences could be considered basic. Consider now what happens when we have a sentence containing both

a particle and a Dative phrase. If Dative Movement does not apply, we still get both of the variants made possible by Particle Movement:

(190) a. John looked up the information for Mary.

b. John looked the information up for Mary.

(191) a. The waiter brought over a drink to Mary.

b. The waiter brought a drink over to Mary.

so that either form could still be the basic one. If, however, Dative Movement has applied, we find the following distribution:

(192) a. John looked Mary up the information.

b. ?John looked up Mary the information.

c. *John looked Mary the information up.

(193) a. The waiter brought Mary over a drink.

b. ?The waiter brought over Mary a drink.

c. *The waiter brought Mary a drink over.

The c.-sentences, in which the particle appears after both the Direct and the Indirect Object, are clearly unacceptable in all dialects. The acceptability of the b.-sentences, in which the particle appears before both the Direct and the Indirect Object, seems to vary from dialect to dialect. Most natural of all, even in those dialects (such as my own) which allow the b.-sentences, are the a.-sentences, in which the particle appears between the Indirect and the Direct Object. Emonds' first point is that if Dative Movement is not a permutation rule, then this distribution of the data shows that the only possible base form which does not require an ad-hoc condition on at least one of the rules in question is one which corresponds to the a.-sentences in (190) and (191). It follows

that this must be the base form under our analysis, since Dative M vement, as we have stated it, is not a permutation rule. Then, if the order of the rules is (1) Dative Movement, (2) Particle Movement; if both rules are optional; and if Particle Movement is stated so as to permute the particle around the NP immediately to its right; then we will derive all of the sentences in (190) and (193) except the clearly ungrammatical c.-sentences. Thus, under our analysis, in order to account for a dialect in which the b.-sentences are as clearly ungrammatical as the c.-sentences, it would be necessary to add a condition to the Particle Movement rule, making it obligatory whenever there are two NP's to the right of the Particle, thus allowing both (190) a. and b., but only (192) a.

Emonds' next point is that if Dative Movement is stated as a permutation rule, we have the possibility of taking the b.-sentences in (190) and (191) as basic, and stating Particle Movement as a rule which moves a particle over a NP on the left. This is the case, because in his analysis the Direct and the Indirect Objects merely exchange positions, leaving the constituent structure unaffected. Therefore, since Particle Movement only moves the particle to the left, it follows that the c.-sentences in (192) and (193) will not be generated. The b.-sentences, on the other hand, will only be generated if Particle Movement is ordered after Dative Movement, while if the order is (1) Particle Movement and (2) Dative Movement, the grammar will produce only the a.-sentences in (192) and (193), and not the b.-sentences.

There are two basic reasons why, Emonds feels, the analysis just given is superior to one in which the Particle must appear immediately after the

Verb in deep structure. The first has to do with his claim, justified in the first part of the paper, that 'Particles' are actually 'Intransitive' Prepositions. If, he argues, Particles are really PP's in deep structure, then an analysis which derives Particles from a position before the Direct Object will entail a complication of the base rules in order to state that fact. On the other hand, if Particles derive from a position after the Direct Object, no complication of the base rules is necessary, since that is the position in which PP's normally occur anyway. The second argument has to do with the difference between dialects which find sentences such as (192) b. totally unacceptable and those which find them acceptable. Emonds argues that his analysis is superior for two reasons: (1) Because it can generate the dialect in which (192) and (193) b. are unacceptable directly, without any ad-hoc conditions on either of the rules, and (2) Because the difference between the two dialects can be described simply as a difference in rule ordering under his analysis, whereas the other analysis can only describe the difference between the two dialects by saying that one dialect, namely the one in which (192) b. is unacceptable, has an extra condition on the Particle Movement rule.

I shall comment on these two arguments in reverse order. Notice first that Emonds' dialect argument depends on two assumptions, neither of which is obviously true. The first assumption is that differences in rule ordering between dialects somehow constitute a more 'natural' explanation of dialect variation than differences in the conditions under which the rules apply. Emonds assumes, in other words, that whenever we encounter an instance of dialect variation, it is preferable,

if at all possible, to explain the variation in terms of a difference in rule ordering, rather than by placing different conditions on the rules in the two dialects. Now it is well known that there are dialect differences which can be accounted for in terms of rule ordering, and likewise that there are dialect differences which are due to there being different conditions on the same rules. This is true in both phonology and syntax. However, there is no evidence, as far as I know, which shows that one type of explanation is intrinsically superior to the other. Rather, it seems that the correct explanation for any given dialect difference must be determined by the facts. This means that the rules for each dialect must be determined independently of each other, and that only after that has been done can we compare the grammars of the two dialects in an attempt to discover how they differ. If the rules are correct for each of the two dialects, then theoretically there should be no choice as regards our explanation of the differences between them. Rather, the differences, whatever they are, will simply be revealed by a comparison of the two grammars. Thus it is invalid to argue, as Emonds does, that one analysis is preferable to another, because it allows a dialect difference to be explained in terms of rule ordering, rather than by some other method. The correct explanation of the dialect difference must rather be a consequence of our having found the correct rules for the two dialects in question. The second assumption which Emonds makes is that the dialect in which the b.-sentences in (192) and (193) are unacceptable is in some sense the 'primary', or more 'basic' dialect, and that the other dialect ought to be explained as a deviation from the more

'normal' dialect. This assumption is implicit not in Emonds' argument for his own analysis, but rather in his arguments against the alternative analysis. Recall that for any analysis in which Dative Movement is not a permutation rule, the dialect in which both the a.- and the b.-sentences in (192) and (193) are acceptable is the one which will be generated by the rules, if no special conditions are put on them, while the other dialect must be explained as having an extra condition on Particle Movement, making it obligatory just in case Dative Movement has applied. Emonds implies that this analysis is less adequate than his, because it explains the latter dialect as being a 'deviation' from the former, whereas in fact, if anything, the former ought to be described as being a deviation from the more 'normal' latter dialect. This assumption I find unacceptable. Even if Emonds were to argue that neither dialect was primary, I would still disagree, for the following reason: If we compare the degree of unacceptability of the b.-sentences (in those dialects for which they are unacceptable) with the degree of unacceptability of the c.-sentences (in both dialects), I am certain that we would find that speakers consider the b.-sentences less unacceptable than the c.- sentences. In my own dialect the b.-sentences are grammatical, but somewhat awkward. This fact, too, I would expect to be true of all speakers of the dialect which finds the b.-sentences acceptable. These two facts, if true, can be explained, I think, by assuming that for all speakers the optimal grammar, with no special conditions on either of the rules, is one that produces both the a. and the b.-sentences. However, the b.-sentences are judged to be awkward for reasons that have basically to do with performance, rather than with competence. Notice that for all of

these sentences (excluding the clearly ungrammatical c.-sentences), except for ((192) and (193) b., a hearer who is trying to reconstruct the deep structure on the basis of surface information can reliably operate under the assumption that the Direct Object is that NP which is to the right of the Particle, or, if there is no NP to the right of the Particle, that it is the one to the left of the particle. Notice that in either case the NP which is the Direct Object is adjacent to the Particle. Sentences such as (192) b.,however, do not work according to this heuristic principle, for in such sentences the Direct Object is not adjacent to the Particle in surface structure. This, I hypothesize, is the reason that in all dialects the b.-sentences sound somewhat awkward, as compared with the others, because they are the only sentences generated by the grammar which do not work in accordance with the heuristic procedure just mentioned. In order to explain those "dialects" in which the b.-sentences are felt to be not only awkward, but positively unacceptable, we might conjecture that those speakers have actually added a constraint to their grammar which has the effect of excluding those sentences which do not fit in with their heuristic procedure. Now the simplest way of excluding these sentences would be to add a condition to the Partical Movement rule, making it obligatory when Dative Movement has applied. The point is that one would expect such a condition, based on performance factors, to take the form of an ad-hoc amendment of the formally motivated rules of the grammar. On the other hand, it is perhaps somewhat less likely that performance factors would effect a radical change, such as a re-ordering of the rules, in the grammar. To put it slightly differently,

it seems to me that dialect variation which is due to a difference in rule ordering typically involves firm judgements of grammaticality, so that in the case under consideration we would expect to find, if the two dialects were really due to a difference in rule ordering, that in the one dialect the b.-sentences would be clearly unacceptable and equal in unacceptability to the c.-sentences, while in the other dialect they would be clearly acceptable and equal in acceptability to the a.-sentences. The actual situation is not one of this kind. Rather, we find that in one "dialect" the b.-sentences are acceptable, but "funny", while in the other dialect they are felt to be unacceptable, but not nearly as unacceptable as the c.-sentences. This seems to me to be exactly what one would expect to find in a situation in which a certain class of sentences is grammatical, i.e. generated by the formally motivated rules of the grammar, but is felt to be odd because of performance factors. That is, one would expect to find doubt and hesitation on the part of speakers with respect to acceptability, with some people deciding that the sentences are acceptable and others deciding that they are unacceptable. This is just what is predicted by our analysis. The formally motivated rules of the grammar, if subject to no ad-hoc conditions, will generate both the a.- and b.-sentences. However, the b.-sentences are felt to be odd, because they conflect with a reasonable heuristic procedure for getting back to the deep structure from the surface structure of the kind described above. Some speakers are still willing, however, to consider the sentences grammatical, while others add an ad-hoc condition to the rule of Particle Movement in order to exclude the sentences which do not fit with their heuristic procedure. I conclude from this that Emonds' argument in favor

of a permutation rule is not a strong one - certainly not strong enough to exclude the possibility that Dative Movement is an ordinary structure-preserving rule. In fact, if the argument just put forward, that the oddity of the b.-sentences is due to performance factors, is correct, then it seems to me that the facts, if anything, weakly favor the view that Dative Movement is not a permutation rule.

Let us return now to Emonds' first argument. First of all, I do not dispute his view that Particles should be analyzed as Intransitive Prepositions, which seems to me entirely convincing. However, it is not so clear that all Intransitive Prepositions belong to the category PP, in which case Emonds' argument that the base rules would be simplified by generating Particles after the Direct Object collapses, since wherever Intransitive Prepositions are to be generated, they will have to be specially mentioned in the base rule anyway. It has been noted by Chomsky (1971) that in order to prevent 'dangling' Prepositions from arising in the COMP node, it may be necessary to exclude Particles from the category PP. Furthermore, if Intransitive Prepositions are really full PP's, then it is hard to see why in many cases <u>both</u> an Intransitive Preposition and a following Transitive Preposition must be preposed together, and why the Intransitive Preposition alone cannot be moved:

(194) a. Up to the top of the hill John ran.

b. *Up John ran to the top of the hill.

(195) a. Out to the garage John ran.

b. *Out John ran to the garage.

(196) a. Off into the bushes ran the zebra.

b. *Off ran the zebra into the bushes.

(197) a. Up onto the porch the dog trotted.

b. *Up the dog trotted onto the porch.

(198) a. Back into the box John put the toys.

b. *Back John put the toys into the box.

Furthermore, the number of Particles which may be preposed at all is exceedingly small, and in particular none of the idiomatic Verb-Particle combinations may ever be preposed:

(199) a. John carried the trunk up.

b. *Up John caried the trunk.

(200) a. Mary threw a box out.

b. *Out Mary threw a box.

(201) a. The teacher handed back every paper to the students.

b. *Back the teacher handed every paper to the students.

(202) a. John turned that job down.

b. *Down John turned that job.

(203) a. They have taken the government over.

b. *Over they have taken the government.

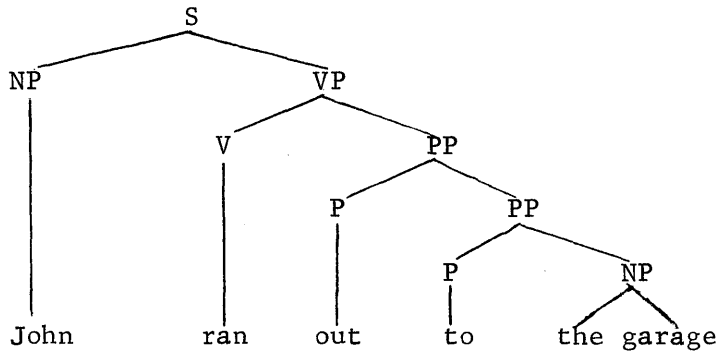
(204) a. We painted up the house.

b. *Up we painted the house.

whereas the preposing rule for full PP's is not nearly so limited. It seems possible that those Intransitive Prepositions which may be preposed should be analyzed as Transitive Prepositions with an unspecified Object, so that <u>In he ran</u> would be analyzed as coming from: <u>He ran in Δ</u>. The Prepositions in (194)-(198), on the other hand should probably be analyzed as coming from a structure containing a PP embedded as the object of a

Preposition:

(205)



All other Intransitive Prepositions could then be derived from the node P, rather than from the structure [PP^{P}]. This would explain the fact that, with only a few exceptions, Intransitive Prepositions behave differently from PP's more often than they behave similarly, and at the same time it would allow us to retain the generalization that 'Particles' belong to the same lexical class as the heads of PP's. If it is true that the vast majority of Particles are really Prepositions in deep structure, though not PP's, then Emonds' argument regarding the simplification of the base rules can no longer be used as a justification for generating Intransitive Prepositions after the Direct Object in deep structure, since special provisions will have to be made for them in any case.

There is one final argument against Emonds' analysis of Particles, which is perhaps the strongest of all, and that is the fact that in derived nominals Particles may only occur before a Direct Object:

(206) a. His looking up of the information.

b. *His looking of the information up.

(207) a. The putting off of such tasks is despicable.

b. *The putting of such tasks off is despicable.

(208) a. The taking over of the government took three hours.

b. *The taking of the government over took three hours.

As noted by Chomsky (1970), this fact follows automatically from the Lexicalist Hypothesis, if we assume that Particles are generated to the left of the Direct Object in the base, since we expect to find nominal forms corresponding to the base structures of sentences, and since Particles cannot be moved over a PP. Thus, not only would Emonds' proposal contradict the Lexicalist Hypothesis, for which there is considerable support, but also he would be forced to posit a totally ad-hoc rule moving the Particle obligatorily to the left of a PP, in order to account for their position in derived nominals.

Notice that there is no inconsistency in maintaining both that Dative Movement is a permutation rule and that Particles are generated in deep structure immediately to the right of the Verb. However, all of the arguments in favor of stating Dative Movement as a Permutation rule depend crucially on the greater simplicity which follows from generating the Particle after the Direct Object, which is only possible if Dative Movement is a permutation rule. If we give up the former assumption, which, I have argued, we must, then there is nothing to choose between Dative Movement stated as a permutation rule and Dative Movement stated as an ordinary structure-preserving rule, in which case we must choose that form of the rule which leads to a more restrictive theory of grammar. I conclude, therefore, that Dative Movement is a normal structure-preserving rule, not a permutation rule, and that the facts concerning Dative Movement support a theory of transformations which excludes the use of

permutation rules.

4.2.3. Further Arguments In Favor of Dative Movement as Structure-Preserving

If it is true, as we have clained, that the application of Dative Movement is dependent on the presence of an empty Indirect Object-NP, which is subcategorized by the Verb, then we might expect to find Verbs which take to- or for-phrases, but which fail to undergo the rule because of the fact that they are not subcategorized to take an empty Indirect Object-NP. This is in fact the case. Consider, for example, the following pairs:

(209) a. I imparted the message to Bill.

b. *I imparted Bill the message.

(210) a. We revealed the secret to Mary.

b. *We revealed Mary the secret.

(211) a. He transferred the title to Bill.

b. *He transferred Bill the title.

(212) a. She imputed a lie to Bill.

b. *She imputed Bill a lie.

(213) a. John described Bill $\left\{\begin{matrix}\text{for}\\ \text{to}\end{matrix}\right\}$ the police.[8]

b. *John described the police Bill.

In a non-structure-preserving theory, the only way to account for these "exceptions" is by means of an ad-hoc rule feature, preventing Verbs such as impart, reveal, etc. from undergoing the rule of Dative Movement. In our theory, on the other hand, these Verbs can be accounted for without having to reduce the generality of the rule, simply by subcategorizing them as follows:

(214) impart: NP ___ NP_2 to NP by NP

Since the Verb is not subcategorized with an empty NP_1 node, it follows automatically that Dative Movement will be unable to apply, even though the structural description of the rule is in all other respects met.

It could be argued that it is just as ad-hoc to prevent lexical items from undergoing a rule by means of subcategorization of empty nodes as it is to use a rule feature. However, this objection misses the real point, which is that subcategorization of empty nodes is a far more restrictive device than are rule-features. This is due to the fact that subcategorization conditions can only subcategorize nodes (empty or not) which are independently motivated nodes generated by the phrase-structure rules. Rule-features, in contrast, are much more powerful, and their use must be subjected to heavy restrictions by any reasonable evaluation measure. Thus, the use of empty nodes in the manner just suggested is, in effect, a proposal for limiting the types of exceptions to structure-preserving rules allowed by the theory of grammar in a rather narrow way. Any other type of exception, for example one which would require the use of exception features, will accordingly be counted as much more costly by the evaluation measure, than one which can be stated in terms of the subcategorization of empty nodes. Insofar as this proposal is supported by the facts, it will provide further support for the validity of our whole approach, since the proposal only makes sense within the structure-preserving framework. For this reason, I conclude that the facts concerning Verbs such as impart, reveal, and so on, provide further, though somewhat weaker, evidence in favor of our analysis of the Dative

Movement rules and for the general theory of subcategorization on which it rests.

4.3. Sentences with Indirect Objects Only

Having established the existence of a deep structure Indirect Object node in English, and having established the form of the Dative Movement rules, we are now in a position to show that the distinction between the Direct Object and the Indirect Object plays a far more important role in English syntax than has hitherto been realized. In this section I shall argue that a great many sentences which, on the surface, appear to be identical to sentences derived from deep structures containing Direct Object-NP's are in fact to be derived from deep structures containing Indirect Object-NP's. It will be shown that the distinction is obscured in surface structure, whenever both are not present, through the action of certain well-motivated rules which collapse the two structures into the single surface structure grammatical relation Object-of.

To see that this is indeed the case, consider the following sentences, which we have already discussed in Section 3.1. in connection with the deep structure Subject position:

(215) a. He annoys me.

b. John's stutter bothers me.

c. You remind me of somebody.

d. Something is troubling him.

e. That experience rewarded me.

f. The long journey tired Bill. (c.f. also, you tire me)

g. He bores Mary.

h. His forgetfulness worries me.

i. That amazes me.

j. The news astounded us.

k. His antics amuse me.

l. John's resemblance to Bill startled me.

m. The discovery astonished me.

n. His sudden disappearance surprised me.

o. Bill revolts me.

p. His views sicken me.

q. His filthy habits disgusted Mary.

r. John helped me.

A striking fact about these Verbs is that in every case there exists a corresponding derived Adjective or Predicate Noun (in some cases, both) in which the Object of the Verb in sentences (215) a.-r. appears as the Object of the Preposition to:

(216) a. He is {annoying / an annoyance} to me.

b. John's stutter is bothersome to me.

c. Let that be a reminder to you.

d. That is troubling to him.

e. The experience was rewarding to him.

f. The long journey was tiresome to Bill. (You are tiresome to me.)

g. He is boring to Mary.

h. His forgetfulness is {worrying / a worry} to me.

i. That is amazing to me.

j. The news is astounding to me

k. His antics are amusing to me.

l. John's resemblance to Bill was startling to me.

m. The discovery was astonishing to me.

n. His sudden disappearance was {surprising / a surprise} to me.

o. Bill is revolting to me.

p. His views are sickening to me.

q. His filthy habits are disgusting to Mary.

r. John was helpful to me.

Now the Lexicalist Hypothesis predicts that we will find derived forms (whether nominal phrases or adjectival phrases) corresponding to the base forms of the sentences to which they are related. Thus, if the Objects in (215) were really Direct Objects in deep structure, then we would expect to find these NP's appearing with the Preposition of in the derived Adjectival forms, just as we find, corresponding to a sentence such as Bill refused the offer, the derived nominal form Bill's refusal of the offer. But in fact, not only do the Objects in (215) appear with the Preposition to in derived adjectival forms, as shown by the examples in (216), but also the Preposition of is impossible:

(217) a. *He is annoying of me.

b. *John's stutter is bothersome of me.

c. *Let that be a reminder of you.

d. *That is troubling of him.

e. *The experience was rewarding of him.

f. *The long journey was tiresome of Bill.

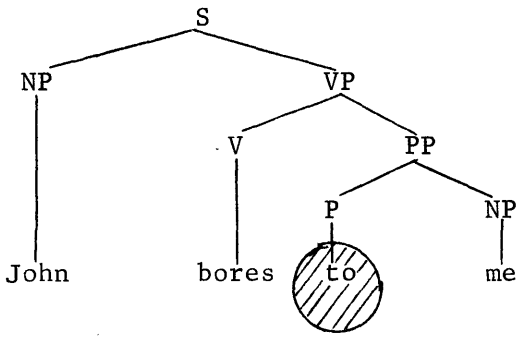
g. *He is boring of Mary.

h. *His forgetfulness is worrying of me.
etc.

These facts naturally suggest that the surface Objects of sentences such as those in (215) derive from a PP with the head Preposition to. This would immediately explain, under the Lexicalist Hypothesis, why the Preposition to appears in the derived Adjectival forms of (216). Furthermore, notice that the fact that the to does not appear in surface structure in sentences such as those in (215) can immediately be explained by means of the independently motivated rule of Preposition Deletion (cf. Section 4.2.1.), which deletes a Preposition when it appears immediately to the right of the Verb.

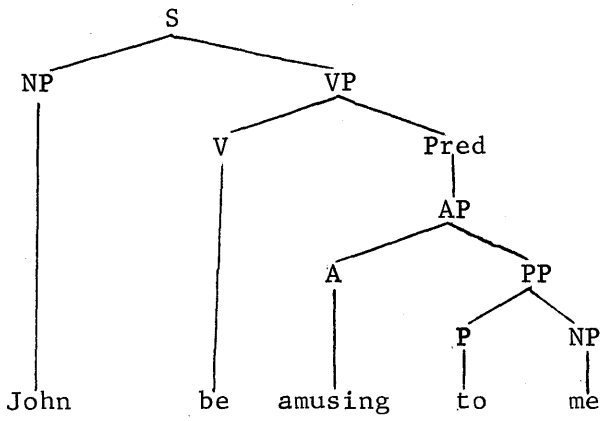
I propose, therefore, that underlying a sentence such as John amuses me is a structure of the following sort:

(218)



Since the Preposition to occurs immediately to the right of the Verb, Preposition Deletion applies, automatically deleting it. The structure underlying sentences containing Adjectival forms, e.g. John is amusing to me, is precisely parallel

(219)



However, since AP's in English never allow their Objects to appear in surface structure without a Preposition, the to must be retained in (219).

We may hypothesize, furthermore, that the to-phrase which appears in the examples of (215) and (216) is in fact simply the deep structure Indirect Object. Notice that this will immediately allow us to simplify the statement of the Dative Movement rules, which may now be reformulated so as to move a PP with the head Preposition to or for into an empty PP-node between the Verb and its Direct Object, the Preposition then being deleted automatically by the rule of Preposition Deletion. We may thus restate the Dative Movement rule simply as follows:

(220) X - V - PP - NP - PP - Y $\Longrightarrow$ X - V - PP - NP - PP - Y

Furthermore, there is independent evidence from derived nominal forms that this is the correct way of formulating Dative Movement. Notice that corresponding to sentences such as the following:

(221) a. John gave a book to Mary.

b. Bill offered a ride to Sue.

c. The insurance company paid the money to John.

we find derived nominals of the following form:

(222) a. John's gift of a book to Mary.

b. Bill's offer of a ride to Sue.

c. The payment of the money to John by the insurance company.

but none of the form:

(223) a. *John's gift (of) Mary of a book.

b. *Bill's offer (of) Sue of a ride.

c. *the payment (of) John of the money by the insurance company.

On the other hand, we do find nominals such as the following:

(224) a. John's gift to Mary of a book.

b. Bill's offer to Sue of a ride.

c. The payment to Bill of the money by the insurance company.

These facts are impossible to explain under the assumption that the deletion of the Prepositions to and for is part of the Dative Movement rule, but follow automatically from the revised version above. The reason that the Preposition fails to delete when it is moved next to the head Noun in the examples of (224) is simply due to the general fact that Nouns in English require PP-Objects in their complements.

Next observe that by extending Dative Movement to apply over a PP, as well as over an NP, we can automatically account for alternations such as those in (172)-(174). Furthermore, the same extension will immediately explain the existence of variants such as the following:

(225) a. John talked about the matter with Mary.

b. John talked with Mary about the matter.

(226) a. Harry spoke to John about Bill.

b. Harry spoke about Bill to John.

Thus we have, in effect, split the Dative Movement rule up into two separate components. The first is simply a rule which moves a PP into the Indirect Object position immediately to the right of the Verb. The second is the lexically governed rule of Preposition Deletion, which deletes a Preposition when it occurs immediately to the right of the Verb. This analysis is essentially the same as that proposed recently by Jackendoff and Culicover (1970), incorporated into the structure-preserving framework.

One final advantage of this analysis is that it is no longer necessary to refer to the linear order of the Indirect and Direct Object-NP's, in order to properly define the Indirect Object as that NP which occurs in the first PP to the right of the Verb in the following PS expansion rule for VP:[9]

(227) VP $\longrightarrow$ V (PP) (NP) (PP)* (S)

Observe, finally, that since the Direct Object-NP typically shows up in derived nominal forms with the Preposition <u>of</u> (cf. Chapter I, Section 2.0.), we might just as well assume that it is present in the deep structure of sentences such as <u>John hit Bill</u>, but that it is deleted obligatorily in VP's by the Preposition Deletion rule. Notice that this assumption not only simplifies the statement of Dative Movement, which can now be formulated as a rule which simply moves a PP over a PP to its left into an empty PP immediately adjacent to the head Verb (or Noun):

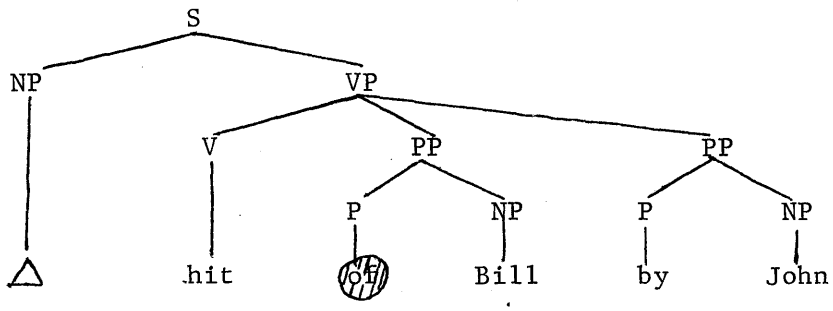
(228) X - <u>C</u> - PP - <u>PP</u> - <u>PP</u> - Y $\Longrightarrow$ X - <u>C</u> - <u>PP</u> - <u>PP</u> - PP - Y

but furthermore, we now write the PS expansion rule for any of the phrase-nodes $\overline{V}$, $\overline{A}$, $\overline{N}$, simply as follows:[10]

(229) $\overline{X}$ $\longrightarrow$ X (PP)* (S)

I shall assume, therefore, that a sentence such as John hit Bill derives from a deep structure of the following form:

(230)



and that the Preposition of is automatically deleted by the rule of Preposition Deletion.

4.3.1. Further Remarks on Passive Adjectives

Observe that corresponding to the sentences in (215), we do not find any derived nominal forms:

(231) a. *His annoyance {to / of} me.

b. *The bother {to / of} me by John's stutter.

c. *Something's troubling {of / to} him.

d. *His boredom {of / to} Mary.

We do, however, find nominals of the following sort:

(232) a. Mary's annoyance at John.

b. Mary's boredom with Bill.

c. My amusement at his antics.

d. John's amazement at Bill's story.

e. Bill's astonishment at the discovery.

f. My surprise at his sudden disappearance.

g. Mary's disgust at Bill's filthy habits.

At first this might seem to contradict the Lexicalist Hypothesis, since there are no sentences of the form: *Mary annoys at Bill, *Mary bores with Bill, etc. However, a closer look reveals that these nominals, rather than being derived from the Verbs annoy, bore, etc. are instead related to the derived Adjective forms found in sentences such as the following:

(233) a. Mary is annoyed at John.

b. Mary is bored with Bill.

c. I am amused at his antics.

d. John was amazed at Bill's story.

e. Bill was astonished at the discovery.

f. I was surprised at his sudden disappearance.

g. Mary is disgusted at Bill's filthy habits.

This suggests that the AP's in (233) are themselves base forms, unlike the AP's discussed in Section 3.1.2., which do not have corresponding derived nominal forms:

(234) a. *Mary's annoyance by John.

b. *Mary's boredom by Bill.

c. *My amusement by his antics.

d. *John's amazement by Bill's story.

e. *Bill's astonishment by the discovery.

f. *My surprise by his sudden disappearance.

g. *Mary's disgust by Bill's filthy habits.

On the other hand, it seems clear that the grammatical relation of the Subject to the Verb in (233) is the same as the grammatical relation of the Indirect Object to the Verb in (215) and (216). Thus, for example, they have identical selectional restrictions:

(235) a. *John annoys the rock.

b. *John is annoying to the rock.

c. *The rock is annoyed at John.

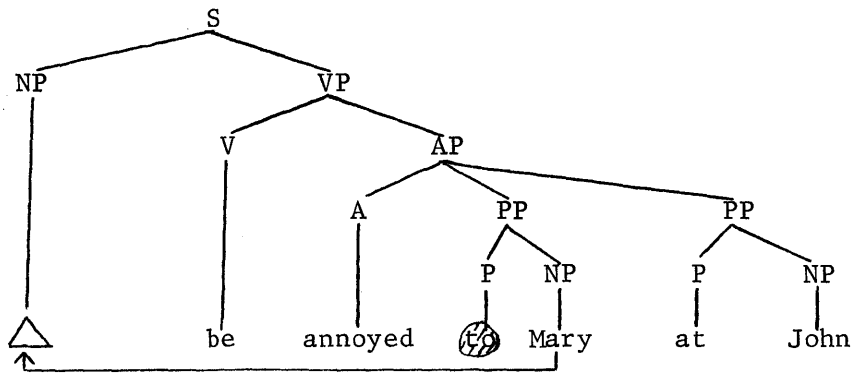
(236) a. *Bill bores the table.

b. *Bill is boring to the table.

c. *The table is bored with Bill.

How can we account for these facts? Notice that there is nothing to prevent us from deriving the surface Subjects in both (232) and (233) from the Indirect Object position in deep structure. I propose, therefore, that sentences such as those in (233) are to be derived from the following sort of deep structure:

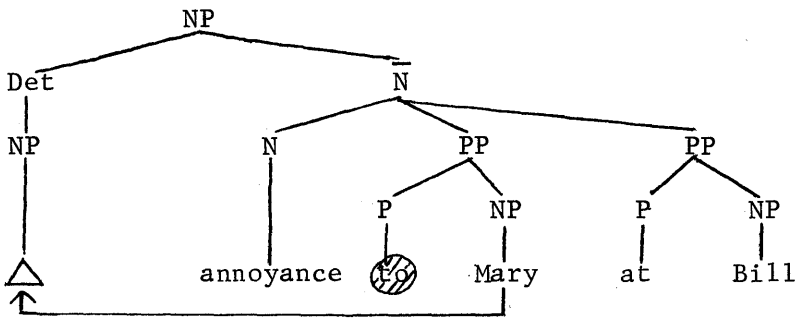
(237)



Given this structure, the rule of Object-Preposing (generalized to apply in AP's as well as in sentences) will move the Indirect Object into the Subject-position because of the presence of the -EN affix on the Adjective, just as it does in Passive sentences, as well as in the Passive Adjective forms discussed earlier in Section 3.1.2., to derive the correct forms in (233).

Corresponding to (237), we will have base nominal forms of the following sort:

(238)



and again Object-Preposing will apply, moving Mary into the 'Subject' position in the nominal.

The situation, then, is as follows. We have closely related base sentences of the form:

(239) a. NP - V - to NP

b. NP - V+EN - to NP by NP

which yield, respectively, the Active and the Passive sentences John bores Mary and Mary is bored by John. Corresponding to these, we have the virtually identical base AP's:

(240) a. NP - A (+ing) - to NP

b. NP - A +EN - to NP - by NP

which yield, respectively, sentences of the form John is boring to Mary and Mary is bored by John. On the other hand, we have base AP's of the form:

(241) NP - A +EN - to NP with NP

which yield surface structures such as Mary is bored with Bill, and corresponding to these, base nominals with the structure:

(242) NP - N+suff - to NP with NP

which give us nominals such as Mary's boredom with Bill.

One question which might be raised at this point is the following:

Why not derive AP's of the form (241) from remoter structures in which the Object of with is derived from the deep Subject position, and likewise the corresponding nominals of the form (242), thus reducing all of these sentences to structures in which the grammatical relations are the same. Notice that this could be done quite easily, simply by allowing Adjectives such as bored to occur with an empty with-phrase, and then adding to the grammar a rule moving a deep Subject into the with-phrase, in the VP. There are two arguments against such a move. First, there is no independent motivation for the extra rule that would be necessary. Second, and more importantly, such an analysis would be unable to explain why, on the one hand, there are no corresponding sentences of the form *Mary bores with John, and also why there are no nominals of the form *John's annoyance to Mary. If, however, we keep (239) and (241) as separate base structures, we can explain both of these facts. Furthermore, there is semantic evidence in favor of this decision, for notice that sentences such as Mary is annoyed at John are subtly different in meaning from either John is annoying to Mary or John annoys Mary. In the former, John is the object, as it were, of Mary's annoyance, while the latter state merely that annoyance is produced in Mary by John. This subtle, but unmistakable difference in meaning is clearly due to the different grammatical relation of the NP John to the Verb in the two types of sentences, indicating that the grammatical relation of a NP contained in a Preposition whose head is at is different from the Subject-of relation. Notice that this difference carries over to the Passive Adjective form Mary is very annoyed by John, in which John is still the deep Subject-of the sentence, while the nominal

form Mary's annoyance at John is clearly the same as Mary is annoyed at John. In short, one can be annoyed by something, or something can be annoying to one, or annoy one, without one's necessarily being annoyed at that thing. Hence, in this case, the different deep structures that we have assigned to these constructions is paralleled by a difference in semantic interpretation.

4.3.2. Some Remarks on Psych-Movement

Paul Postal, in his monograph Cross-Over Phenomena, has argued that pairs of sentences such as I am annoyed at Bill, Bill is annoying to me, should be related to one another by means of a rule which he calls "Psych-Movement". This rule operates on underlying forms having roughly the structure of the first example just cited, and converts them into representations more or less like the second example. Postal's argument is somewhat hard to interpret, for though he claims that these pairs are related by a rule, at the same time he takes pains to assure the reader that they are not synonymous and do not have the same underlying representations. Yet if "the underlying nominal-verbal relations are the same", as Postal claims, it is hard to see how the difference in meaning between these pairs can be accounted for except in terms of some ad-hoc feature, or perhaps by relating it to some superficial difference between the two, such as, say, the fact that one has the affix -ing, while the other has the affix -EN. On closer inspection, however, it becomes apparent that all of the evidence that Postal brings forward to support his analysis involves the relationship between the Subject of the first example and the Indirect Object of the second example. He points out,

for example, that they share selectional restrictions, in that both must be animate, and in some cases human. Likewise, the distribution of the Adverb personally:

(243) a. I personally am annoyed with Jack.

b. *Jack is annoyed with me personally.

c. Jack is annoying to me personally.

d. *I personally am annoying to Jack.

while it supports the claim that the Subject of (243) a. and the Indirect Object of (243) c. are derived from the same deep structure source, fails to support the other part of his claim, which is presumably that the NP Jack in (243) a. and (243) c. are also derived from an identical source in deep structure.

In fact, as we have just seen, there is good reason to suppose that the Object of annoyed and the Subject of annoying are not derived from the same source, and some of the evidence that Postal himself discusses demonstrates this. Thus he notes that the sentence I was very surprised by that are not synonymous, but he fails to note that the Passive is synonymous (or at least has the same grammatical relations as) the sentence that was surprising to me. As was observed earlier, these facts strongly support the view that the Object of annoyed and the Subject of annoying have different deep structure sources.

If these observations are correct, then it follows that sentences of this kind cannot be related by means of a permutation rule which switches the Subject and Object in a manner similar to the usual statement of the Passive rule. This brings up another difficulty with Postal's

analysis, which is that he nowhere justifies his decision to take the forms with annoyed as underlying. In fact, there is none, since obviously whichever order we take as underlying, the facts concerning selectional restrictions and the distribution of personally can be described equally well.

On the other hand, there is considerable syntactic support, as we have just argued, for the existence of a rule which moves an Indirect Object into the Subject position, and all of the facts brought forward by Postal reinforce this conclusion. Later on, we shall see that there are even stronger arguments for this view than the ones we have already given.

Postal lumps under the title "Psych-Movement" a great many other phenomena, most of which we will discuss in the course of this chapter and the next. In every case we shall see that the evidence strongly supports the more limited claim of this work, which is that a great many surface Subjects derive from the Indirect Object position in deep structure. My main concern here is to point out that nothing in Postal's discussion supports the view that there is a permutation rule that switches Subjects and Objects in English. In view of the fact that the Passive itself is most appropriately described in terms of two separate movement rules, this conclusion should not be surprising.

4.4. Other Indirect Object Constructions

We have just seen that there is syntactic evidence that certain NP's which appear, on the surface, to be ordinary Direct Objects are in fact derived from the deep structure Indirect Object position. Unless both a Direct Object and an Indirect Object are present, however, the difference

between them is obliterated by the rule of Preposition Deletion. There is also evidence that certain NP's which appear in the Subject position in surface structure are to be derived from underlying Indirect Objects. Consider, for example, sentences such as the following:

(244) a. John received the book today.

b. Mary obtained the information from her instructor.

c. John acquired that Rembrandt for next to nothing.

d. Bill lost a book yesterday.

e. Mary gained 10 lbs. last month.

f. He earned a lot of money.

g. Harry found a dime.

It has often been noted that the relation of the Subject-NP to the Verb in these sentences is different from that of the Subject to the Verb in sentences such as John hit Bill. On the other hand, the Objects of these sentences are clearly deep structure Direct Objects, as is shown, for instance, by the fact that they appear with the Preposition of in their nominal forms:

(245) a. The company's receipt of your order.

b. John's acquisition of a Rembrandt.

c. A loss of weight.

d. A gain of 20 lbs. since last month.

e. The earning of money.

f. The finding of a dime by Harry.

The evidence from the nominal forms for the deep structure origin of the Subject-NP's in (244) is not nearly so decisive, since in most cases the

Indirect Object is obligatorily moved to the Subject position, just as it is in the sentential forms. Note, however, that in at least two cases the Subject may actually appear with the expected Preposition to in the derived nominal forms:

(246) a. It was a great loss to John.

b. A gain to John of $20.

Furthermore, in several instances, there are related sentences in which the Subject shows up, as expected, in the Indirect Object position:

(247) a. That decision lost Bill a lot of friends.

b. Mary's promotion gained her a lot of new friends.

c. Mary's promotion gained a lot of new friends for her.

d. That investment earned him a lot of money.

e. That investment earned a lot of money for him.

Examples of this sort make it apparent that the surface Subjects of the Verbs earn, lose, and gain are derived from a deep structure for-phrase or to-phrase. When the sentence also has a deep Subject, as in (247), the Dative-NP stays in the Prepositional Phrase, or is moved into the Indirect Object position by the Dative Movement rule. If, on the other hand, the Subject-NP is empty in deep structure, as in (244), then the Dative-phrase is moved into the surface Subject position by the rule of Object-Preposing.

Further evidence in favor of this view can be derived from the existence of pairs of related Verbs which stand in the 'converse' relation to one another. Consider for example the following:

(248) a. John received the book from Mary.

b. Mary gave the book to John.

(249) a. Mary taught the children French (to the children).

b. The children learned French from Mary.

(250) a. John sold the book to Bill.

b. Bill bought the book from John.

(251) a. Harry borrowed a Rembrandt from the Metropolitan.

b. The Metropolitan lent a Rembrandt to Harry.

It seems apparent that the Subject -NP in the a.-sentences bears the same kind of relation to the Verb as the Object of the to-phrase does in the b.-sentences. However, it has thus far been to difficult to find justification for accounting for this relationship in syntactic terms. Of particular interest in this connection is the Verb get, which can appear either with a to-phrase or with a from-phrase:

(252) a. John got the book to Mary on time.

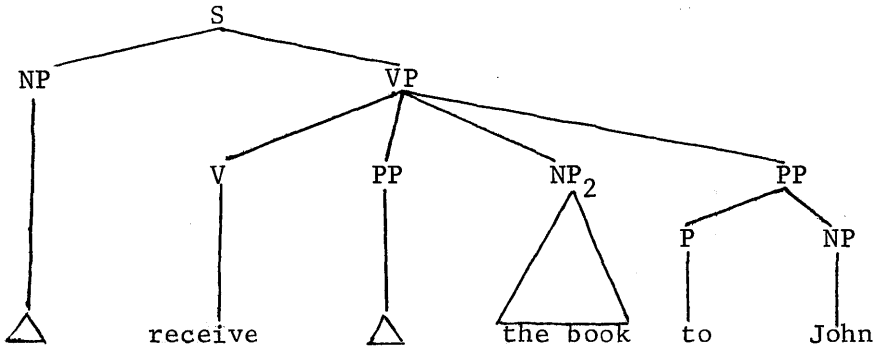
b. Mary got the book from John on time.

c. The book got to Mary on time.

Notice also that (252) a. and (252) c. are related in exactly the same way as the Transitive and Intransitive forms of the Verb roll. The only difference between the two is that the former, but not the latter, has an Agent-phrase. All of these facts naturally suggest that there is a whole complex of factors which are interrelated in various ways, and, as we shall see, there is some justification for this view.

As a first step, then, let us assume that sentences such as those in (244) derive from deep structures in which the surface Subject is contained in a to-phrase. Thus I propose that (244) a., for example, has a deep structure of roughly the following form:

(253)



Notice to begin with that as long as we subcategorize receive as obligatorily containing an empty NP_1 node in its deep structure, we do not need to add any new rules to the grammar in order to account for the surface form of sentence (244) a. First, the rule of To-Dative Movement will apply obligatorily, after which Object-Preposing will apply, also obligatorily, moving the NP John into the empty NP-node in the Subject position. Thus receive would have the following subcategorization feature:

(254) receive: NP ___ PP NP_2 to NP[11]

Notice, however, that this proposal immediately raises a problem, for these sentences not only have surface Active forms, but Passive forms as well:

(255) a. The book was received by John.

b. The information was obtained by Mary from her instructor.

c. That Rembrandt was acquired by John for next to nothing.

d. A book was lost yesterday by Bill.

e. 10 lbs. was gained last month by Mary.

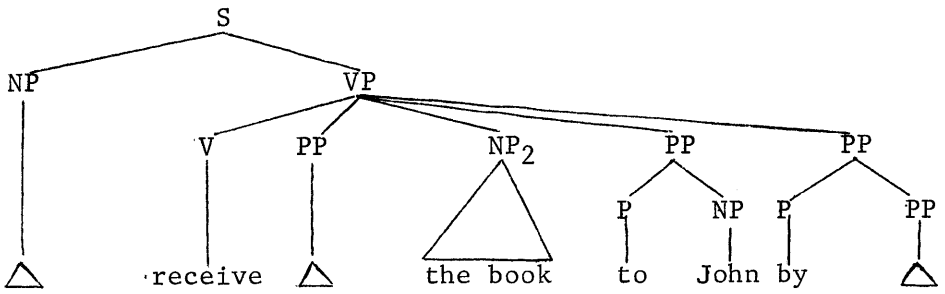
f. A lot of money was earned by him.

g. A dime was found by Harry.

This fact cannot be accounted for with the rules that we have so far,

even if we add to the subcategorization frame (254) an optional, empty Agent-phrase. To see that this is so, consider the deep structure which we would have to have:

(256)



First of all, notice that to get the NP John into the by-phrase, it would be necessary to order Subject-Postposing after Object-Preposing, which contradicts the normal order. For example, in the derivation of the sentence John was hit by the ball, Agent-Postposing must first move the deep structure Subject into the empty Agent-phrase, after which Object-Preposing will fill in the empty Subject-position with the Object-NP. But in (256) we must first apply To-Dative Movement, then Object-Preposing, and finally Subject-Postposing. Furthermore, in order to get the Object-NP into the Subject position, we must allow Object-Preposing to apply again, after Agent-Postposing has applied. Thus we would have to have a derivation of the following kind:

(257) 1. To-Dative Movement: ___ receive - John - the book - ___ - by ___

2. Object-Preposing: John - receive - the book - by ___

3. Agent-Postposing: ___ - receive - the book - by John

4. Object-Preposing: the book - receive - by John

Under the usual assumption that syntactic rules are linearly ordered, this

is an intolerable situation, requiring as it does that a rule (Object-Preposing) be allowed to apply both before and after another rule (Subject-Postposing) on the same cylce.

Suppose, however, we were to give up the assumption that structure-preserving rules are linearly ordered, and simply allow the rules to apply freely. There would then be nothing to prevent us from having derivations of the type shown in (257). Furthermore, notice that given the structure (256), the only possible derivation that will lead to a surface structure which meets the general condition that empty nodes be filled at least once in the course of the derivation is, in fact, the derivation shown in (257). If, for example, we tried to apply Object-Preposing first, to the Direct Object-NP the book. ThenDative Movement, which requires that there be a filled NP between the to-phrase and the empty Indirect Object-PP, would be unable to apply, and hence we would end up with a surface structure containing an empty node which had never been filled in the course of the derivation.

Let us adopt, therefore, the following general condition governing the application of structure-preserving rules:

(258) The structure-preserving rules apply freely, i.e. they may apply at any point in the derivation at which their structural description is met, and in any order. There are no extrinsic ordering conditions imposed on structure-preserving rules.

Notice that if two-way rules of the sort discussed earlier are permitted, then we must add another condition to prevent the indefinite iteration of rules such as Agent-Preposing and Subject-Postposing. In order to accomplish

this, it is sufficient to impose the following general condition on derivations:

(259) No node may be moved back into a position which it occupied earlier in the derivation.

Hence, if the Subject-NP is moved into the by-phrase, say, by the rule of Subject-Postposing, then (259) will automatically prevent Agent-Preposing from moving the same NP back into the Subject position. Notice that condition (259), being one of the conventions by which grammars are interpreted, is not a part of the particular grammar of English, and hence does not contribute to the complexity of the grammar at all.

Given that the structure-preserving rules may apply freely, we can now account for the fact that Verbs such as receive, acquire, lose, gain, learn, buy, borrow, etc. have Passive forms, as well as Active forms, by subcategorizing them simply as follows:

(260) learn: NP ___ PP NP_2 to NP (from NP) (by NP)

If the optional, empty Agent-phrase is not chosen, then we will automatically derive sentences such as John learned French (from) Bill through the application of Dative Movement, Preposition Deletion, and Object-Preposing. If, on the other hand, the empty by-phrase is present, then Subject-Postposing must apply, followed by a second application of Object-Preposing, and we will derive sentences such as French was learned (from Bill) by John.[12]

Consider next sentences containing the converses of the Verbs receive, learn, etc., namely, those containing Verbs such as teach, sell, give, and lend. We have the following data to account for:

(261) a. John taught French to Mary.

b. John taught Mary French.

c. French was taught to Mary by John.

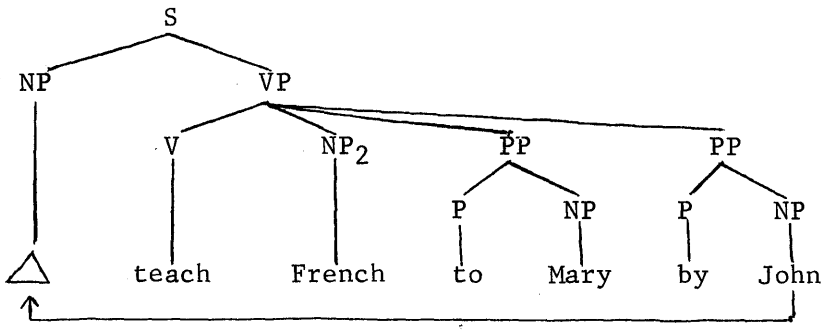
d. Mary was taught French by John.

We observe immediately that one difference between teach and learn is that the empty Indirect Object-node is optional for the former, as is shown by (261) a. and b. Furthermore, teach cannot take a from-phrase, since we do not find sentences such as *John taught French to Mary from Bill. On the other hand, either the Direct Object or the Indirect Object may occur in the Subject position in Passive constructions, depending on whether or not Dative Movement has applied, as is shown by (261) c. and d. All of these facts can be accounted for, assuming that the problems mentioned in footnote 12 can be solved, by means of a subcategorization feature of the following form:

(262) teach: NP ___ (PP) NP_2 to NP by NP

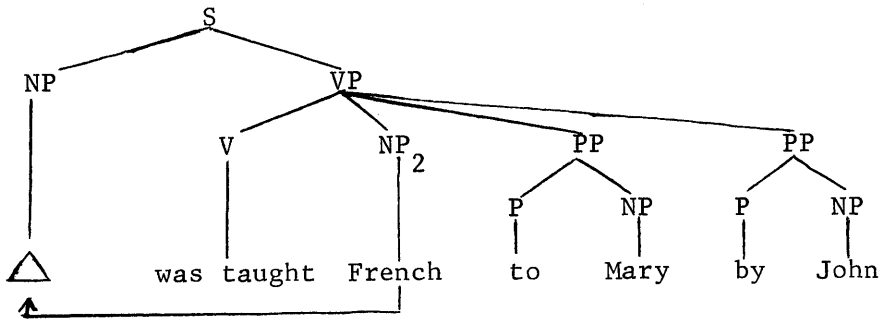
If the optional, empty Indirect Object-NP is not chosen, then we will derive either the Active form (261) a., through the application of Agent-Preposing:

(263)



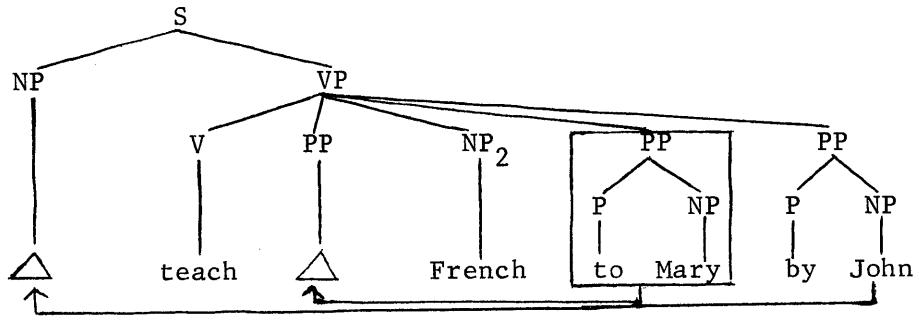
or else the Passive sentence (261) c., by means of Object-Preposing:

(264)



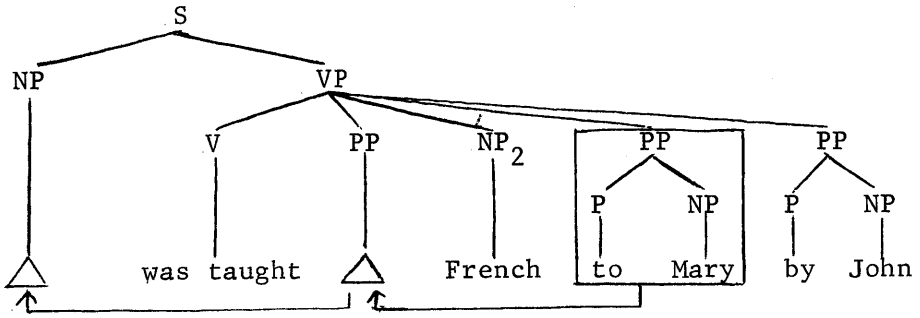
If, on the other hand, we choose the empty Indirect Object-node, then we will derive either the Active sentence (261) b., by means of Agent-Preposing, Dative Movement, and Preposition Deletion:

(265)



or else we will derive the Passive sentence (261) d., through the application of Dative Movement, Preposition Deletion, and Object-Preposing:

(266)



Notice, incidentally, that if we were to apply Object-Preposing <u>first</u> in (266) to the NP <u>French</u>, the structural description of Dative Movement, which requires an intervening filled Object-NP, would no longer be met, the empty Indirect Object node would not get filled in the course of the derivation,

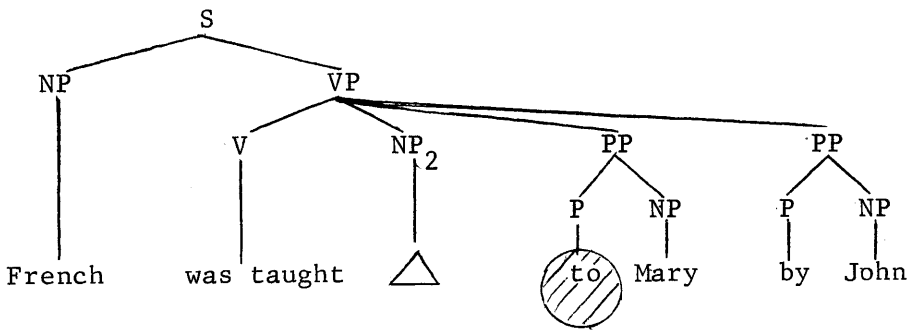
and the resulting surface structure would be rejected as ill-formed.

Observe, however, that there is still another sentence which must be accounted for, namely, the Passive form (267):

(267) French was taught Mary by John.

Sentences of this kind are exceedingly difficult to derive in standard theories of Dative Movement. Thus Fillmore (1965), for example, was only able to account for such sentences by means of an ad-hoc extension of the Passive rule, which would allow it in certain cases to apply over an Indirect Object-NP. In our framework, on the other hand, no such problems arise. In fact, we already have the means for deriving (267). Consider the structure which results from the application of Object-Preposing to the underlying form (264):

(268)



We see at once that the environment for Preposition Deletion is met, since the Preposition to now stands immediately to the right of the Verb. Furthermore, since the rules apply freely, there is nothing to prevent us from applying Preposition Deletion to (268), thus deriving the Passive form (267).

Comparing the subcategorization features (260) and (262), we see that the surface Subject of learn and the surface Indirect Object of teach both derive from a deep structure to-phrase. The two Verbs differ in that

learn takes an optional from-phrase, whereas teach requires an Agent-phrase.[13] Furthermore, as has already been observed, the empty Indirect Object node is obligatory for learn, whereas it is optional for teach. This fact turns out to predict, in a rather interesting way, certain further differences between some of the members of these two classes of Verbs. Notice that many Transitive Verbs which normally require an Agent-phrase may, under certain circumstances, occur without the by-phrase, in which case the Direct Object naturally gets moved into the empty Subject-NP by the rule of Object-Preposing. Consider, for example, sentences such as the following:

(269) a. The book reads easily.

b. The grass cuts easily.

c. This sentence translates badly into English.

d. Bill bruises easily.

e. That fabric may stain badly.

f. Mary photographs well.

which may also appear in transitive sentences of the following kind:

(270) a. John read the book.

b. Bill cut the grass.

c. Sue translated this sentence into English badly.

d. The rock bruised Bill.

e. The blood stained the fabric.

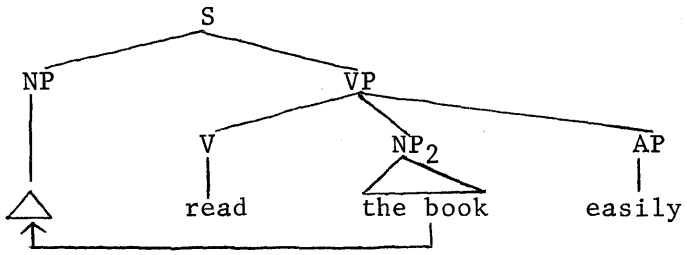
f. John photographed Mary.

The relationship between the sentences in (269) and those in (270) may easily be accounted for, in our framework, by subcategorizing these Verbs to take a Direct Object-NP, plus an optional Agent-NP:

(271) read: NP ___ NP_2 (by NP)

Thus if read, for example, is inserted in the context NP ___ the book - by John , then the empty Subject-NP will obligatorily be filled in by Agent-Preposing, and we will derive the sentence John read the book. If, on the other hand, read is inserted into a base tree of the following form:

(272)



then Object-Preposing will necessarily apply, moving the Direct Object the book into the empty Subject-NP, and thus deriving sentence (269) a.

Returning now to Verbs such as teach and learn, notice that the subcategorization features (260) and (262) predict that it should be possible for Verbs such as teach to have Intransitive variants analogous to the examples in (269), but that it should be impossible for Verbs such as learn to have Intransitive variants of this form. The reason is simply that the Verb learn requires an empty Indirect Object-NP, which guarantees that the Subject-NP can only be filled by the NP which occurs in the to-phrase. If Object-Preposing were to apply before Dative Movement, then the structural description for the latter would no longer be met, and we would be left at the end of the derivation with an empty Indirect Object node which had never been filled, and hence the derivation would be rejected. For Verbs such as teach, on the other hand, the empty Indirect Object node is optional. Consider now a Verb exactly like teach, except

that its Agent-phrase is optional. Such a Verb would be subcategorized as follows:

(273) NP ___ (PP) $\underline{NP}_2$ to $\underline{NP}$ (by $\underline{NP}$)

We see immediately that if neither the Agent-phrase, nor the empty Indirect Object node is chosen, the result will be a deep structure whose empty Subject-NP can only be filled in by the rule of Object-Preposing. In fact, there are Verbs if just this type. Consider, for example, the following sentences:

(274) a. This book sells like hotcakes to the college students.

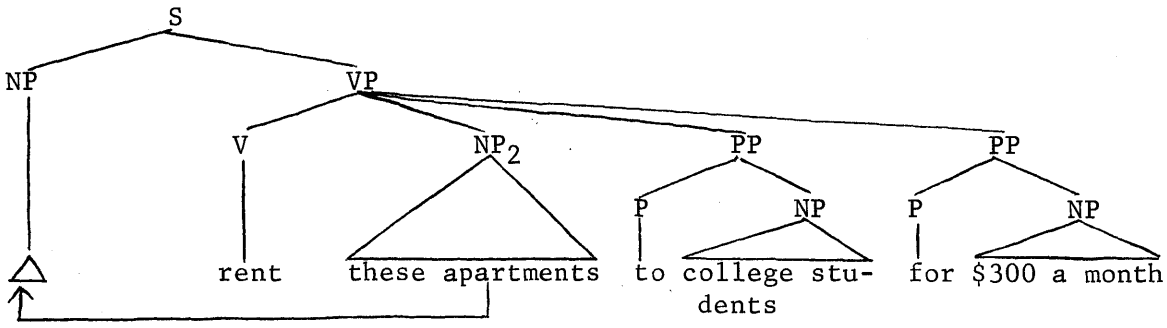
b. These apartments rent to college students for $300 a month.

c. Spanish teaches pretty easily to students who already know Italian.

d. The books on this shelf lend for only two weeks at a time.

Examples of this kind will be derived automatically, given the existence of deep structures such as the following:

(275)



On the other hand, constructions of the type shown in (274) are totally impossible for Verbs such as buy, learn, and borrow, as is demonstrated by the ungrammaticality of sentences such as the following:

(276) a. *This book is buying like hotcakes (from the campus store).

b. *These apartments rent to the students from the university.

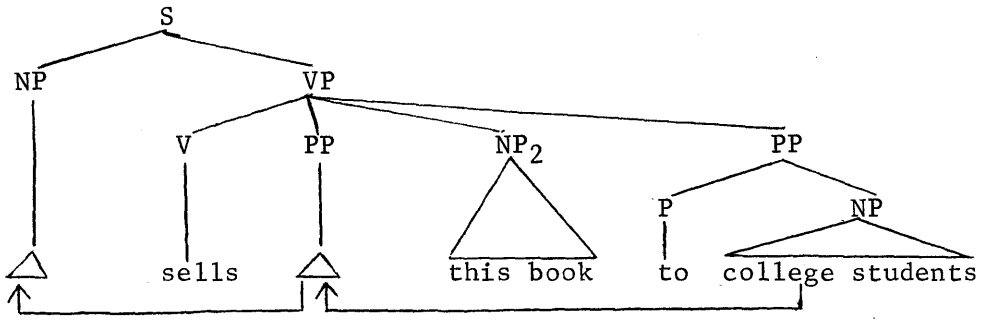
c. *Spanish learns pretty easily to students who already know Italian.

d. *The books on this shelf borrow for only two weeks at a time.[14]

Once again, this fact is explained automatically by the form of the subcategorization feature assigned to Verbs such as buy learn, etc., which makes it impossible for any NP except the Object of the to-phrase to become the surface Subject of the sentence.

Notice, however, that there is still a slight problem. As it stands, the subcategorization feature (273), which is associated with Verbs such as teach, sell, lend, etc., will permit us to generate deep structures of the following form:

(277)



This in turn will allow us to derive the sentence college students sell this book, by means of Dative Movement and Object-Preposing. Sentences of this kind are of course grammatical, but only under an interpretation in which the surface Subject derives from the Agent-phrase. However, (277) predicts that such sentences should have a non-Agentive interpretation, as well. The problem is that we need to prevent the optional, empty Indirect Object-NP

from occuring in deep structure, when the Agent-phrase is missing. Putting it slightly differently, we wish to allow an optional, empty Indirect Object node, only when the sentence contains an Agent-phrase.

This restriction could easily be incorporated in to the subcategorization feature (273), if we were allowed to express discontinuous dependencies between the elements of a subcategorization feature by means of the angled bracket notation. We could then write the subcategorization feature for sell, say, in the following manner:

(278) sell: NP ___ ⟨(PP)⟩ $\underline{NP}_2$ to NP ⟨by NP⟩

(278) is an abbreviation for three subcategorization features of the following form:

(279) a. NP ___ PP $\underline{NP}_2$ to NP by NP

b. NP ___ $\underline{NP}_2$ to NP by NP

c. NP ___ $\underline{NP}_2$ to NP

The use of the angled brackets notation thus automatically precludes the possibility of generating a deep structure of the form (277). (279) a. accounts for sentences such as John sold Harry a book, as well as the corresponding Passive Harry was sold a book by John; (279) b. accounts for sentences such as John sold a book to Harry, as well as the Passive forms a book was sold to Harry by John and a book was sold Harry by John; and (279) c. accounts for sentences such as this book is selling like hotcakes to the college students.

Notice, incidentally, that for sell the to-phrase is also optional, since we have the sentences John sold the book and the book is selling well. Furthermore, all of the sentences discussed can take an optional

for-phrase, as well. Thus we have John sold the book to Bill for $30, and the book is selling to students for $10, plus the corresponding Passive forms of the first two sentences. Adding this information to (278), we can write the full form of the subcategorization feature for sell as follows:

(280) sell: NP __ ⟨(PP)⟩ NP_2 (to NP) (for NP) ⟨by NP⟩

The Verb buy also takes an optional for-phrase, cf. John bought the book from Bill for $10, the book was bought for $10, etc., but, as has already been noted, the to-phrase is obligatory. Hence, the full form of the subcategorization feature for buy is as follows:

(281) buy: NP ___ PP NP_2 to NP (for NP) (from NP) (by NP)

(280) thus abbreviates twelve different subcategorization features, while (281) abbreviates six.

Before going on to the next section, let us consider briefly the Verb rent. This Verb has the peculiarity that it acts either like Verbs such as buy or like Verbs such as sell. Consider, for example, the following sentences:

(282) a. John rented the apartment (to Bill) (for $30 a month).

b. Bill rented the apartment (from John) (for $30 a month).

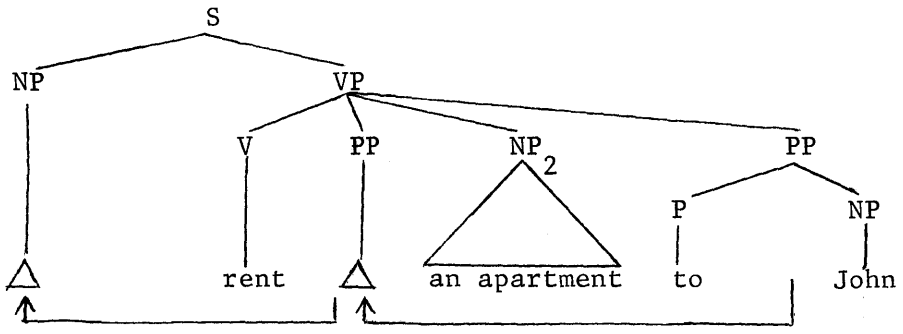
The contexts in (282) a. and c. are exactly those in which the Verb sell may appear, while the contexts in (282) b. are characteristic of a Verb such as buy. Notice, furthermore, that without a to- or from-phrase, a sentence such as John rented the apartment is ambiguous: it can mean either that John was the tenant, or that John was the landlord. This fact correlates directly with the form of the subcategorization feature that

must be assigned to the Verb rent. For in fact all of the contexts in which this Verb may appear are correctly predicted by the following subcategorization feature, which combines and simplifies the two features (280) and (281):

(283) rent: NP ___ (PP) NP_2 (to NP) $\left\{ \begin{array}{c} \text{(from NP)} \quad \text{(by NP)} \\ \text{(by NP)} \end{array} \right\}$ (for NP)

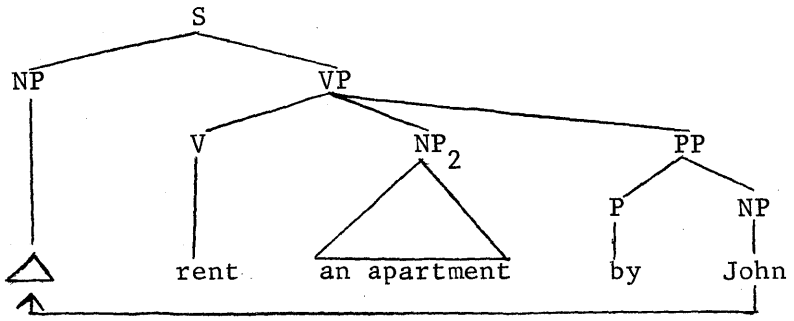
Recall that the reason we introduced the angled brackets notation was to prevent deep structures such as (277) from being generated for Verbs such as sell. However, in the case of the Verb rent, there is no need to prevent such deep structures, since a sentence such as John rented the apartment does, in fact, have a non-Agentive reading. This means that we can simply dispense with the angled brackets notation in writing the subcategorization feature for rent, and make the empty Indirect Object-NP optional. Thus if we insert rent in a deep structure such as the following:

(284)



we will come out with the surface structure John rented an apartment, with an interpretation analogous to that of John bought a book. If, on the other hand, we insert rent into a deep structure of the following form, as is permitted by (283):

(285)



we will come out with exactly the same surface structure, but this time with an interpretation analogous to that of John sold a book.

Notice that (283) represents 32 different environments in which the single Verb rent may appear, only a few of which are unrealized in grammatical surface forms. The fact that all of these subcategorization features may be reduced to the single subcategorization feature (283) illustrates in a dramatic way the power of the notational conventions proposed earlier, as well as providing strong evidence that the learning of lexical items cannot be merely a matter of memorizing long lists of essentially unrealted and idiosyncratic bits of information concerning the distribution of particular words, but that there must be systematic principles involved in the acquisition of a lexicon, which are a part of universal grammar, and hence need not be constructed ad-hoc for each particular language.

4.5. For-Dative Movement

Notice that one immediate advantage of the analysis of Dative Movement adopted in the preceeding section is that the movement of a to-phrase and the movement of a for-phrase need not be stated as separate rules, as was the case in earlier analyses (cf., for example, Fillmore (1965)). However, we have not yet examined Verbs which undergo For-Dative Movement.

Let us begin by considering the following sentences:

(286) a. Mary got a drink from the hostess.

b. John got a drink for Mary from the hostess.

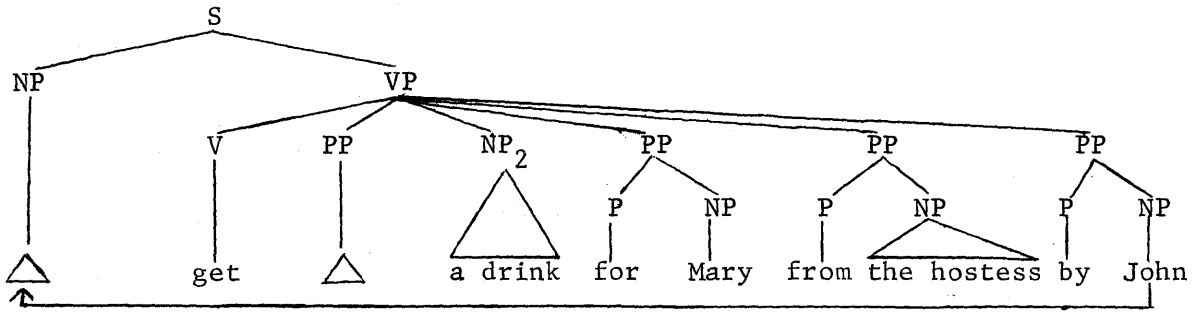
c. John got Mary a drink from the hostess.

At first glance it might appear as if (286) a. was related to the b.- and the c.-sentences in much the same way that the Intransitive and the Transitive forms of roll are related. Thus we might assume that the former derives from a structure containing a for-phrase and an empty Subject-NP, whereas the latter derive from a structure containing both a for-phrase and an Agent-phrase. We could then subcategorize get, in this sense, as follows:

(287) get: NP ___ (PP) NP_2 for NP (from NP) (by NP)

and (286) a. would be derived automatically from an underlying structure of the following form:

(288)

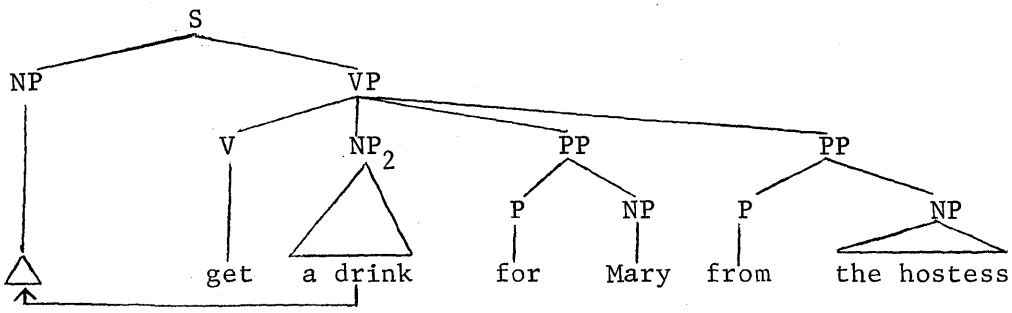


through the application of Dative Movement, Preposition Deletion, and Object-Preposing. If, on the other hand, the deep structure contained an Agent-phrase, then the empty Subject-NP would be filled in obligatorily by the rule of Agent-Preposing, and we would derive either (286) b. or (286) c.,

depending on whether or not the empty Indirect Object node was present.

Unfortunately, this proposal immediately runs into difficulties. Notice, for one thing, that since the empty Indirect Object node must be optional, in order to account for (259) b. and c., we will be able to generate structures such as the following:

(289)



to which Object-Preposing should be able to apply, deriving ungrammatical sentences such as:

(290) *A drink got for Mary from the hostess.

There is no obvious way of remedying this defect, which is not hopelessly ad-hoc.

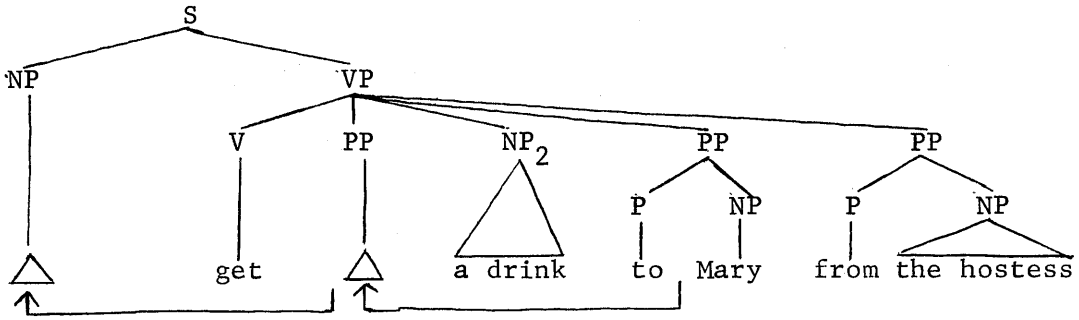
Furthermore, notice that (287) makes incorrect claims concerning the underlying grammatical relations in sentences such as those in (286). In (286) a., the person who receives the drink directly from the hostess is Mary, but the same is not true of (259) b. and c. Rather, John is the one who receives the drink directly from the hostess, while Mary (presumably) gets the drink from John. However, (287) claims that the NP Mary derives from the same underlying position in all three sentences, which would lead one to expect an interpretation in which Mary gets the drink directly from the hostess in all three cases. But this prediction, as we have just seen, is not borne out by the facts.

Suppose we assume instead, following the analysis of the previous section, that get, like other Verbs which allow a from-phrase, derives its surface Subject from an underlying to-phrase. We can then subcategorize get in the following manner:

(291) get: NP ___ PP NP_2 to NP (for NP) (from NP) (by NP)

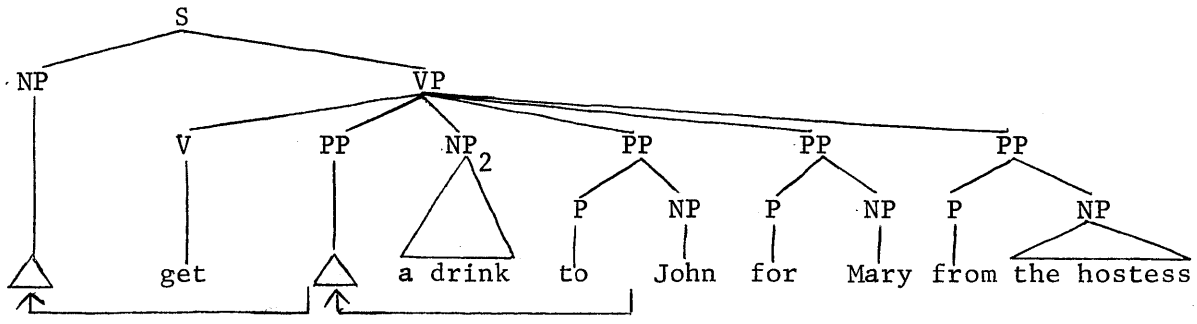
Now we can derive just the sentences in (286), and no others, without any difficulty. Thus (286) a. will be derived automatically from a structure such as the following:

(292)



through the application of Dative Movement, Preposition Deletion, and Object-Preposing. Sentences (286) b. and c., on the other hand, will be derived from the following sort of structure:

(293)



The first rule to apply is, of course, Dative Movement, which moves the to-phrase into the empty Indirect Object node, followed by Preposition

Deletion and Object-Preposing. The result is an intermediate string of the following form:

(294) John - get - PP - a drink - for Mary - from the hostess.

Observe that at this point, the structural description for Dative Movement is met once again. Furthermore, notice that whether Dative Movement applies or not, the result will be a well-formed surface structure, simply because the empty Indirect Object node has already been filled once in the course of the derivation. Thus if we re-apply Dative Movement to the for-phrase, we will derive (286) c., after the application of Preposition Deletion, while if choose not to re-apply Dative Movement, the result will be sentence (286)b.

This last derivation illustrates an important point, which is that the optional/obligatory distinction for transformational rules cannot, in general, be reduced to the optional or obligatory subcategorization of an empty node. Notice that get must be subcategorized to take an obligatory, unfilled Indirect Object node. Normally, this would have the effect of making Dative Movement apply obligatorily, since otherwise we would be left at the end of the derivation with a node which had not been filled in the course of the derivation. In this case, however, the derivation will not be rejected, if Dative Movement fails to apply to the for-phrase, because the empty Indirect Object node has already been filled once by the application of Dative Movement to the to-phrase. It follows, then, that obligatory subcategorization of an empty node can make an optional rule, in effect, obligatory, only in case that empty node has not been filled in beforehand by some other rule. On the other hand, notice that an obligatory rule can have the effect of forcing a node to be filled

twice in the course of a derivation, even though the general constraint on structure-preserving rules only requires that an empty node be filled at least once. A case in point is the derivation of a sentence such as John was hit by a rock. As was pointed out in footnote 12, the rule of Subject-Postposing must apply obligatorily in the presence of the Passive Auxiliary. Thus an underlying string of the form: [a rock - be hit - John - by NP] will obligatorily be converted into the intermediate form: XX [NP - be hit - John - by a rock]. Now normally the Subject-NP would not have to be filled in at this point, since it has already been filled once in the course of the derivation. However, Object-Preposing is an obligatory rule. Therefore, the NP John must be moved into the empty Subject-position, thus forcing the Subject-NP, in effect, to be filled twice during the derivation. Other examples of the interaction between optional and obligatory rules and optionally and obligatorily subcategorized empty nodes will be noted as we proceed.

Returning to the Verb get, we note that the subcategorization feature (291) not only generates the correct surface structures, but also describes correctly the underlying grammatical relations in the examples of (286). Thus (286) a. derives from the structure (292), in which the NP Mary is the Object of the Preposition to, whereas in (286) b. and c., Mary derives from a deep structure for-phrase, while the NP John derives from the to-phrase. Assuming that the person referred to by the NP in the to-phrase is the one who gets the drink directly from the hostess, the structures (292) and (293) then account correctly for the interpretation of the sentences in (286).

Let us consider next sentences such as the following:

(295) a. John got the book to Mary in time for the exam.

b. Bill got the ball from John to Mary very quickly.

Sentences of this type are similar to (286) b., except for the fact that they have a to-phrase instead of a for-phrase. They differ in other ways as well. First of all, they may not undergo Dative Movement, as is shown by the ungrammaticality of the following examples:

(296) a. *John got Mary the book in time for the exam.

b. *Bill got Mary the ball from John very quickly.

Such sentences are grammatical, of course, but do not have the same meaning as the examples in (295). Rather, they must be derived from underlying forms with a for-phrase:

(297) a. John got the book for Mary in time for the exam.

b. Bill got the ball from John for Mary.

The second peculiarity of the sentences in (295) is that they have Intransitive forms such as the following:

(298) a. The book got to Mary in time for the exam.

b. The ball got from John to Mary very quickly.

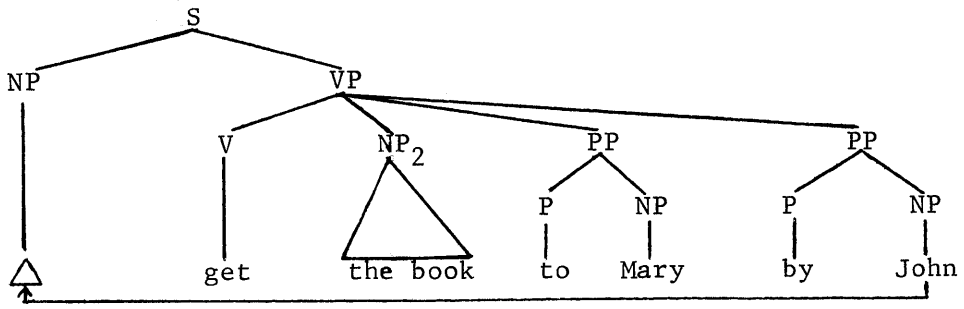
unlike the sentences containing a for-phrase (cf. example (290)), which may only be Transitive.

Notice that we could explain both of these facts simultaneously, if we were to assume (1) that get, in this sense, may not be subcategorized for an empty Indirect Object-NP, and (2) that the surface Subject in this case derives from the Agent-phrase, and furthermore that it is optional. We would thus have the following subcategorization feature:

(299) get: NP ___ NP_2 to NP (from NP) (by NP)

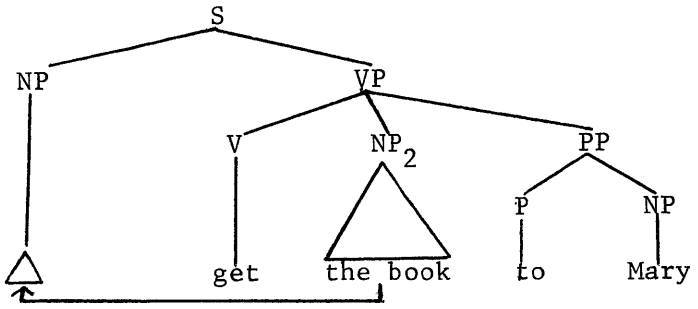
The fact that the examples in (295) may not undergo Dative Movement is of course accounted for by the fact that (299) does not allow an empty Indirect Object-NP. At the same time, the absence of an empty Indirect Object-NP will prevent the to-phrase from becoming the surface Subject when there is no Agent-phrase, and ensure that the Object-NP instead gets moved into the Subject position, thus deriving the Intransitive sentences in (298). If the Agent-phrase is chosen, then, (299) will allow structures such as the following:

(300)



from which we will derive, by means of Agent-Preposing, the sentence John got the book to Mary. If, however, the Agent-phrase is not chosen, we will have an underlying structure such as the following:

(301)



to which Object-Preposing must apply, automatically deriving the Intransitive sentence the book got to Mary.

We now have two subcategorization features for get, namely, (291) and (299), which I repeat below for convenience:

(302) get: NP ___ PP $\underline{NP}_2$ to NP (for NP) (from NP) (by NP)

NP ___ $\underline{NP}_2$ to NP (from NP) (by NP)

Clearly, there is a dependency in the first of these features between the empty Indirect Object-NP, the optional for-phrase, and the optional, empty by-phrase. Hence we can utilize the angled brackets notation and collapse these two features into a single feature of the following form:

(303) get: NP ___ ⟨PP⟩ $\underline{NP}_2$ to NP ⟨(for NP)⟩ (from NP) $\left\{\begin{matrix}\langle\text{(by NP)}\rangle \\ \text{(by NP)}\end{matrix}\right\}$

Notice that we have combined the angled brackets notation with the curly braces notation in a rather interesting way. (303) states that for the Verb get, one must choose either an optional, empty by-phrase, or an optional, filled by-phrase. Furthermore, if one chooses the former, one must also choose an empty Indirect Object-NP, and, optionally, a for-phrase, whereas if one chooses the latter, one may have neither an empty Indirect Object-NP nor an optional for-phrase. Thus, in general, the notational conventions must be defined in such a way that an expression of the form:

(304) ⟨X⟩ Y $\left\{\begin{matrix}\langle Z\rangle \\ W\end{matrix}\right\}$

is an abbreviation for the two expressions:

(305) a. X Y Z

b. Y W

Observe that which interpretation of the notational conventions is correct is an empirical question. If, for example, we defined the notational conventions in such a way that the angled brackets had to be expanded first, then (304) would be an abbreviation for the two expressions:

(306) a. X Y $\left\{\begin{matrix} Z \\ W \end{matrix}\right\}$

b. Y W

(306) a. would, in turn, abbreviate two expressions of the form:

(307) a. X Y Z

b. X Y W

and hence, under this definition, (304) would be an abbreviation for the three expressions:

(308) a. X Y Z

b. X Y W

c. Y W

If, on the other hand, we defined the notational conventions in such a way that the curly braces had to be expanded first, follwed by the expansion of the angled brackets, then (304) would abbreviate two expressions of the form:

(309) a. $\langle X \rangle$ Y $\langle Z \rangle$

b. $\langle X \rangle$ Y W

The expression (309) a. would, in turn, abbreviate the two expressions:

(310) a. X Y Z

b. Y

(311) Y W

or else two expressions of the form:

(312) a. X Y W

b. Y W

With regard to the case at hand, the evidence indicates that neither of these possible alternatives is correct. Rather, it seems that we must define the notational conventions in such a way that the angled brackets and the curly braces are expanded simultaneously. This will ensure that an expression of the form (304) is always expanded into two expressions of the form shown in (305). Thus if the analysis of get represented by the subcategorization feature (303) is correct, then it provides empirical evidence in favor of the following general convention governing the expansion of expressions containing both angles brackets and curly braces:

(313) If a subcategorization condition is abbreviated by means of both angled brackets and curly braces, then the expressions which it abbreviates is determined by expanding the material within angled brackets and the material within curly braces simultaneously.

4.6. Optional Reflexive Deletion

We are now in a position to remedy a slight defect in our treatment of the Verb get. Notice that according to our analysis, the following two sentences derive from different deep structures, which naturally leads us to expect that they should be non-synonymous:

(314) a. Mary got a piece of cake for John.

b. John got a piece of cake from Mary.

This seems to be correct. In (314) a. Mary is semantically the 'Goal', and John the 'Benefactee', while in (314) b. John, in one interpretation of the sentence (we return to the other interpretation, directly), is semantically the 'Goal', and Mary the 'Source', where I am using the terms 'Source' and 'Goal' in the sense of Gruber (1965). Furthermore, notice that while it is possible to add a from-phrase to (314) a.:

(315) Mary got a piece of cake for John from Bill.

it is not possible to have an additional from-phrase in (314) b.:

(316) *John got a piece of cake from Mary from Bill.

This fact is correctly predicted by the subcategorization feature (303), which allows only one from-phrase to occur with the Verb get. If we can also make the reasonable assumption that in this case, the semantic rules associate the interpretation 'Goal' with a deep structure to-phrase, the interpretation 'Source' with a from-phrase, and the interpretation 'Benefactee' with a for-phrase, then (303) accounts satisfactorily for the meaning of these sentences.

Notice, however, that (314) b. is actually ambiguous. Under one interpretation, it can be paraphrased as meaning "John received a piece of cake from Mary". That is the interpretation just mentioned. But there is also an interpretation under which John is not only the Goal, semantically, but also the Benefactee, so that the sentence implies that the piece of cake that John got was in fact for himself. How can we account for this second interpretation? Notice that there exist Reflexive sentences of the following sort in English:

(317) a. John got a piece of cake for himself.

b. John got himself a piece of cake.

Furthermore, it is well known that English has a special rule which, for certain Verbs, optionally deletes a Reflexive Pronoun in the Object position, producing variants such as the following:

(318) a. John shaved himself.

b. John shaved.

(319) a. The children behaved themselves.

b. The children behaved.

(320) a. Mary dressed herself.

b. Mary dressed.

Clearly, we need only extend this rule slightly to account for the second interpretation of (314) b. Thus suppose that we start out with the structure underlying (317) a., and then apply Dative Movement to the for-phrase, yielding an intermediate structure of the form (317) b. At this point the environment for Optional Reflexive Deletion is met, so that the Pronoun himself may be deleted, producing a surface structure which is identical to that of (314) b. Assuming that the interpretation 'Benefactee' is associated with the for-phrase, this immediately accounts for the ambiguity of these sentences, since in one case they are derived from a deep structure containing a to-phrase only, while in the other they are derived from a source which contains both a to-phrase and a for-phrase, the Object-NP's of which are coreferential.

It is interesting to observe that a similar sort of ambiguity arises in sentences of the following kind:

(321) a. John rolled down the hill.

b. Bill turned into a pumpkin.

which can be interpreted either agentively or non-agentively. In the first case, the surface Subject must derive from the by-phrase, while in the second, it must derive from the Direct Object position in deep structure. Notice that the sentences in (321) can be disambiguated in favor of the Agentive interpretation by adding Adverbs such as deliberately, intentionally, etc.:

(322) a. John deliberately rolled down the hill.

b. Bill intentionally turned into a pumpkin.

If, on the other hand, the surface Subject is non-Animate, these sentences have only the non-Agentive interpretation:

(323) a. The ball rolled down the hill.

b. The squash turned into a pumpkin.

as is shown, for example, by the fact that they cannot co-occur with Adverbs of the deliberately-class:

(324) a. *The ball deliberately rolled down the hill.

b. *The squash turned into a pumpkin on purpose.

As we have already noted, the relationship between pairs of sentences such as the ball rolled down the hill and John rolled the ball down the hill can be accounted for, in our framework, by subcategorizing Verbs such as roll in the following manner:

(325) roll: NP ___ NP_2 (by NP)

Now the non-Agentive interpretation of the examples in (321) poses no problems, since they may derive from structures exactly like those which underlie the Intransitives in (323), i.e. from structures containing a Direct Object and no Agent-phrase. However, the Agentive interpretation of (321) is somewhat difficult to explain. The reason is simply that

the surface Subject is, in this case, interpreted both as a Direct Object and as an Agent. Thus John in (321) a. is clearly the one who is rolling down the hill, and equally clearly, he is the Agent of the action in question.

These facts are easily accounted for, however, if we simply combine the analysis suggested earlier with the rule of Reflexive Deletion. We may then derive the sentences in (321), when they have an Agentive interpretation, from the deep structures which underlie sentences such as the following:

(326) a. John rolled himself down the hill.

b. Bill turned himself into a pumpkin.

If the Reflexive Deletion rule applies, we will then derive sentences which are identical in form to the ordinary non-Agentive sentences in (323). If, on the other hand, Reflexive Deletion is not applied, the result will be the intermediate forms in (326).

Further support for the correctness of this analysis can be derived from the fact that an Agentive interpretation is impossible for sentences such as the following:

(327) a. The ice melted.

b. The corn grew.

c. The water drained out of the tank.

d. The paper burned in the fireplace.

This fact follows automatically from the ungrammaticality of the analogous sentences containing Reflexives:

(328) a. *The ice melted itself.

b. *The corn grew itself.

c. *The water drained itself out of the tank.

d. *The paper burned itself in the fireplace.

and this in turn follows from the fact that only Animate NP's may occur in a deep structure by-phrase. Thus the only source for the Intransitive sentences in (327) is one which contains a Direct Object-NP and no Agent-phrase.

Finally, notice that we can now explain more adequately certain observations that were made in Section 2.0. concerning the lack of a pseudo-Passive form for Verbs such as slip, fly, etc., just when the surface Subject happens to be interpreted non-Agentively. It was noted there that the sentences:

(329) a. The bird flew across the room.

b. The thief slipped into the closet.

have grammatical pseudo-Passives:

(330) a. The room was flown across by the bird.

b. The closet was slipped into by the thief.

only when the Object of the surface by-phrase is interpreted Agentively. This, in turn correlates with the fact that when the NP is not capable of being interpreted agentively, the pseudo-Passives are ungrammatical:

(331) a. *The room was flown across by the dictionary.

b. *The closet was slipped into by the soap.

We can now account for this fact by deriving the sentences in (329) in their non-Agentive interpretation from deep structures containing an

Object, but no Agent-phrase, while the same sentences in their Agentive interpretation will be derived from underlying structures containing an Agent-phrase and a coreferential Reflexive Object-NP:

(332) a. The bird flew itself across the room.

b. The thief slipped himself into the closet.

The ungrammaticality of (331) then follows from the ungrammaticality of the underlying sentences containing reflexives:

(333) a. *The dictionary flew itself across the room.

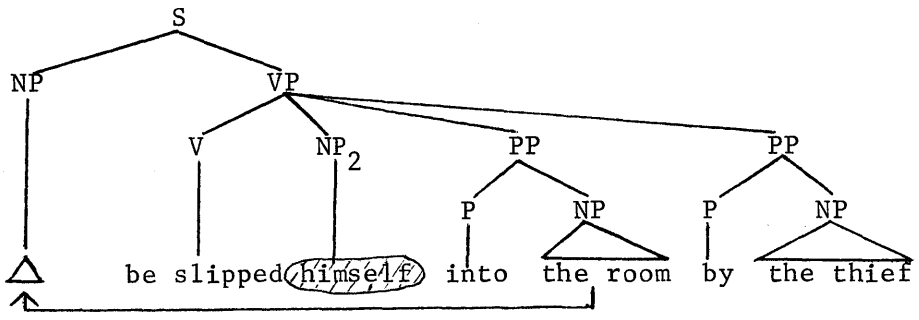
b. *The soap slipped itself into the closet.

Furthermore, we can now combine the subcategorization features for Transitive and Intransitive slip and fly into a single feature:

(334) slip: NP ___ NP into NP (by NP)

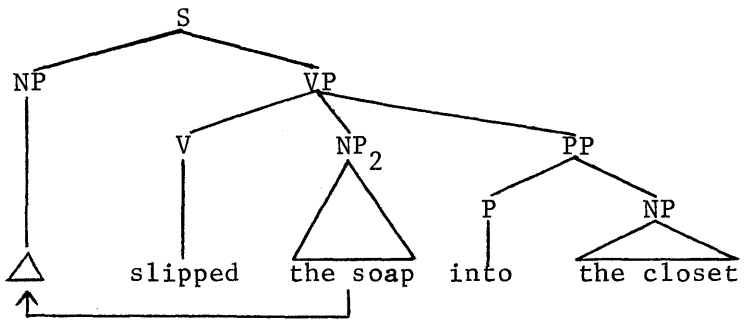
Thus the pseudo-Passives in (330) will be derived from deep structures of the following sort:

(335)



by means of the following sequence of rules: (1) Reflexive Deletion, and (2) Object-Preposing (applied over the Preposition into). Intransitive sentences such as the soap slipped into the closet, or the sentences in (329) in their non-Agentive interpretation, on the other hand, will be derived by means of Object-Preposing alone from structures such as the following:

(336)



This concludes, for the moment, our discussion of the Dative Movement rules and the Indirect Object position. I have argued that there is a deep structure Indirect Object position in English, from which it follows that the Dative Movement rules may be stated as ordinary structure-preserving rules, and further, that it is unnecessary for Dative Movement to be stated as a permutation transformation. This last result is important, since Dative Moment is, as far as I am aware, the only transformation in English which provides convincing arguments in favor of the use of structure-preserving permutation transformations. Therefore, if Dative Movement can (and indeed must, as I have argued) be stated as an ordinary structure-preserving rule, it immediately becomes possible to restrict the theory of grammar by excluding permutation rules altogether from the class of possible structure-preserving transformations.

I have also argued at some length that the Indirect Object position plays a far more important role in English syntax than has hitherto been realized. In addition, I have proposed that structure-preserving rules must be allowed to apply freely. This means, in particular, that they are not linearly ordered and that they may apply more than once in the course of a single derivation.

We turn next to a brief discussion of Instrumental-phrases in English,

after which I shall conclude this chapter with some further speculations regarding the nature of Verbs such as roll, melt, turn, etc., which may be either Transitive or Intransitive in form.

5.0. Instrumental Phrases

It has been argued by Fillmore (1968) that the surface Subjects of certain English sentences are systematically related to Instrumental-phrases containing the preposition with:

(337) a. John opened the door with the key.

b. The key opened the door.

(338) a. Harry broke the glass with a hammer.

b. A hammer broke the glass.

(339) a. John hit Bill on the head with the stick.

b. The stick hit Bill on the head.

(340) a. Bill burned the table with a match.

b. A match burned the table.

(341) a. Mary chopped down that tree with an ax.

b. An ax will chop that tree down.

Fillmore contends that examples of this kind, along with others, some of which we have already discussed, demonstrate the 'superficial' nature of the Subject position in English, and argues that underlying the surface structures of particular languages is a universal system of labelled functional relations, which he refers to as 'cases'. He further suggests, at the end of his paper, that the notion of deep structure occupies a position in the theory of grammar similar to that of the taxonomic phonemic level in phonology, and should be abandoned. This, however, is only a suggestion, and Fillmore offers no strong arguments of

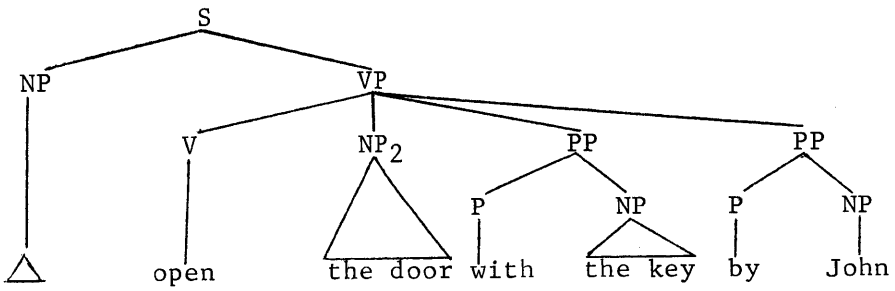
the type that would show that deep structure, as a separate level of linguistic organization, must be abandoned.

Notice that there are two separate issues being raised here. At the level of particular grammar, that is, the grammar of a particular language, namely English, there is the question of whether or not pairs of sentences such as those above are most appropriately related to one another in the syntactic component of the grammar, or whether such relationships are most appropriately treated in some other way, for example, in the semantic component. At the level of universal grammar, there is the question of whether or not the existence of such related pairs of sentences can be used to provide evidence for or against a particular theory of grammatical organization. I shall argue here that Fillmore is partially correct, at the level of particular grammar, in wanting to relate syntactically pairs of sentences such as those in (337)-(341), but that he is mistaken in believing that such sentences provide crucial evidence in favor of some new organization of grammar, characterized by the absence of a level of deep structure distinct from either the level of surface structure or the level of universal semantic representations. I shall argue, on the contrary, that pairs of sentences of the type noted by Fillmore in fact provide strong evidence for the necessity of a level of deep structure, and, in particular, that Instrumental sentences such as those above provide crucial arguments in favor of the existence of a deep structure Subject position in English.

It should perhaps be noted first of all that in the framework we have been developing here, it is a simple matter to account for the relation-

ship between the pairs of se tences in (337)-(341). Let us assume that the surface Subjects of the a.-sentences are derived from the Agent-phrase in deep structure and that the a.-sentences are basic, so that the surface Subjects of the b.-sentences originate in a with-phrase. We will then have a deep structure of the following form for (337) a.:

(342)

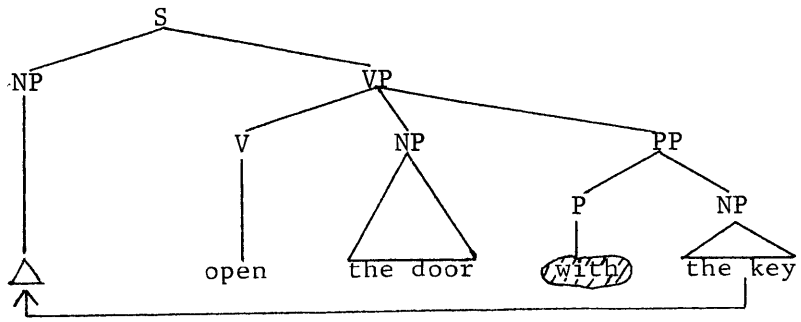


We already have a transformation, Agent-Preposing, which will account for the surface form of (337) a. correctly, so that nothing further need be said about the derivation of the a.-sentences. Furthermore, notice that Object-Preposing is also applicable, so that we can derive the Passive form:

(343) The door was opened with the key by John.

as well. Consider next the b.-sentences. In order to derive these, we need only assume a deep structure identical to (342), except that it will have no Agent-phrase in it:

(344)



Now we shall simply add to the grammar of English a new rule (call it

Instrumental Preposing), which moves the Object of a with-phrase into an empty Subject-NP and simultaneously deletes the Preposition. This rule can be stated as follows:

(345) Instrumental Preposing:

$$X - NP - \underline{V} - Y - \text{with } \underline{NP} - Z \Longrightarrow X - \underline{NP} - \underline{V} - Y - \emptyset - NP - Z$$

Applying (345) to the deep structure (344), we automatically derive the surface form (337) b. Notice that Object-Preposing may also apply in (344), in which case we will derive the grammatical sentence:

(346) The door opened with the key. Finally, observe that since the Instrumental-phrase is optional in both (342) and (344), we will be able to derive all of the following sentences, using only the regular rules:

(347) a. John opened the door.

b. The door was opened by John.

c. The door opened.

Sentence (347) a. is derived by the application of Agent-Preposing, while (347) b. and c. are derived by means of Object-Preposing.

We see, then, that all of the surface forms mentioned by Fillmore may be generated with three rules, two of which are independently motivated for all sorts of other reasons anyway. Furthermore, all of these sentences can be accounted for by means of a single subcategorization feature for the Verb open, as long as we are allowed to collapse subcategorization features in accordance with principle (38). Thus we would have the following feature:

(348) open: NP ___ NP (with NP) (by NP)

(348) states that the Verb open may occur in deep structures of the form (342) or (344) (depending on whether or not the Agent-phrase is chosen), either with or without the Instrumental-phrase. Thus the facts brought up by Fillmore, in addition to supporting the structure-preserving constraint and the use of empty nodes in deep structure, also provide strong support for principle (38), governing the use of lexical redundancy rules in the lexicon.

Let us now consider more closely the sentences in (339). As was mentioned earlier, Fillmore interprets data of the sort we have been examining as evidence for the 'superficial' nature of the Subject position in English. However, we have just seen that the relationships with which he is concerned are easily incorporated into a grammar which allows empty nodes to be generated in deep structure, so that it certainly cannot be the case that grammars containing a level of deep structure are in principle incapable of handling syntactic relationships of this kind. Evidently, then, this matter of the superficial nature of the Subject relation is at least one of the things which is crucial in distinguishing the empirical claims of the type of theory that Fillmore advocates from those made by a theory which incorporates a level of deep structure. In other words, if we could not show that a Subject-position was independently motivated in our grammar, then clearly setting up an empty Subject-NP in deep structure to serve as a dummy symbol onto which to map the various NP's manifesting the functional relations contained in the VP, would amount to no more than a notational variant of the system advocated by Fillmore, in which surface structures are

related to underlying labelled, functional relationships by means of rules of 'Subject-formation', Prepositional Phrase formation rules, and so forth.[15] However, it happens that this very matter of Instrumental phrases provides a strong argument for the necessity of an independent Subject relation in deep structure.

Recall that in Section 3.1. we discussed Verbs such as hit, touch, strike, etc., and showed there that the ambiguity of sentences such as John hit the wall can be accounted for under the assumption that the surface Subject is derived either from an Agent-phrase or from the Subject position in deep structure. Sentences such as those in (339) would seem to argue that the surface Subjects of these Verbs, in the non-Agentive interpretation, are actually derived from the Instrumental phrase in deep structure. If this were true, it would obviously weaken our case and lend support to Fillmore's contention that all instances of the surface relation 'Subject-of' are derived from deeper underlying relations such as Instrument, Agent, and so on. However, notice that true deep structure Instrumentals behave differently from deep structure Subjects with respect to Passivization. Whereas the deep Subject of a sentence such as the rock (John) hit the wall can be passivized, yielding the sentence:

(349) The wall was hit by the rock.

a deep structure Instrumental-NP such as the key in (337) b. cannot be put in the Passive by-phrase:

(350) *The door was opened by the key.

Similarly, notice that the Subject of (339) b. cannot be interpreted as an Instrument when it is put in the by-phrase:

(351) Bill was hit on the head by a stick.

Now most Nouns in English are completely neutral, in the sense that they can be interpreted either as Instruments or not, depending on the syntactic environment. Thus stick in (339) a. is interpreted as an Instrument, because it appears in a with-phrase; in (351) it must be interpreted non-Instrumentally, because it appears in the Passive by-phrase; while in (339) b. it can be interpreted either way. However, certain lexical items, such as key, ax, screw-driver, nail, shovel, etc., when they appear with the appropriate Verb, can only have an Instrumental interpretation, and these will be ungrammatical when they appear in a Passive by-phrase:

(352) a. *The tree was chopped down by an ax.

b. *That hole was dug by a shovel.

c. *Mary was shot by a gun.

d. *The screw was put in by a screw-driver.

e. *The meat was chopped up by a cleaver.

f. *The paint was put on by a brush.

Instead, they must appear in a with-phrase:

(353) a. The tree was chopped down with an ax.

b. That hole was dug with a shovel.

c. Mary was shot with a gun.

d. The screw was put in with a screw-driver.

e. The meat was chopped up with a cleaver.

f. The paint was put on with a brush.

On the other hand, these same Nouns can all be used in a Passive by-phrase, i.e. can be non-Instrumental, with different Verbs:

(354) a. John was hit on the head by an ax.

b. The wall was struck by a shovel (that was flying through the air).

c. Mary was hit by a gun.

d. John was touched by a screw (that happened to fall out of the wall).

e. Bill was badly bruised by the cleaver (that fell off the shelf).

f. Harry was scratched by the brush (when it fell into his face).

This naturally suggests that "true" Instrumentals, such as appear in (353), should be distinguished in deep structure from the NP's which appear in (354), which are not true Instrumentals. At the same time, we want to distinguish the Agentive interpretation of sentences such as John touched the table from the non-Agentive interpretation in which John is simply described as having come into contact with the table. The only way to account for all of these distinctions, using only rules that are syntactically motivated is to assume that true Instrumentals derive from the with-phrase in deep structure, that Agents derive from the Agent-phrase, and that the NP's which appear in the by-phrase in (354) originate in the Subject-position in deep structure. It is difficult to see how Fillmore could account for these facts, except by setting up ad-hoc another deep structure 'case', corresponding to our deep structure Subject-NP. However, there is no syntactic justification for such a move. On the other hand, there is considerable motivation, as we have

already seen, for distinguishing deep Subjects from Agent-phrases, and far distinguishing both of these from true Instrumental phrases.

Another argument in favor of the existence of a deep structure Subject relation is provided by the fact that Instrumental-phrases can co-occur with a deep Subject. Consider, for example, the following sentences:

(355) a. John bored us with his stories about Africa.

b. Bill annoys Mary with his incessant declarations of love.

c. He tires me with his lousy jokes.

d. Bill worries me with his forgetfulness.

e. John amused the children with his antics.

f. Harry surprised me with his sudden disappearance.

g. John hit the wall with his head.

h. The car broke the window with its fender.

Fillmore is, of course, aware of these counterexamples, but he argues that in such sentences the surface Subject is actually derived from the Possessive NP in the Determiner of the Instrumental-NP, a trace being left behind in the form of the Possessive Pronoun. Thus, he states, "the superficial nature of the notion 'subject of a sentence' is made apparent by these examples in a particularly persuasive way, because... the 'subject' is not even a major constituent of the sentence;..." (cf. Fillmore (1968), p. 23). This analysis, however, is unconvincing. Notice, for one thing, that it is by no means necessary for a trace to be left behind, as the following examples show:

(356) a. John bored us with an interminable story about Africa.

b. Bill annoys Mary with incessant declarations of love.

c. He tired us with a lot of corny jokes.

d. John amused the children with an imitation of Donald Duck.

e. He surprised me with a violent denunciation of Richard Nixon.

f. Bill worries me with forgetfulness.

Interestingly enough, though, the absence of a coreferential possessive Pronoun requires that the surface Subject have an Agentive interpretation. Thus sentences (355) a.-f. are ambiguous in that the Subject can be derived either from the Agent-phrase in deep structure or from the Subject position, whereas those in (356) are unambiguous, the Subject-NP having an Agentive interpretation only. This naturally suggests that there is a rule which requires an Instrumental-NP to be provided with a pronominal copy of the deep Subject-NP. Thus if we have a deep structure string of the following form:

(357) NP - V - X - with [Δ - $\bar{N}$]

then the rule will obligatorily fill in Δ with a pronominal copy of the Subject-NP.[16]

Consider now sentences (355) g. and h. The rule just proposed immediately explains why sentences such as (358):

(358) *John hit the wall with $\left\{\begin{matrix} a \\ the \end{matrix}\right\}$ head.

are ungrammatical, except under the rather bizaar interpretation in which the head refers not to John's head, but to some other head. Note also that John must be an Agent under this interpretation, just as we

would expect. The following sentence, on the other hand:

(359) *The car broke the window with $\left\{\begin{matrix}\text{the}\\ \text{a}\end{matrix}\right\}$ fender.

is completely ungrammatical, just as we would predict, because (1) it breaks the rule just proposed, and (2) because the NP the car is not one which can be a deep structure Agent. Note again, that in order for this explanation to work, it is crucial that we distinguish between deep Subjects and deep Agent-phrases, on the one hand, and between Subjects and Instrumental-phrases, on the other.

But what about Fillmore's proposal? We have shown that the facts brought up by him can be handled equally well in our framework, but we have not yet demonstrated that his proposal is wrong. What Fillmore is claiming is that pairs of sentences such as the following have the same source:

(360) a. John bored us with his stories about Africa.

b. John's stories about Africa bored us.

which naturally implies that they should be synonymous. That they are, in fact, clearly not synonymous is shown in a rather striking way by a pair of sentences such as the following:

(361) a. Gainsborough's portraits bore me.

b. Gainsborough bores me with his portraits.

It is plain that although (361) b. implies the truth of (361) a., the converse does not hold, as is indeed generally the case with pairs of sentences of this sort. This fact can be explained under the assumption that one derives from a structure containing both a deep Subject and an Instrumental-phrase, while the other contains only a deep Subject. On

the other hand, it is difficult to see how Fillmore could account for these facts without re-introducing into his system, in some ad-hoc manner, the notion 'Subject-of'.

Further support for the correctness of our analysis can be derived from the fact that corresponding to each of the sentences:

(362) a. John bores me.

b. John's stories about Africa bore me.

c. John bores me with his stories about Africa.

we find a derived Adjectival form:

(363) a. John is boring to me.

b. John's stories about Africa are boring to me.

c. John is boring to me with his stories about Africa.

This fact is automatically explained under the Lexicalist Hypothesis, as long as we assume that all three forms in (362) are base forms, and furthermore, that the surface Subject, in each case, derives from the deep structure Subject position. On the other hand, notice that we do not find derived Adjectival forms, when the surface Subject is derived from the Agent-phrase:

(364) *John was boring to me with an interminable story about Africa.

As was mentioned earlier, it is a general fact about AP's that they cannot contain Agent-phrases in deep structure. Hence, (364) lends further support to our claim that the possessive Pronoun in Instrumental-phrases such as those in (362) c. and (363) c. is due to a rule which obligatorily copies a pronominal form of the deep Subject-NP onto the Instrumental-NP. Notice, incidentally, that there are no arguments of

this sort against the rule of Instrumental-Preposing. That is, sentences such as The key will open the door and The door will open with the key are clearly synonymous, a fact which supports a transformational derivation of the two from the same source in deep structure.

In view of these considerations, I conclude that the facts concerning Instrumental-phrases brought up by Fillmore, far from supporting some radically different theory of grammar, in which there is no level of deep structure, or even demonstrating that the Subject relation is a purely surface phenomenon in English, rather, when all the relevant facts are taken into consideration, reinforce the idea that there is a level of deep structure and that one of the grammatical relations which plays a central role in English syntax is the Subject relation. It should perhaps be noted that Fillmore's observations are more damaging to a theory of syntax in which the use of empty nodes in deep structure cannot be constrained by the structure-preserving constraint. At the very least, his observations would force such a theory to introduce an extensive mechanism for handling lexical redundancy rules, at which point one would have to decide whether or not such a system was a notational variant of Fillmore's system, and if not, which was correct. However, I think that it is clear that the theory that we have been developing here is quite capable of accounting for these facts, as well as others, in purely syntactic terms, thus demonstrating that these problems are problems of particular grammar, and hence do not demonstrate the need for radical revisions in the theory of grammar of the sort envisaged by Fillmore.

6.0.0. Transitive and Intransitive Verbs: A Re-analysis

Recall that we started out in Section 2.0. with the desire to relate pairs of sentences such as the ice melted, John melted the ice; the ball moved, John moved the ball; and so on. This we proposed to do by deriving the Subjects of the Transitive sentences and the Objects of the Intransitive sentences from the same deep structure source, namely the Direct Object position. It was then observed that if the surface Subjects of the Transitive sentences could be derived from the by-phrase in deep structure, then the subcategorization features for the two types of sentences could be combined into a single feature with the use of the parenthesis notation, giving us lexical entries of the following sort:

(365) melt: NP ___ NP_2 (by NP)

This analysis, as far as it goes, seems plausible. There are, however, a number of facts which it leaves unexplained.

Notice, for one thing, that our proposal fails to explain the fact (noted in Chomsky (1970)) that Verbs of this type generally have derived nominal forms coresponding to the intransitive sentences, but none corresponding to the transitive sentences. Thus we have:

(366) a. the movement of the ball across the table.

b. the growth of the corn.

but not:

(367) a. *John's movement of the ball across the table.

b. *Bill's growth of the corn.

This fact can, of course, be represented in our framework, simply by listing nominal forms such as growth, movement, etc. in the lexicon with

different subcategorization features from the corresponding Verb forms. However, our proposal precludes the possibility of finding any deeper explanation for this fact about the Verbs of this class. Instead, our analysis makes the claim that the non-existence of nominals such as (367) is merely an idiosyncratic property of each of the Nouns in question, and must be specified as such in separate lexical entries for each one.

This defect is related to a deeper inadequacy in our analysis, which is that we have failed to explain why Verbs such as melt, grow, move, etc., as opposed to Verbs such as hit, punch, kick, strike, etc., should have both a Transitive and an Intransitive form. The subcategorization features which we must assign to Verbs of the latter class are identical to those required by the former, except for the fact that the Agent-phrase must be obligatory, rather than optional. Compare, for example, the subcategorization feature for punch with (365), above:

(368) punch: NP ___ NP by NP

Once again, our analysis is perfectly capable of describing the difference between punch and grow, but intuitively we feel that there ought to be some deeper explanation for the fact that one type of Verb, but not the other, is allowed to occur without an Agent-phrase in deep structure. Notice that appeals to semantics are of little use here. Thus there is certainly no semantic reason why English could not have intransitive sentences such as John punched, meaning, presumably, 'John received a punch', or why we cannot say Bill hit, meaning 'Bill got hit'. To say this is not, of course, to preclude the possibility that the syntactic property in question could be systematically related to some semantic

feature. Rather, my intention is simply to point out that semantic theory alone cannot serve as a basis for an explanation of the differences between the Verbs punch and melt, any more than phonetic theory alone is capable of explaining alternations such as democrat, democracy.

There are still further problems with our analysis, as it stands at present. Notice that we have discussed in this chapter two rather different types of Verbs which have the property of appearing in surface structure in both Transitive and Intransitive sentences. The first type are the Verbs discussed at the beginning of this chapter, e.g. roll, melt, burn, disperse, etc. The second type are those discussed briefly in Section 4.4., namely, Verbs such as sell, teach, rent, read, translate, bruise, photograph, and so on, which may appear either in Transitive sentences with Agents:

(369) a. John read the book.

b. Bill translated the sentence.

c. Harry sold the book for $20.

d. John photographed Mary.

or in what we might call "pseudo-Intransitive" sentences of the following form:

(370) a. The book reads easily.

b. The sentences translates awkwardly.

c. The book sells for $20.

d. Mary photographs well.

Transitive/Intransitive pairs such as those in (369) and (370) differ in a number of important respects from the pairs discussed at the beginning

of this chapter. For one thing, they often require some Adverb such as easily, well, with difficulty, etc., in order to be grammatical:

(371) a. *The book reads.

b. *The sentences translates.

c. *Mary photographs.

whereas the same is never true of Verbs such as roll, melt, etc.:

(372) a. John rolled the ball.

b. The ball rolled.

(373) a. Bill melted the ice (easily).

b. The ice melted (easily).

(374) a. They dispersed the crowd (gradually).

b. The crowd dispersed (gradually).

Semantically, the difference between Intransitives such as those in (370), a nd those in (372)-(374) b. are equally striking. Whereas the latter simply describe events, e.g. the rolling of the ball, the melting of the ice, etc., the former invariably carry with them a generic, or habitual, interpretation, or else they ascribe to the surface Subject some general quality or property. Notice, furthermore, that examples such as (370) presuppose an Agent, semantically, whereas the Intransitive forms of melt, roll, etc. do not. Thus to say that Mary photographed well implies that somebody photographed Mary, whereas to say that the ice melted does not necessarily imply that the ice was melted by someone.[17]

Intuitively, it seems clear that the difference between these two types of Verbs lies in the fact that in one case the Intransitive sentences are "basic", and the Transitive sentences "derived", whereas in the other

case, the Transitive sentences are basic, and the Intransitive sentences are derived. Thus for a Verb such as sell, the basic form is the transitive Agentive type of sentence John sold the book, from which we may form the Intransitive sentence the book sold for $20, by omitting the Agent-phrase. For a Verb such as melt, on the other hand, the Intransitive sentence the ice melted is basic, and we derive Transitive sentences such as John melted the ice by "adding" an Agent-phrase.

The question that arises, then, is how to describe the fact that for certain Verbs the Intransitive forms are "basic", whereas for others the Transitive forms are "basic"; for notice that in the framework that we have developed so far, there is no way of making such a distinction. In fact, Verbs such as read and melt are subcategorized in exactly the same way, namely, both are specified to take a Direct Object-NP, plus an optional Agent-phrase:

(375) NP ___ NP_2 (by NP)

The problem is that we have not specified in sufficient detail the interpretation which is to be assigned to a subcategorization feature which is collapsed by means of the parenthesis notation.

One obvious solution to this problem would be the following: We assign Verbs such as melt a feature, say [+causative], and we then include in the lexicon a redundancy rule of the following form:

(376) NP $\left[\frac{\quad}{+\text{causative}}\right]$ NP_2 $\longrightarrow$ NP $\left[\frac{\quad}{+\text{causative}}\right]$ NP_2 by NP

Rule (376) is interpreted to mean that any Verb which takes a Direct Object-NP, and which has the feature [+causative], is automatically allowed to appear in a context containing an Agent-phrase, as well. In order to account for the relationship between the Transitive and Intransitive forms of a Verb such as read, we assume another lexical redundancy rule, of roughly the following form:

(377) NP ___ $\underline{NP_2}$ by $\underline{NP}$ ⟶ NP ___ $\underline{NP_2}$

This rule is interpreted to mean that a Transitive Verb which requires an Agent and a Direct Object may automatically appear in environments containing only a Direct Object, as well.

Given these two rules, we may then subcategorize melt and read, respectively, in the following manner:

(378) a. melt: NP $\left[\frac{\qquad}{+\text{causative}}\right]$ $\underline{NP_2}$ (by $\underline{NP}$)

b. read: NP ___ $\underline{NP_2}$ (by $\underline{NP}$)

Thus both Verbs will be subcategorized in the lexicon as taking an optional Agent-phrase, but they will be derived differently, the Transitive being derived, in one case, from the basic Intransitive form, the Intransitive being derived, in the other case, from the more basic Transitive form.

This proposal, however, runs into difficulties, for observe that a Transitive Verb which is derived from an Intransitive may itself be used to form a pseudo-Intransitive. Consider, for example, sentences such as the following:

(379) a. This ball rolls well.

b. The ice melted easily.

c. The crowd dispersed only with difficulty.

d. This table will burn easily.

Each of these sentences is clearly ambiguous, depending on whether or not an Agent is implied. Thus (379) c., for example, may mean either that it was difficult for the crowd to disperse, or, alternatively, that it was difficult for someone to disperse the crowd. Similarly, (379) d. may mean either that this table is made of a material which is such that it burns with no difficulty, or else that this table is such that it is easy for someone to burn it. The only way that this fact can be accounted for under the analysis just proposed, is by subcategorizing Verbs such as melt, burn, etc. in the following manner:

(380) burn: NP $\left[\frac{\quad}{\pm\text{causative}}\right]$ $\underline{NP}_2$ (by $\underline{NP}$)

The subcategorization feature (380) expands into two features of the following form:

(381) a. NP $\left[\frac{\quad}{+\text{causative}}\right]$ $\underline{NP}_2$ (by $\underline{NP}$)

b. NP $\left[\frac{\quad}{-\text{causative}}\right]$ $\underline{NP}_2$ (by $\underline{NP}$)

and each of these two features expands into two features, yielding four features in all:

(382) a. NP $\left[\frac{\quad}{+\text{causative}}\right]$ $\underline{NP}_2$ by $\underline{NP}$

b. NP $\left[\frac{\quad}{+\text{causative}}\right]$ $\underline{NP}_2$

c. NP $\left[\frac{\quad}{-\text{causative}}\right]$ $\underline{NP}_2$ by $\underline{NP}$

d. NP $\left[\frac{\quad}{-\text{causative}}\right]$ $\underline{NP}_2$

However, this analysis claims, incorrectly, that there are not only two different types of Intransitive sentences containing burn, but also two Transitive senses, as well. Thus it predicts that a sentence such as John burned the table easily should be ambiguous, depending on whether or not the underlying Verb has the feature [+causative] or [-causative]. Furthermore, it claims that only the former is related to the "true" Intransitive burn, while only the latter is related to the "pseudo-Intransitive" burn. But this prediction is clearly false, since in fact the sentence John burned the table easily is unambiguous.

This point can be illustrated even more clearly, perhaps, if we consider two Verbs whose Transitive and true Intransitive forms are not phonologically identical, e.g. the Verbs kill and die. Corresponding to the "true" Intransitive sense of burn, we have, in such cases, sentences such as:

(383) The rabbit died easily.

Furthermore, from the Transitive Verb kill we may form a pseudo-Intransitive sentence such as:

(384) Rabbits kill easily.

which is clearly quite different in meaning from (383). Finally, consider the Transitive sentence:

(385) Bill killed the rabbit easily.

Contrary to what the analysis proposed above would predict, we do not find that (385) is ambiguous, having one interpretation corresponding to that of (383), and another corresponding to that of (384). Rather, it is unambiguous, meaning only: "it was easy for Bill to kill the rabbit."

The point is that the redundancy rules (376) and (377) cannot be applied simultaneously, but rather must be applied sequentially. In other words, given a "true" Intransitive (i.e. [+causative]) Verb such as burn, we can derive from it a Transitive Verb with an Agent. From this Transitive Verb, we may form, in turn, a pseudo-Intransitive such as (384). This fact--that the redundancy rules must apply sequentially--causes no problem, since we can easily construct the grammar in such a way that lexical redundancy rules are permitted to operate on the output of other lexical redundancy rules. However, this assumption, plus the assumption that there is a feature [±causative] which "triggers" the redundancy rule (376) which forms Transitive Verbs from Intransitive Verbs, does create difficulties in writing the proper subcategorization feature for a Verb such as burn, as we have just seen.

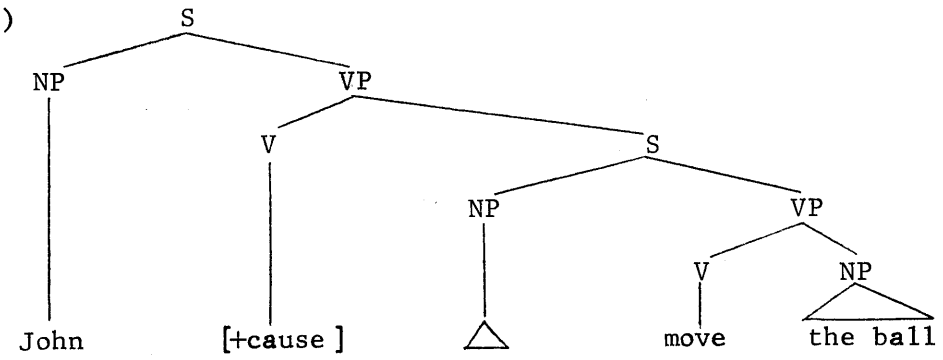
These considerations strongly suggest that the parenthesis notation is appropriate for collapsing subcategorization features which are related by means of a redundancy rule such as (377), but that it is not the proper device for collapsing subcategorization features which are related by means of redundancy rules such as (376). This, in turn, relates to the inadequacies in our analysis of Verbs of the melt-class that were mentioned at the beginning of this section, and suggests the necessity for a different approach altogether.

6.1.0. Another Possibility

Recall that one of the defects of our original treatment of "causative" Verbs was that it provided no explanation for the fact that there are no derived nominal forms corresponding to the Transitive

sentences, although we do find nominal forms corresponding to the Intransitive sentences. Now in Chomsky (1970) it was observed that this fact could be explained, under the Lexicalist Hypothesis, by assuming that the transitive sentences are not base forms, but rather are derived from structures containing an intransitive sentence embedded beneath an "abstract" Verb [+cause]. This naturally suggests the possibility of combining our analysis of sentences containing intransitive Verbs such as melt, grow, etc. with Chomsky's proposal, so that the sentence John moved the ball, for example, would be derived from a deep structure of the following form:

(386)



We can now account both for the fact that the surface Subject of a sentence such as the ball moved is the logical Object of the Verb, and for the fact that we have derived nominals of the form the movement of the ball and the ball's movement, but not *John's movement of the ball. Thus move (and likewise all the other Verbs of this class) would be subcategorized simply as follows:

(387) move: NP ___ NP_2

Since the only base sentences containing move are intransitive, it follows automatically that we will find the corresponding nominal forms the move-

ment of the ball and (if Object-Preposing is applied) the ball's movement, but none corresponding to transitive sentences such as John moved the ball, which are transformationally derived from structures such as (386).

Consider next pairs of sentences such as the following:

(388) a. John got the metal hot.

b. The metal got hot.

(389) a. John turned the paint blue.

b. The paint turned blue.

The a.-sentences are obviously parallel in structure to sentences such as:

(390) a. John painted the wall red.

b. John made the wall white.

c. They eat their food raw.

except that the sentences in (390) do not have intransitive variants:

(391) a. *The wall painted red.

b. *The wall made white.

c. *Their food eats raw.

Furthermore, there are sentences, corresponding to the b.-sentences in (388)-(389), which have only an intransitive form:

(392) a. John looks sad.

b. *Bill looks John sad.

(393) a. Mary feels unhappy.

b. *Bill feels Mary unhappy.

(394) a. The shelf seems insecure.

b. *John seemed the shelf insecure.

Assuming that the AP's in these sentences are generated beneath the

Predicate node in deep structure, we can easily account for the relationships between them in terms of the analysis just proposed. Thus the sentences in (390) will derive from structures containing an Agent-phrase and a Direct Object, and the Verbs will be subcategorized as follows:

(395) paint: NP ___ NP_2 AP by NP

The a.-sentences in (392)-(394), on the other hand, contain only Direct Objects in deep structure, and are hence automatically subject to Object-Preposing:

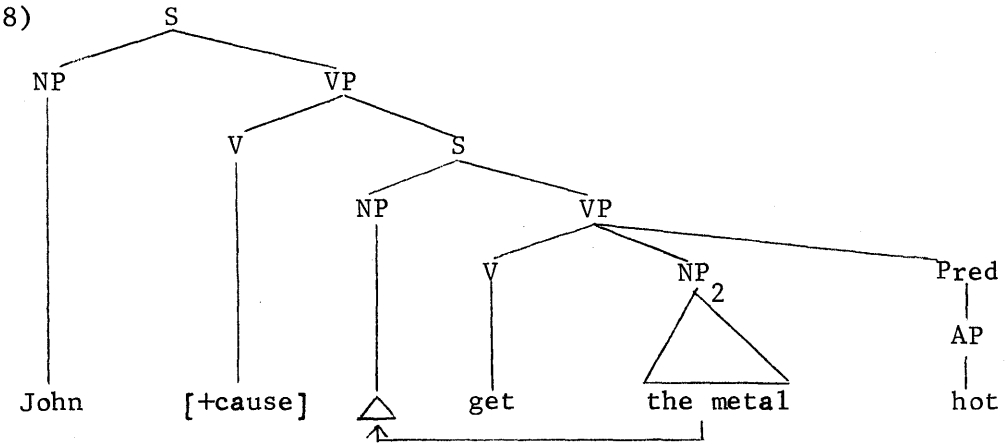
(396) feel: NP ___ NP_2 AP

Finally, the Verbs in the b.-sentences in (388) and (389) can be subcategorized exactly like the Verbs feel, look, seem:

(397) get: NP ___ NP_2 AP

while the a.-sentences will be derived from a causative construction with embedded intransitive sentences. Thus, sentence (351) a., for example, would have a deep structure of the following sort:

(398)



However, we must now justify in more detail the operations necessary to transform causative structures such as (398) into their correct surface forms. So far, it has been assumed that the causative construction

consists of a causative "pro-Verb" with a sentence embedded below it. Such a structure would require, at the very least, some kind of a raising rule to get the NP in the embedded sentence into its surface position as Object of the Verb in the matrix S, as well as a rule moving the Verb of the matrix S. This is not a welcome result, since, as has been argued in Chomsky (1972), there is very little syntactic motivation for a raising rule of this sort. Furthermore, structures such as (398) would require all kinds of ad-hoc restrictions, in order to prevent the embedded sentence from containing the various auxiliary elements which normally may occur in embedded sentences, but which obviously do not occur in S's embedded in a causative construction.

However, the sentences that we have just considered suggest another possibility. Note that in order to generate structures containing Predicate AP's we will need phrase structure rules such as the following:

(399) 1. VP $\longrightarrow$ V (PP) (NP_2) (Pred) (PP)* (S)

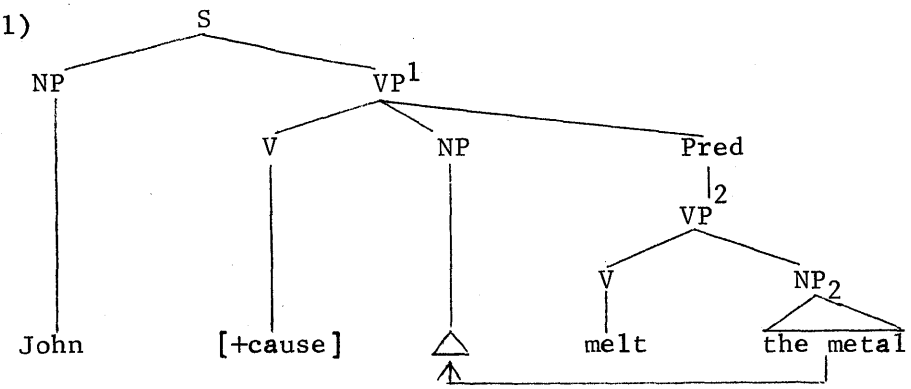
2. Pred $\longrightarrow \left\{ \begin{matrix} AP \\ NP \end{matrix} \right\}$

Suppose now that we were to extend the rule expanding Pred, so as to allow the node VP to appear in that position, as well as the nodes NP and AP. This seems entirely natural, in that the node Pred would now be allowed to dominate any of the major phrase node categories NP, AP, and VP:

(400) Pred $\longrightarrow \left\{ \begin{matrix} NP \\ AP \\ VP \end{matrix} \right\}$

Given this slight extension of the phrase structure rules, we can now derive causative sentences from structures of roughly the following sort:

(401)



If furthermore we assume that VP is a cyclic node, just as the nodes NP and AP are (an assumption which is implicit in the Lexicalist Hypothesis anyway), and that the causative "pro-Verb" can be subcategorized with an empty Object-NP, as shown in (401), then it follows immediately that the surface position of the NP the metal can be accounted for by the regular rule of Object-Preposing, applying on the VP^1-cycle. This proposal would eliminate completely the need for a special "Subject-Raising" rule in English.

Furthermore, there is independent motivation for this analysis. Consider sentences such as the following:

(402) a. John made the metal melt.

b. Bill made Mary cry.

In the next chapter, we shall study Verbs of this sort in great detail. For the moment, it is sufficient to point out that the complements in these sentences differ in a number of ways from ordinary Infinitive complements. For one thing, the to which is characteristic of Infinitives is lacking. For another, the complement of make cannot occur with Passives, Progressives, or the Perfect aspect, unlike Infinitives, which can:

(403) a. John expects the metal to have melted.

b. John expects the metal to be melted by Bill.

c. John expects the metal to be melting soon.

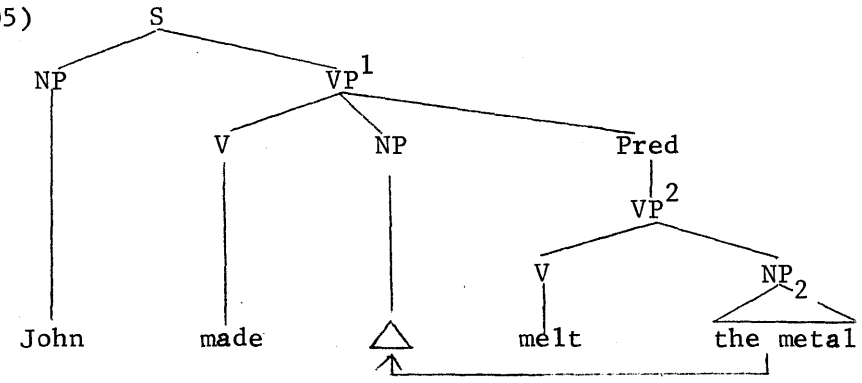
(404) a. *John made the metal have melted.

b. *John made the metal be melted by Bill.

c. *John made the metal malting.

A natural source for complements of this sort, given these facts, would be the Predicate-VP position. I propose, therefore, to derive the sentences in (402) from a structure of the following sort:

(405)



Notice that (405) and (401) are exactly parallel in structure. Furthermore, Object-Preposing will automatically apply on the VP^1-cycle in (405), just as it does in (401), and move the Direct Object into the matrix S. The only difference between them is that where (405) has the real Verb make, (401) has a lexical item with syntactic and semantic features, but no phonological form. Note also that the sentence John made the metal melt is, under this analysis, parallel to a sentence such as John got the metal hot, the only difference being that the former contains a Predicate-VP, while the latter has a Predicate-AP, in deep structure. It seems to me that there is a great deal more syntactic justification for this proposal than there is for previous analyses, which have generally tried

to analyze causative Verbs as deriving from deep structures parallel to those of Infinitive constructions such as John caused the metal to melt. (See, for example, Lakoff (1965), for one such proposal.)

Given structures such as (401), the only new rule which we need to add to the grammar is one that takes the Verb in the Predicate-VP and combines it with the features associated with the Verb node in the matrix VP. This rule can be stated as follows:

(406) Predicate-Verb Raising:

$$X - [+\text{cause}] - Y - [_{\text{Pred}}Z - \underline{V} - W] - U \Longrightarrow$$

$$X - [+\text{cause}]\ \underline{V} - Y - [_{\text{Pred}}Z - \emptyset - W] - U$$

Notice that Predicate-Verb Raising, as it is stated here, does not conform to our general notation for the statement of structure-preserving movement rules. However, I think that it can be shown that there is, in fact, motivation for the existence of such a rule, as long as we are willing to extend the structure-preserving framework slightly to allow, in certain cases, the lexical categories N, V, and A to appear in deep structure dominating the terminal symbol Δ.

It is well known that many of the Verbs which have transitive/intransitive doublets are derivationally related to Adjectives. In particular, there is a fairly large class of Verbs which are formed from Adjectives by the addition of the suffix -en, as for example, in the following sentences:

(407) a. John reddened the paint.

b. The paint reddened.

(408) a. Bill thickened the solution.

b. The solution thickened.

(409) a. The cold air hardened the metal.

b. The metal hardened.

(410) a. The smoke yellowed the paint.

b. The paint yellowed.

(411) a. The clouds darkened the sky.[18]

b. The sky darkened.

Notice that we have already accounted for the relation between the a. and the b.-sentences in terms of the causative construction, so that the a.-sentences will be assigned deep structures of the form shown in (401). We might now inquire into the possibility of also relating the Verbs such as thicken, redden, etc. to the Adjectives thick, red, etc. Observe that just as we have sentences such as John made the corn grow, which are closely related to causatives such as John grew the corn, so we also have sentences containing Predicate AP's which are closely related to the sentences in (407)-(411):

(412) a. John {got / made / turned} the paint red.

b. The paint {got / became / turned} red.

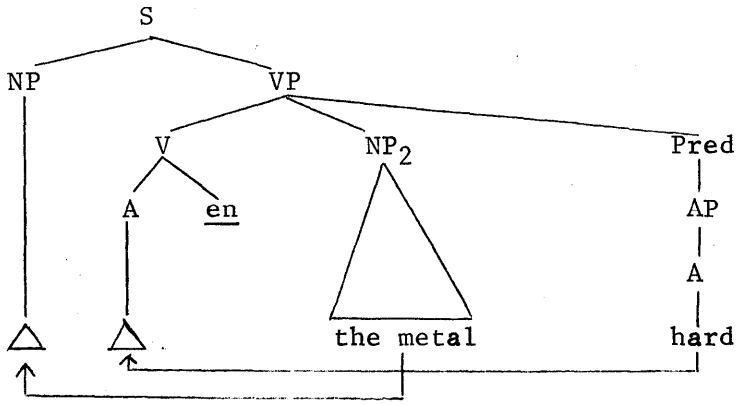
(413) a. Bill {got / made / turned} the metal hard.

b. The metal {got / became / turned} hard

This immediately suggests that sentences containing Verbs such as thicken and harden might be derived from underlying structures containing

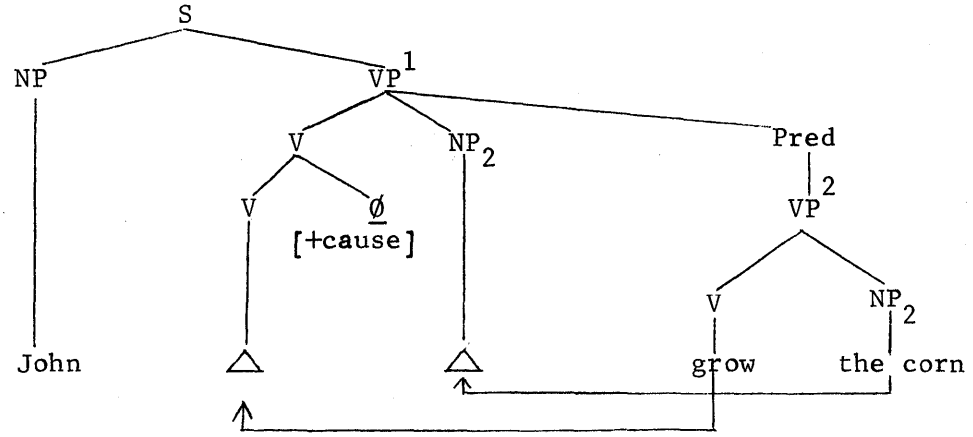
Predicate AP's. To be more concrete, let us assume that certain suffixes, for instance -en, may appear in deep structure associated with an empty Adjective node, and dominated by a Verb node. It would then be possible to generate deep structures of the following sort:

(414)



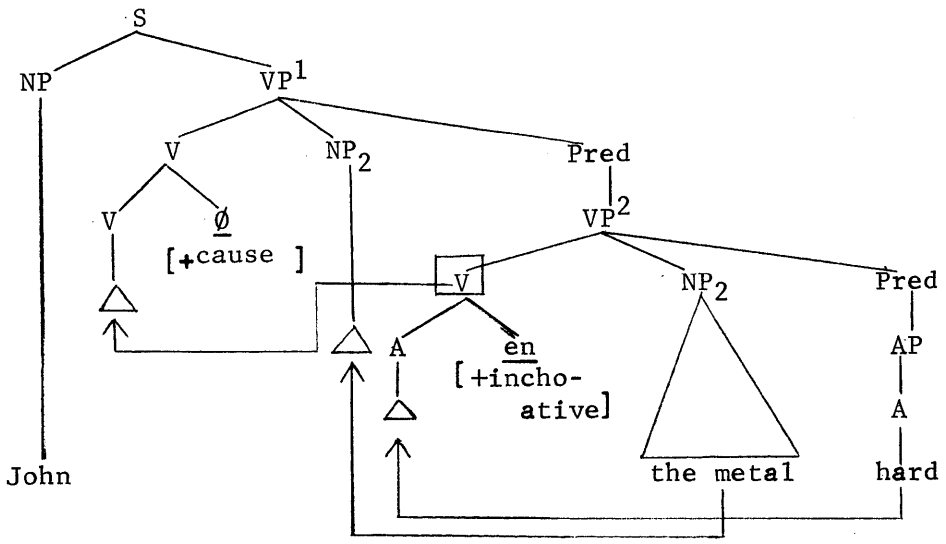
It is easy to see that in addition to the rule of Object-Preposing, we need only have a rule which moves the Predicate-Adjective hard into the empty Adjective node in the matrix sentence, and we will have succeeded in deriving the correct surface structure for sentences such as (407)-(411) b. Furthermore, notice that a rule which is formally identical to this one could be used in deriving causative sentences such as John grew the corn, if we assume deep structures such as the following:

(415)



Finally, we can combine these two analyses, in order to explain the underlying grammatical relations in a causative sentence such as John hardened the metal, in the following manner:

(416)



The rules that would apply are indicated in the diagram. On the Predicate-AP cycle nothing happens. On the VP^2-cycle, Predicate Raising will apply, putting the Adj hard into the empty Adj node beneath the V node. On the VP^1-cycle, two rules will apply: first, Predicate-Raising will move the whole V, consisting of hard, plus the suffix -en, into the empty V-node in VP^1; second, Object-Preposing will move the Direct Object into the empty NP-node in the upper VP^1. This completes the derivation. The result is the surface structure John hardened the metal.

The point that I wish to emphasize is that the same rule of Predicate Raising can be used to relate both transitive and intransitive sentences, and also "inchoatives" derived from underlying Adjectives. Furthermore, this rule is structure-preserving, as long as we allow certain derivational

affixes to be inserted into deep structure trees with an associated empty Verb or Adj node, a possibility which seems implicit in the structure-preserving framework anyway. The revised rule of Predicate-Raising can then be stated simply as follows:

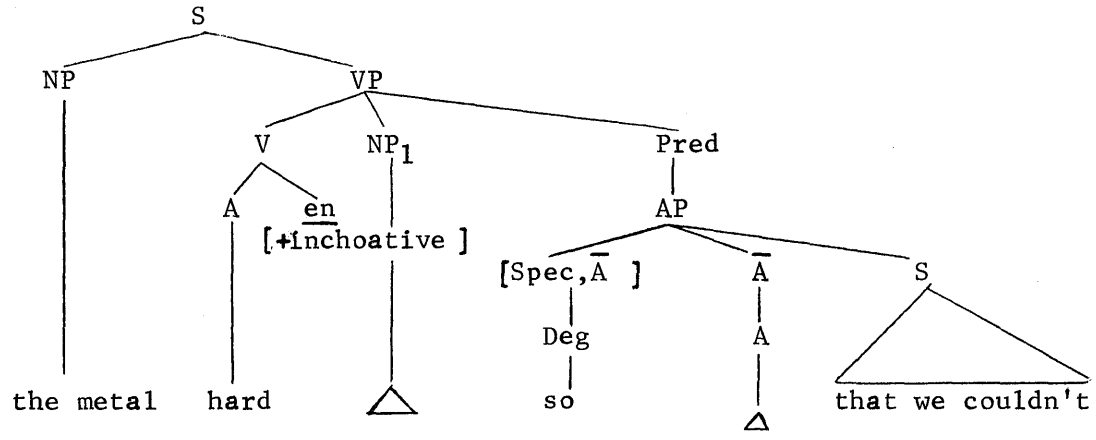
(417) Predicate-Raising:

$X - C - Y - [_{Pred} W - \underline{C} - Z] - U \Longrightarrow X - \underline{C} - Y - [_{Pred} W - C - Z] - U$

where C = V, Adj; and 1-2-3-4-5 is a VP

There is one possible objection to this analysis which should be dealt with. What happens if the Predicate AP contains any of the various elements of the Specifier, e.g. Comparatives, Equatives, so...S, too...S, etc. If the rules we have proposed apply to a structure of that sort, we will be left with surface structures such as the following:

(418)



What I would like to suggest is that any time an empty Adjective node appears in surface structure, the word much is automatically inserted. This will give us the sentence:

(419) The metal hardened so much that we couldn't break it.

as the final output of the structure in (418). This proposal would explain a number of interesting facts. Notice that with one or two well known exceptions, e.g. fast, well, Adjectives which do not appear under the node Predicate automatically get the affix -ly, resulting in the traditional surface category of "Adverb". Thus we have, for example:

(420) a. The metal hardened so quickly that we didn't have time to mold it.

b. The metal hardened too suddenly for us to mold it.

The lexical item much is an exception to this generalization, since we do not have:

(421) *The metal hardened so muchly that we couldn't break it.

However, in our analysis, this exceptional behavior would be perfectly regular, since much in fact appears under the node Pred, and hence does not get the -ly ending. This difference is correlated with a difference in semantic interpretation. Of all the possible -ly "Adverbs" which may appear with a Verb such as harden, much is the only one that refers to the extent to which the metal had become hard. All others, e.g. those in (420), refer to the manner in which the metal became hard. This unique semantic interpretation associated only with the Adjective much can of course be attributed to the different deep structure source which it has. As final confirmation for the essential correctness of this analysis, notice that it is possible to get both the Predicate Adjective much and an -ly Adverb in the same sentence:

(422) a. The metal hardened too much so suddenly that we were caught by surprise.

b. The metal hardened so much so quickly that we didn't have time to mold it.

This would naturally be impossible if much derived from the same source as Manner Adverbs such as quickly, suddenly, and so on.[19]

I conclude from this discussion that while there is little motivation for a causative construction in English which derives causative Verbs from structures containing embedded sentences, parallel to constructions of the form John caused the metal to melt, there is considerable justification for deriving certain Transitive Verbs (namely, just those which have both a transitive and an intransitive form) from a causative construction which contains an embedded Predicate-VP, parallel to sentences of the form John made the metal melt. Furthermore, it seems that the same rules used in the derivation of causative Verbs can also be used to derive certain "inchoative" Verbs from structures containing embedded Predicate-AP's, thus lending further support to the existence of our rule of Predicate-Raising. Moreover, this analysis, as we have just seen, does not require an ad-hoc rule of Subject Raising. Instead, the independently motivated rule of Object-Preposing can be used to account for the surface position of the embedded Indirect Object, as the Object of the causative Verb. Finally, as we shall see in the following chapter, there is entirely independent evidence for the existence of Predicate-VP constructions.

6.1.1. Further Evidence for A Causative Construction

There are other arguments in favor of the analysis just proposed. Consider sentences such as the following:

(423) a. John galloped the horse.

b. Mary is walking the dog.

c. Bill ran John out of the house.

d. John jumped the horse over the fence.

As has been noted before (cf. for example, Lyons (1968), p. 365), sentences of this kind, though clearly related to intransitive sentences such as the following:

(424) a. The horse galloped.

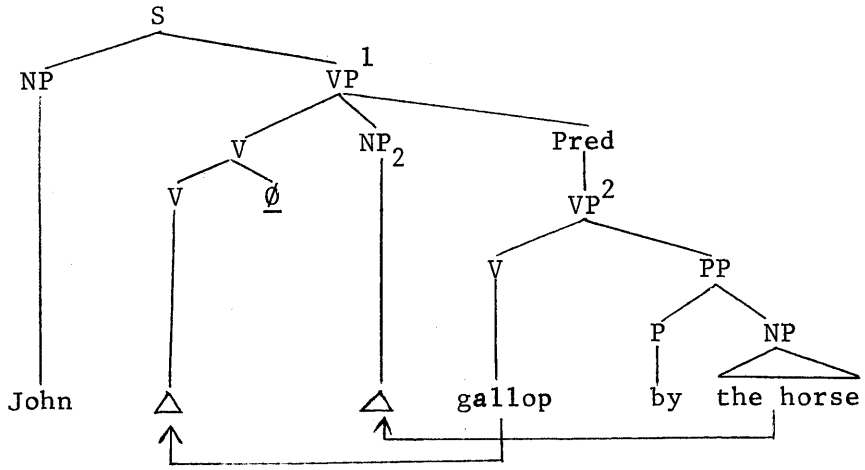
b. The dog is walking.

c. John ran out of the house.

d. The horse jumped over the fence.

differ from causative sentences containing Verbs such as melt, grow, etc., in that the Object of the transitive Verb is Agentive, just as it is in the intransitive sentences in (424). This fact is easily accounted for under the analysis just proposed. We need only assume that the examples in (423) derive from underlying structures of the following form:

(425)



Given a structure of this form, the rules of Agent-Preposing and Predicate-

Raising will automatically apply, as shown in (425), to derive the correct surface form John galloped the horse.

Furthermore, notice that from the transitive sentences in (423) it is possible to derive in turn pseudo-intransitives such as the following:

(426) a. That horse gallops easily.

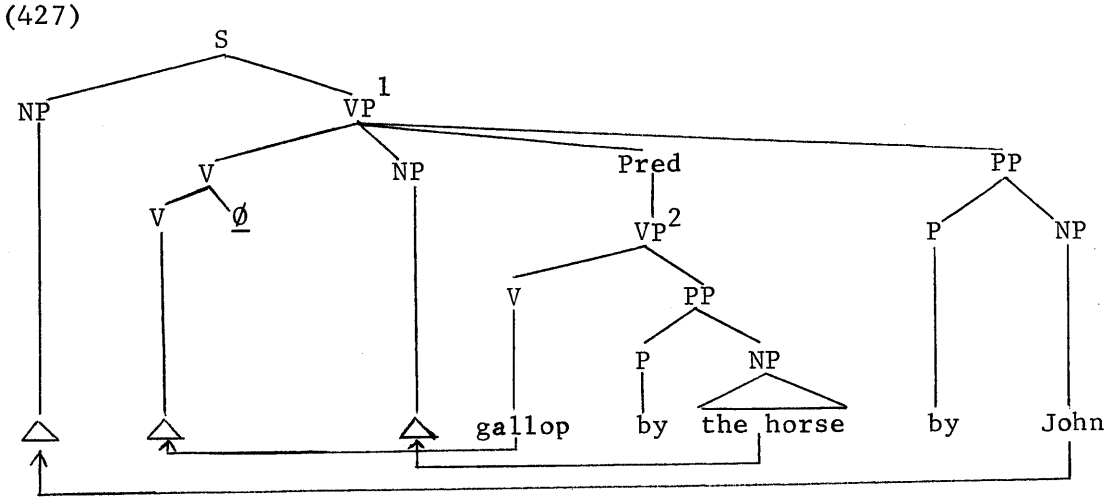
b. The dog walks easily on a leash.

c. This horse jumps beautifully.

Just like the examples in (379), discussed in Section 6.0.0., the sentences in (426) are ambiguous depending on whether or not an Agent is implied. Thus (426) a. can mean either that it is easy for the horse to gallop, or else that it is easy for one to gallop the horse. Similarly, (426) b. can mean either that the dog has no difficulty in walking when he has a leash on, or else that it is easy to walk the dog when he has a leash on.

These facts suggest, naturally enough, that the surface Subject of the causative suffix -$\underline{\emptyset}$ in structures such as (425), and in the causative constructions discussed earlier as well, derives from the Agent-phrase in deep structure. If that is the case, then in order to account for the pseudo-intransitive interpretation of the sentences in (379) and (426), we need only assume that transitive Verbs with the -$\underline{\emptyset}$ causative affix are just like other transitive Verbs in that they are subject to the lexical redundancy rule (377) (cf. Section 6.0.0.) which allows transitive Verbs with Agent-phrases to optionally appear without the by-phrase in surface structure. I propose, therefore, that underlying the sentences in (423) is a structure such as the following:

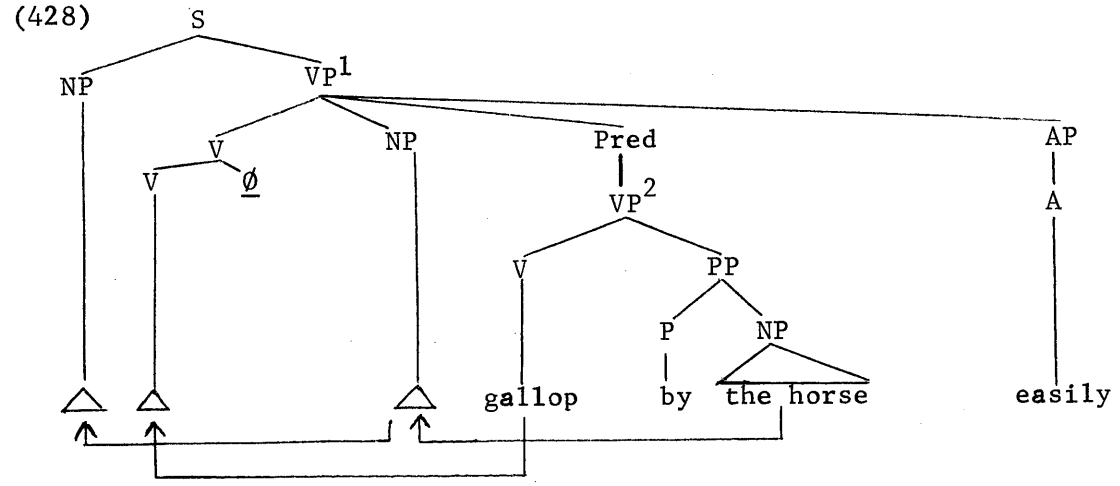
(427)



The derivation will proceed exactly as in (425), except that we will have an additional application of Agent-Preposing on the S-cycle, to account for the surface position of the Agent-NP.

The pseudo-intransitive sentences in (426), on the other hand, will be derived from a structure identical to (427), except that it will have no by-phrase in VP^1:

(428)

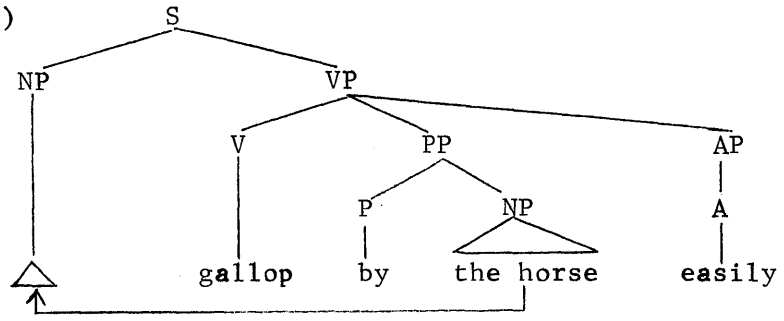


The derivation will proceed as follows: On the VP^1-cycle, we will apply Agent-Preposing and Predicate-Raising. On the S-cycle, however, because there is no Agent-phrase, the empty Subject position can only be filled in

by the rule of Object-Preposing. Hence, the NP the horse will be moved again, deriving the correct surface structure the horse gallops easily.

Consider, in contrast, the derivation of the non-"pseudo-intransitive" interpretation of this same sentence. In this case, we will have a deep structure of the following form:

(429)



which is derived simply by the application of Agent-Preposing. Obviously, similar derivations can be used to account for the difference between the intransitive and pseudo-intransitive forms of Verbs such as melt, grow, etc.

Further support for this analysis of causative Verbs can be derived from the behavior of certain nominals which Lees (1960) refers to as "action" nominals, and which Chomsky (1970) has termed "mixed" nominal forms. Recall that one of our motivations for adopting a causative analysis for Verbs such as melt, move, grow, etc. was to account for the fact that we find derived nominal forms corresponding only to the intransitive forms of these Verbs, and not to the transitive forms. However, this statement does not hold in the case of action nominals, as was noted by Chomsky (1970). Thus, for example, a nominal such as:

(430) the growing of the tomatoes

unlike the derived nominal the growth of the tomatoes, is ambiguous,

and has either a transitive or an intransitive interpretation, depending on whether or not there is an "understood" Agent. Furthermore, we find action nominals with an explicit Agent-phrase:

(431) a. the growing of the tomatoes by the gardener.

b. Bill's growing of the tomatoes

c. Mary's tidying up of the house

d. the tidying up of the house by Mary

Finally, note that we have action nominals corresponding to normal transitive Verbs which are not derived from intransitives:

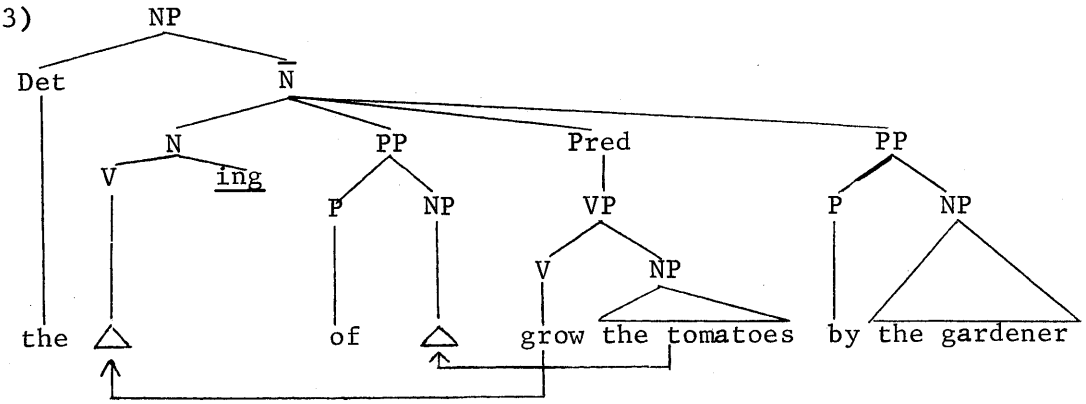
(432) a. the shooting of the hunters (by the wardens)

b. Bill's riding of his bicycle

One conclusion that might be drawn from these facts is that both the transitive and the intransitive forms of Verbs such as grow are base forms (cf. Chomsky (1970)), in which case it would be necessary, under the Lexicalist Hypothesis, to explain the lack of transitive forms for derived nominals such as growth by means of an ad-hoc feature of some sort. Another possibility, explored in Fraser (1970), would be to derive action nominals transformationally from underlying sentences. However, there is a third possibility, in our framework, which is to assume that there is a process in nominals which derives transitive Nouns from underlying intransitive Verbs, in much the same way that causative Verbs are derived from underlying intransitive Verbs.

To be more concrete, suppose that we were to allow underlying structures of the following form:

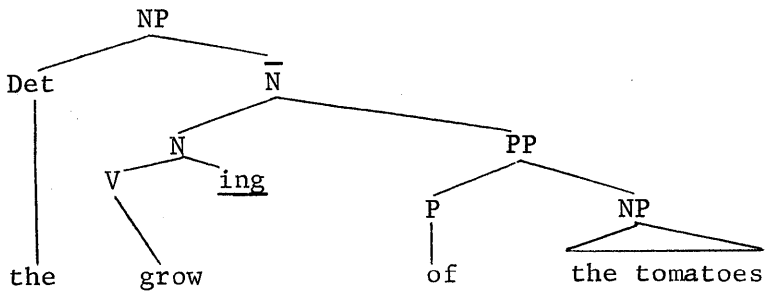
(433)



We see immediately that by applying the rules of Object-Preposing and Predicate-Raising, we can automatically derive the correct surface form (431) a. In order to derive nominals with the Agent in Subject position, we need only allow an optional, empty NP node to occur in the Determiner, in which case Agent-Preposing will automatically move the Agent-NP into the Subject position. Note that the underlying form (433) is exactly parallel to the underlying forms that we have proposed for transitive S's such as the gardener grows the tomatoes, except that the Predicate-VP containing the intransitive Verb is embedded in a NP in one case, and in a VP in the other.

Consider next the intransitive interpretation of nominals such as (430). These may be derived directly from underlying NP's such as the following:

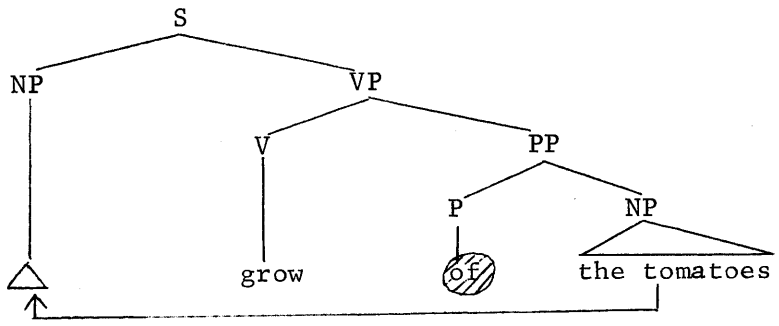
(434)



Once again, notice that this derivation is precisely parallel to the

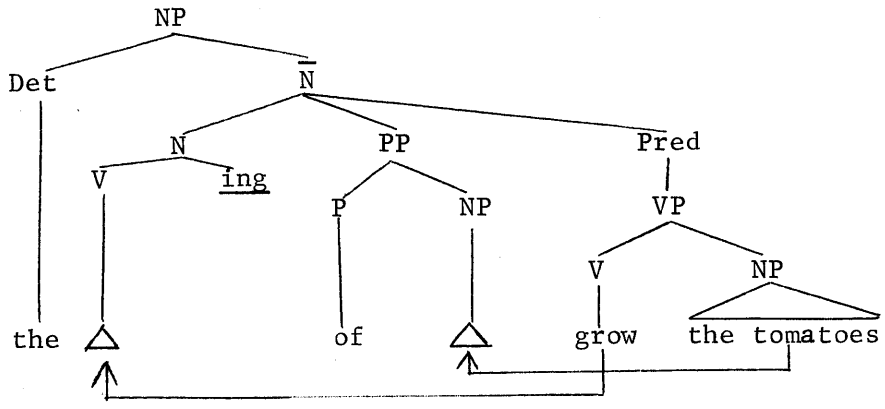
derivation of intransitive sentences such as the tomatoes grew, the only difference being that in sentences the Subject-NP is obligatory in surface structure, so that Object-Preposing must fill in the empty Subject-NP:

(435)



Consider, finally, the "pseudo-intransitive" interpretation of nominals such as (430). In order to account for these, we need only assume that the -ing affix, like the -Ø affix, allows the Agent-phrase to be optional in deep structure. Hence, we may derive pseudo-intransitive nominals such as (430) from underlying structures of the following form:

(436)



Again, we see that the rules of Object-Preposing and Predicate-Raising will automatically derive the correct surface form (430). Furthermore, note that the derivation is precisely parallel to that which we have

proposed for pseudo-intransitive sentences containing Verbs such as grow, the only difference being that the VP in (436) is embedded below a Noun, rather than a Verb.

It is worth noting also that just as pseudo-intransitive sentences typically have a generic or habitual interpretation, so the pseudo-intransitive -ing nominals typically occur in sentences with a generic or habitual interpretation. Compare, for example the following pairs of sentences:

(437) a. The growing of tomatoes requires a dry climate.

b. Tomatoes grow best in a dry climate.

(438) a. The opening of this door always requires the use of a key.

b. This door will never open without the use of a key.

In contrast, consider the non-pseudo-intransitive interpretation of pairs such as the following:

(439) a. The growing of the tomatoes took only 7 weeks.

b. The tomatoes grew in only 7 weeks.

(440) a. The opening of the door surprised everyone.

b. It surprised everyone that the door opened.

The situation is complicated, however, by the fact that intransitive -ing nominals such as (430) may also have an "unspecified" Agent-phrase, in which case they have an interpretation which corresponds not to that of an intransitive sentence, but rather to that of a Passive sentence with an unspecified Agent. Thus sentence (439) a., for example, actually has two interpretations, one which is analagous to the intransitive sentence (439) b., and another which is analogous to a sentence such as:

(441) The tomatoes were grown in only 7 weeks.

Similarly, the generically interpreted nominal (437) a. could correspond either to the pseudo-intransitive sentence (437) b., or, alternatively, to a generic Passive sentence of the form:

(442) Tomatoes are necessarily grown in a dry climate.

Summarizing, then, we see that the interpretation of action nominals with the suffix -ing strongly supports the causative analysis proposed in the preceeding section. In particular, these nominal forms provide further evidence for the existence of the rule of Predicate-Raising, for, as we have just seen, this rule, in combination with base forms such as (433) and (436) will automatically allow us to derive the correct surface forms of action nominals and, at the same time, account for their interpretation. Finally, notice that the non-existence of transitive derived nominal forms can now be explained simply by the fact that the suffixes in question, e.g. -th, -ment, etc., unlike the -ing suffix, are not allowed to occur in structures containing a VP complement.

Returning, now, briefly to the Agentive Verbs discussed at the beginning of this section, observe that action nominals such as the following:

(443) a. the galloping of the horse

b. the walking of the dog

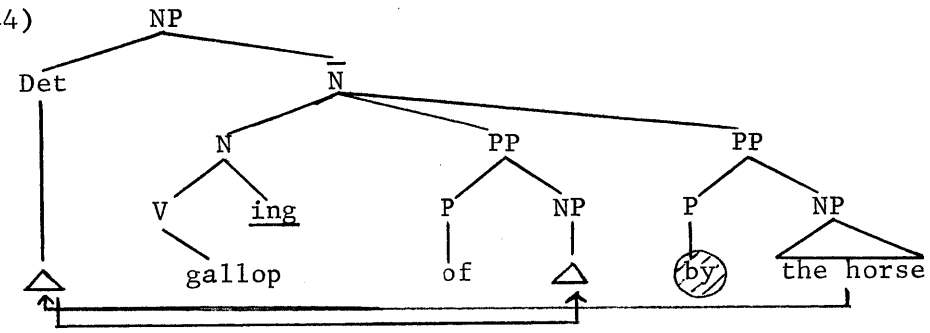
c. the jumping of the pony

d. the running of John out of the house

are ambiguous in exactly the same way as intransitive nominals such as (430). Thus sentence (443) a., for example, can refer either to the

horse's galloping, or to someone's galloping of the horse. However, the phrase is disambiguated in favor of the latter interpretation, if we add an explicit Agent-phrase, e.g. the galloping of the horse by John, John's galloping of the horse. Clearly, the non-Agentive interpretation of the intransitive nominal forms can be accounted for by assuming an underlying form such as the following:

(444)

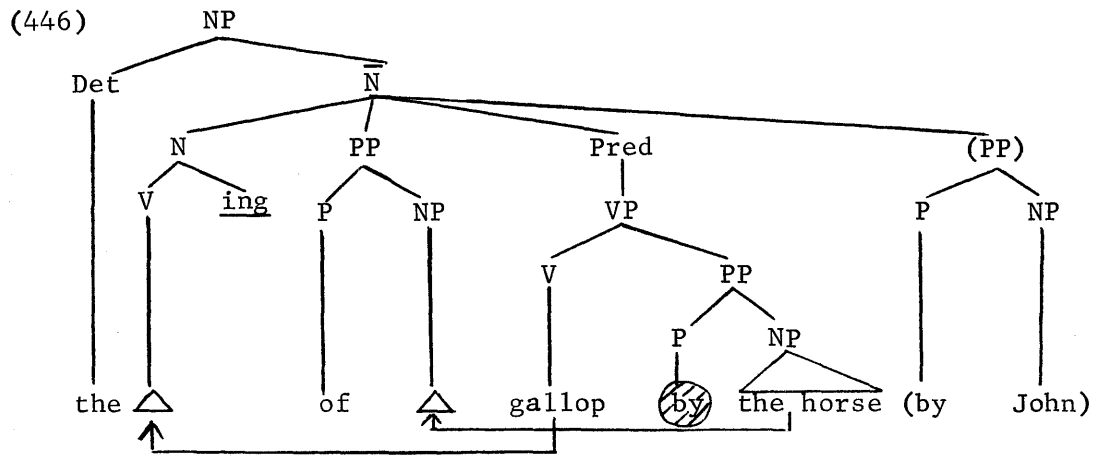


and the surface form (443) a. will be derived by means of Agent-Preposing, followed by the inverse of Object-Preposing. Note that we find also the intermediate forms:

(445) a. the horse's galloping

b. the galloping by the horse

which lends further support to the base form (444). The same nominal form, in its pseudo-intransitive interpretation, on the other hand, can be accounted for quite straightforwardly by deriving it from a base form such as the following:



by means of the rules of Agent-Preposing and Predicate-Raising. Furthermore, if the optional Agent-phrase indicated in (446) is present, then we will derive the Agentive nominal form the galloping of the horse by John.

6.1.2. Fodor's Arguments

Yet another argument in favor of the causative analysis that we have proposed is that it escapes a number of difficulties which Fodor (1971) argues would militate against any type of causative analysis for English which derives transitive Verbs from underlying structures containing embedded intransitive sentences.

Fodor's first argument shows merely that it is impossible to derive transitive melt from intransitive melt and, at the same time, to maintain that kill is derived from cause to die. This argument seems to me entirely valid, and furthermore, the results of this study strongly support the view that kill and die are not transformationally related.

The other two arguments, however, purport to show that a causative analysis for either kill and die or transitive melt is impossible. Let us examine them. The first argument has to do with the distribution of

Time Adverbials. Fodor notes that while it is possible to say:

(447) John caused the metal to melt on Sunday by heating it on Saturday.

it is not possible to get different Time Adverbials with transitive melt:

(448) *John melted the metal on Sunday by heating it on Saturday.

Therefore, Fodor reasons, a causative analysis would require an ad-hoc constraint to ensure that the Time Adverbial in the embedded S containing the intransitive melt matches up with the Time Adverbial in the Instrumental phrase, the latter being, of course, a complement to the causative Verb in the matrix S, rather than being contained in the embedded S with the intransitive melt. Notice, however, that if the causative analysis proposed here is correct, and if, furthermore, Time Adverbials are generated outside the VP, as has been argued on a number of occasions (cf., for example, Chomsky (1965) and Lakoff and Ross (1965)), then this difficulty does not arise, since it will be impossible to generate a Time Adverbial in the Predicate-VP anyway. Of course, when the intransitive melt occurs alone, i.e. not as a complement to the causative suffix -Ø, it will be dominated by S, and hence will be able to have a Time Adverbial associated with it, thus allowing sentences such as The metal melted on Sunday.

Fodor's second argument involves the distribution of Instrumental phrases containing an embedded S. He notes that while the sentence:

(449) John caused Bill to die by swallowing his tongue.

is ambiguous, the Subject of the Instrumental being either John or Bill,

the corresponding sentence with kill is not ambiguous in this way:

(450) John killed Bill by swallowing his tongue.

Here, the Subject of the Instrumental can only be John. Since, as Fodor demonstrates, the Subject of Instrumental phrases of this type is always deleted by the Subject of the matrix sentence, these facts show that Bill in (450) cannot have originated as the Subject of an embedded sentence. While this argument seems to work for kill and die, it is not so clear that it works for transitive and intransitive melt. In fact, it is extremely difficult to find pairs of the required kind. There are apparent exceptions to this statement, such as the following examples:

(451) a. John turned into a pumpkin simply by wishing for it.

b. Bill rolled down the hill by pushing against a rock.

c. John moved into the kitchen by crawling along the floor.

Recall, however, that sentences of this sort, when they have an Agentive interpretation are derived from underlying structures of the form:

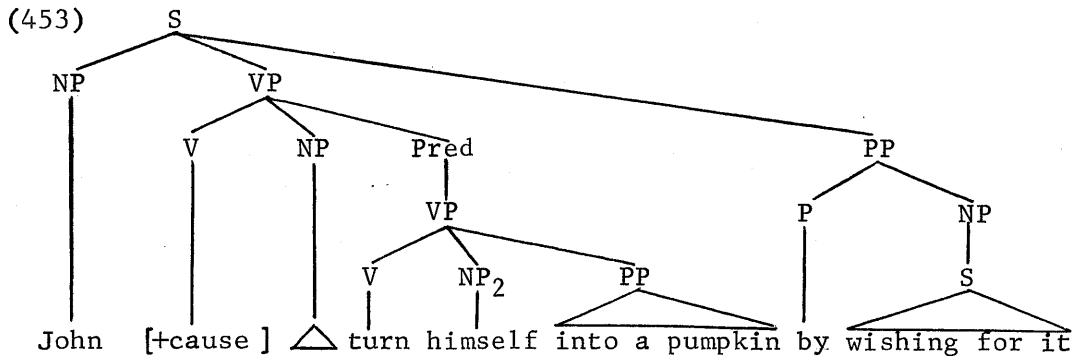
(452) a. John turned himself into a pumpkin simply by wishing for it.

b. Bill rolled himself down the hill by pushing against a rock.

c. John moved himself into the kitchen by crawling along the floor.

Thus the Instrumental-phrase in (451) is associated not with the Direct Object, but with the Subject of the causative suffix beneath which the intransitive Verb is embedded:

(453)



In fact, of course, the sentences in (451) are ungrammatical if their surface Subjects do not have an Agentive interpretation, i.e. if they are derived from the Direct Object position, just as sentences such as the following are:

(454) a. *The rock turned into a pumpkin simply by wishing for it.

b. *The ball rolled down the hill by pushing against a rock.

c. *The chair moved into the kitchen by crawling along the floor.

There do, however, seem to be a few examples of the required kind. Thus consider the following sentences:

(455) a. The ball moved into the kitchen by rolling along the floor.

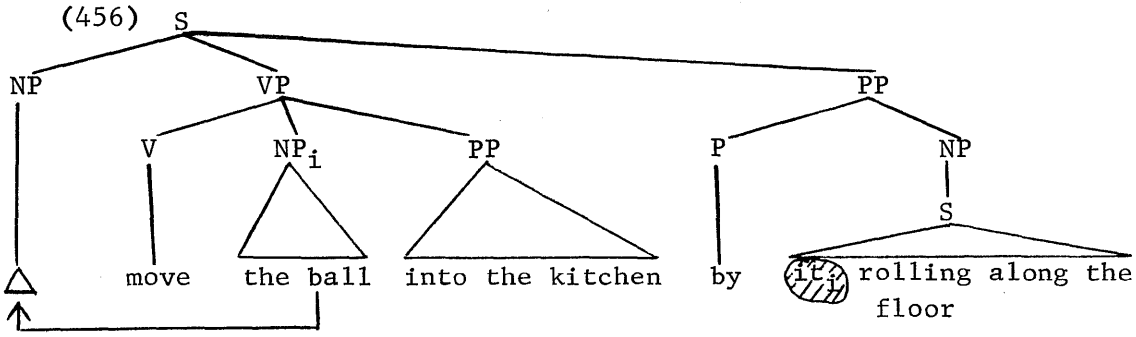
b. John moved the ball into the kitchen by rolling it along the floor.

c. *John moved the ball into the kitchen by rolling along the floor. (where the Subject of the Instrumental is the ball)

This seems to be a genuine example of the type that Fodor needs in order to make his argument work. But observe that with the causative analysis advocated here, the ungrammaticality of (455) c. can be explained

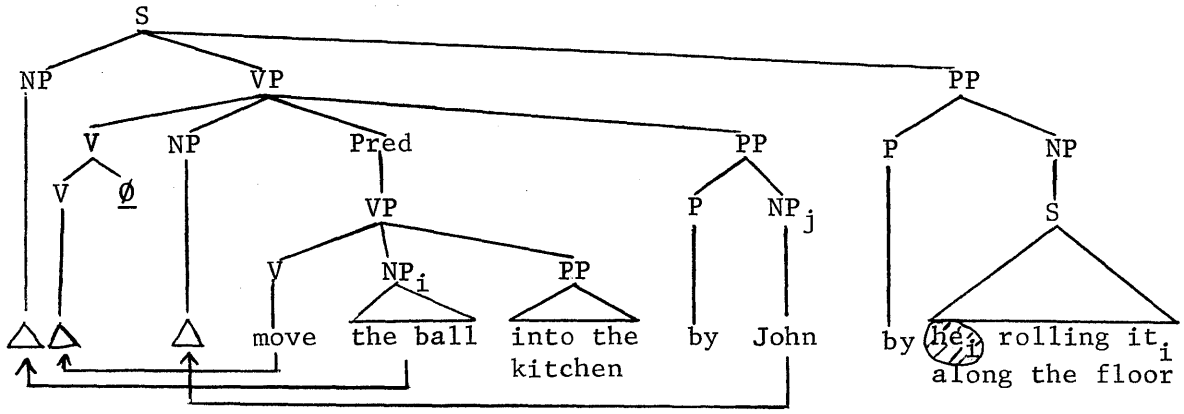
quite simply, without the need for any ad-hoc restrictions on the rules involved, if we merely assume that by-Instrumental clauses of the type in question are immediately dominated by S, rather than by VP. Example (455) a. would then be derived from a structure such as the following:

(456)



while (455) b. would derive from the following structure:

(457)



On the other hand, the structure necessary to produce a sentence such as (455) c. will never be generated, since it is impossible for the NP the ball in the structure (457) to ever appear in the surface Subject position, as is necessary, if the Subject of the by-clause is to be deleted under identity with it.

In fact, there is evidence that it is correct to assume that by-

clauses of this type are generated "outside the VP." Notice, for example, that such clauses can be preposed:

(458) a. By rolling along the floor, the ball moved into the kitchen.

b. By rolling it along the floor, John moved the ball into the kitchen.

c. By moving the table, John inadvertently broke a vase.

d. By being attentive, students can learn a great deal.

as is typical of other clauses that are not subcategorized by the Verb:

(459) a. John stole the money, because he was desperate.

b. Because he was desperate, John stole the money.

(460) a. Mary was very rude to Bill, when he visited her.

b. When Bill visited Mary, she was very to him.

(461) a. Harry climbed Mt. Everest, in order to become a hero.

b. In order to become a hero, Harry climbed Mt. Everest.

Clauses that are subcategorized by the Verb can, of course, be preposed also, as in the following examples:

(462) a. Why Bill left, I don't know.

b. That Bill is an idiot, no one is more aware of than I.

c. Going to Italy, I disapprove of violently.

d. Being made to apologize, Mary resents deeply.

e. Having to start work again, I don't even want to think about.

However, the interpretation of these sentences is quite different from that of the preposed clauses in (458)-(461). The sentences in (462) are

clearly derived by means of the same Topicalization rule that produces examples such as the following:

(463) a. That guy, I can't stand.

b. That car accident, I don't even want to think about.

c. That fact, I happen to be aware of.

d. Your insulting behavior, Mary resents deeply.

e. The answer to that question, I don't know.

Furthermore, notice that whereas the Preposition which accompanies the clauses in (458)-(461) can never be left behind:

(464) a. *Rolling along the floor, the ball moved into the kitchen by.

b. *Moving the table, John inadvertently broke the vase by.

c. *He was desperate, John stole the money because.

d. *To become a hero, Harry climbed Mt. Everest in order.

it is perfectly possible to leave the Preposition behind in topicalized sentences, as is shown by examples (462) b., c., and e., indicating that two different rules are involved.

The evidence, then, seems to support the view that by-clauses of the type in question are dominated by S, rather than by VP, in which case, Fodor's argument against a causative analysis for transitive Verbs such as melt, move, roll, etc. does not affect the analysis proposed here, which derives transitives from structures containing a Predicate-VP, rather than from underlying structures containing embedded S's. I conclude, therefore, that while Fodor's arguments do, indeed, cast serious doubt on the validity of any causative analysis

(e.g. the one proposed in Lakoff (1965)), which derives transitive sentences such as John melted the metal from structures similar to those which underlie sentences of the form John caused the metal to melt, they do not affect at all the analysis proposed here, which claims instead that the underlying form of John melted the metal is parallel to that of a sentence containing a Predicate-VP construction, as, for example, John made the metal melt.

6.2.0. Further Remarks Causative Verbs

We have just seen that a causative analysis for transitive Verbs such as grow, move, melt, etc. allows us to explain (1) why these Verbs, but not Verbs such as hit, strike, etc., always have intransitive forms; (2) difference between intranstives such as grow, move, melt, etc., and the "pseudo-intransitive" forms of transitive Verbs such as hit, sell, wash, etc.; (3) why the derived nominal forms of Verbs such as grow have only an intransitive interpretation, and cannot take Agent-phrases; and (4) why action nominals with the affix -ing behave like S's rather than derived nominal forms in that they may have both transitive and intransitive interpretations, may take Agent-phrases, and also may have pseudo-intransitive forms. However, we have not yet exhausted the evidence in favor of a causative construction of the kind proposed in the preceding section. We are now in a position to refine our earlier analysis of Verbs such as bore, amuse, frighten, interest, etc., and to show, at the same time, that they provide independent evidence in favor of our analysis of causative Verbs.

Recall that in Section 4.3.0. it was shown that the surface Objects

of Verbs such as bore, frighten, amuse, interest, surprise, amaze, astound, and so forth, are not, as one might think initially, deep structure Direct Objects, but rather must be derived from the Indirect Object position in deep structure. One piece of evidence in favor of this analysis derives from the fact that the Objects of these Verbs show up in derived Adjectival forms with the Preposition to, rather than with the Preposition of, which is normally associated with Direct Objects. As far as it goes, this analysis seems to be satisfactory. However, there are a number of interesting facts which it fails to explain. In particular, notice that we have not accounted for the fact that sentences containing these Verbs have no derived nominal forms, as was pointed out by Chomsky (1970):

(465) a. *His annoyance $\left\{\begin{matrix}\text{to}\\\text{of}\end{matrix}\right\}$ me.

b. *The bother $\left\{\begin{matrix}\text{to}\\\text{of}\end{matrix}\right\}$ me by Bill's stutter.

c. *John's interest $\left\{\begin{matrix}\text{to}\\\text{of}\end{matrix}\right\}$ me in Linguistics.

d. *Bill's amusement $\left\{\begin{matrix}\text{to}\\\text{of}\end{matrix}\right\}$ the children with his antics.

e. *John's boredom $\left\{\begin{matrix}\text{to}\\\text{of}\end{matrix}\right\}$ Mary.

On the other hand, we do find derived nominal forms, as was noted in Section 4.3.1., corresponding to sentences containing the Adjectival forms, annoyed, bored, amused, etc., Mary's annoyance at Bill, Mary's boredom with movies, the children's amusement at his antics, and so forth. This latter fact can be explained under the assumption that sentences

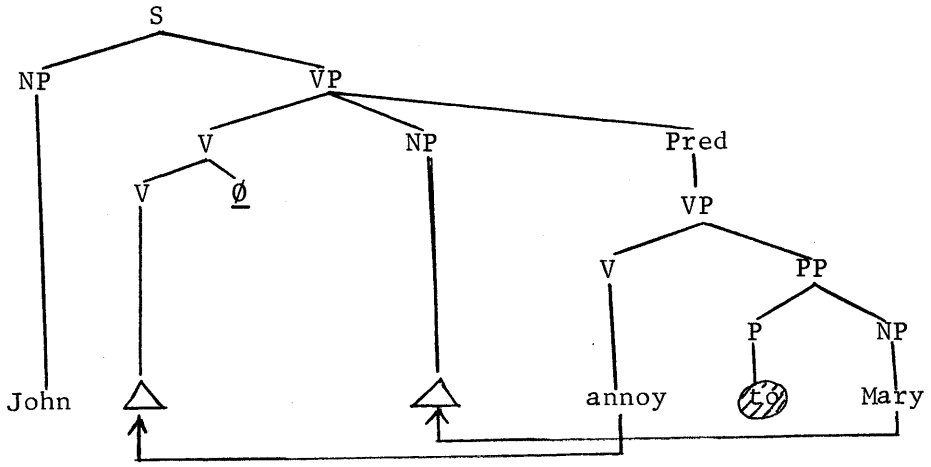
containing Adjectives of this type are base forms, but the non-existence of the nominal forms in (465) was passed over in our earlier discussion without explanation.

Observe, however, that the lack of derived nominal forms for sentences such as Mary annoys Bill can easily be explained, if we assume that they transformationally derive from an underlying causative construction. In particular, we might assume, following Chomsky (1970), that Verbs such as annoy are derived from a causative construction containing a sentence of the form: X - be annoyed - at Y. However, there are difficulties with this proposal. For one thing, notice that such an analysis fails to explain the fact that the Adjective annoyed is morphologically derived from the Verb annoy, rather than the reverse. Secondly, it is not necessarily the case, as was pointed out in Section 4.3.1., that a sentence such as John annoys Mary implies the truth of the sentence Mary is annoyed at John. But if the former is derived from a structure containing the latter, then it is difficult to account for this fact. Thirdly, Chomsky's proposal fails to explain why we find Adjectival forms such as John is annoying to Mary, which correspond, both in form and meaning, to causative sentences such as John annoys Mary. Are we to allow causative Adjectives, as well as causative Verbs, and if not, why are Adjectival constructions of this type not excluded under the Lexicalist Hypothesis?

These difficulties suggest that a somewhat different approach is necessary. Instead of trying to derive Verbs such as annoy, amuse, etc. from the Adjectival forms annoyed, amused, and so forth, suppose that we

were to assume instead that they are simply underlying intransitive Verbs which have the peculiarity that they must occur in a causative construction. Given the analysis of the preceding section, we could then derive the sentence John annoys Mary from an underlying structure of the following form:

(466)



The rules of Preposition Deletion, Object-Preposing, and Predicate-Raising will then apply to (466), automatically deriving the correct surface form John annoys Mary.

There is some support for this proposal. Notice, first of all, that the Verbs of this class may generally appear in pseudo-intransitive constructions such as the following:

(467) a. Mary annoys easily.

b. Bill frightens only with difficulty.

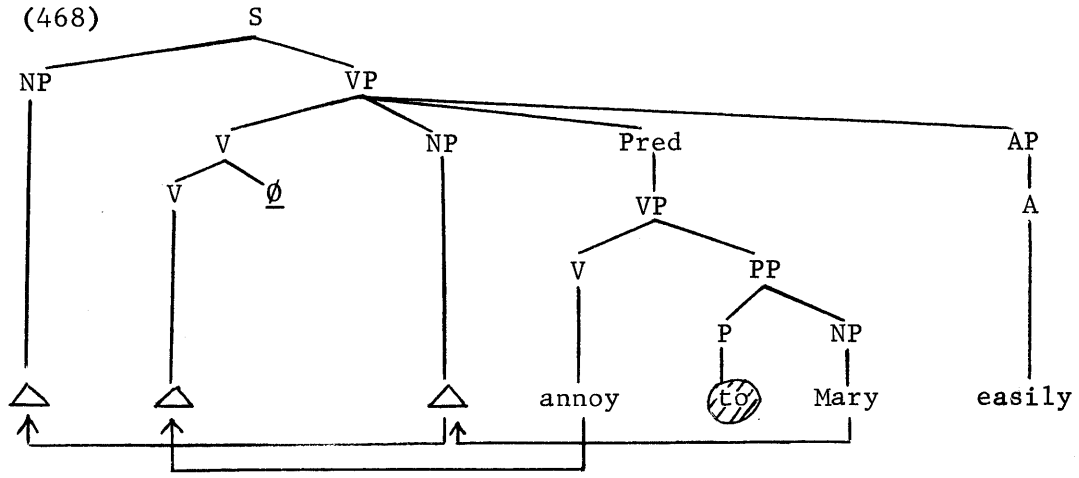
c. The child tires easily.

d. Such people tend to surprise easily.

However, since it is a general fact about the causative suffix -Ø that its Agent-phrase is optional, the existence of pseudo-intransitive forms such as those in (467) is easily accounted for, by deriving them from a

structure of the following sort:

(468)



The derivation is eactly the same as in (466), except that on the top S-cycle, Object-Preposing must apply, moving the NP Mary into its surface position as Subject of the sentence.

Second, notice that there are, in fact, a number of Verbs of this class in English which may appear in either transitive or intransitive sentences, e.g. benefit, worry, and a few others. Thus we find pairs such as the following:

(469) a. Your advice benefited me.

b. I benefited from your advice.

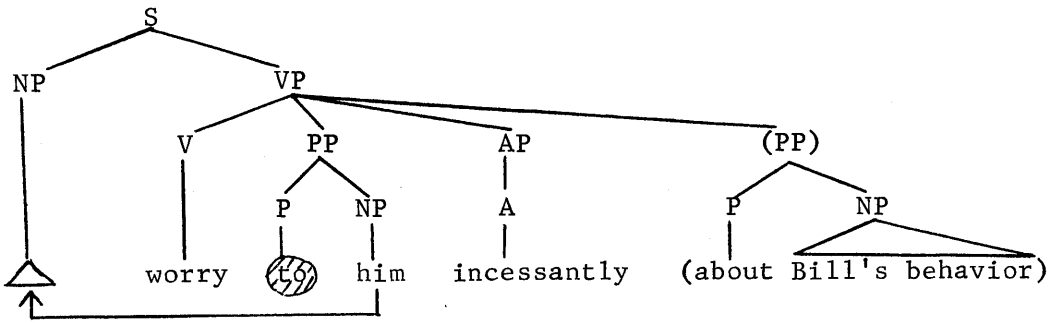
(470) a. Bill's behavior worries everyone.

b. Everyone worries about Bill's behavior.

c. He worries incessantly.

Under the analysis just proposed, the a.-sentences in (469)-(470) would be derived from structures parallel to (466), while examples (469) b. and (470) b. and c. would be derived from non-causative structures such as the following:

(471)

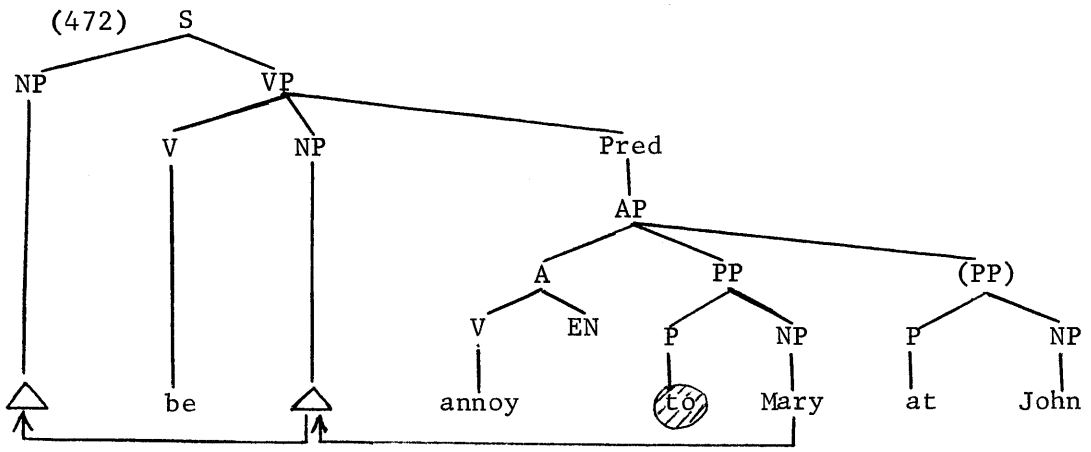


The correct surface form is of course derived automatically by means of the regular rules of Preposition Deletion and Object-Preposing.

It should be pointed out also that in a great many language, transitive and intransitive pairs of this sort are quite common. This is particularly true of languages which do not distinguish syntactically between the categories Verb and Adjective. Looked at in this light, the only thing which is peculiar about English is that for the vast majority of the "Psych-Movement" Verbs, causativization is obligatory. How, then, are the intransitive forms of these Verbs expressed in surface structure in a language like English? This brings us immediately to the Adjectival forms annoyed, amused, worried, etc. We have already observed that these Adjectives are morphologically derived from the Verbs, and not vice-versa. At the same time, these Adjectives must be base forms, in order to account for the fact that we find derived nominals such as Mary's annoyance at Bill, corresponding to sentences of the form Mary is annoyed at Bill. This suggests, naturally enough, that the underlying forms of these Adjectival constructions are Parallel in structure to the intransitive VP's which occur obligatorily in causative constructions such as (466). I propose, therefore, to derive Adjectival constructions of this type from base forms of the following

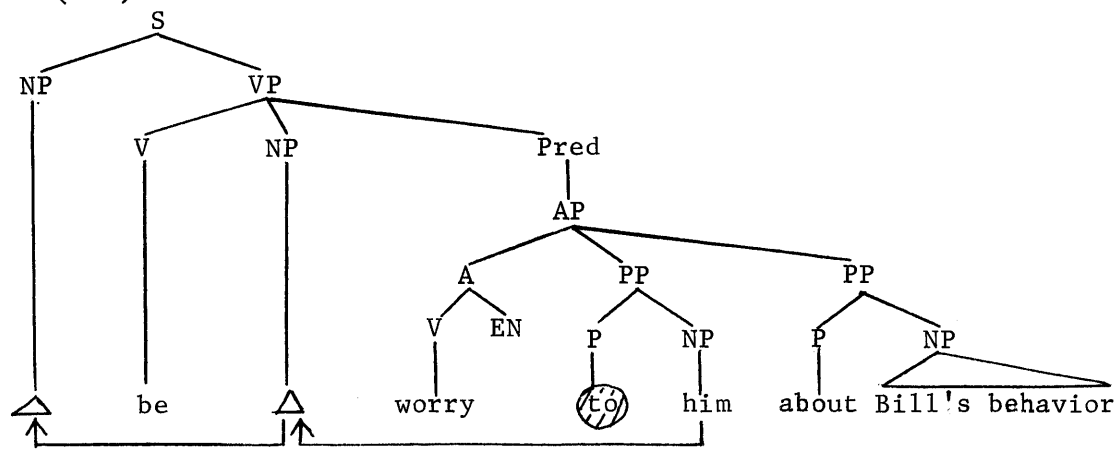
sort:

(472)



We see immediately that although (472) is syntactically quite different in structure from the intransitive VP embedded in the causative construction in (466), nevertheless the underlying grammatical relations are identical. This fact can be brought out even more clearly by comparing the structure (471), from which the sentence he worries (about Bill's behavior) is derived, with the structure underlying the Adjectival construction he is worried (about Bill's behavior), which is similar to (472):

(473)



In fact, the Verb worry and the Adjective worried can be assigned

exactly the same subcategorization feature:

(474) worry(+EN): NP ___ to NP (about NP)

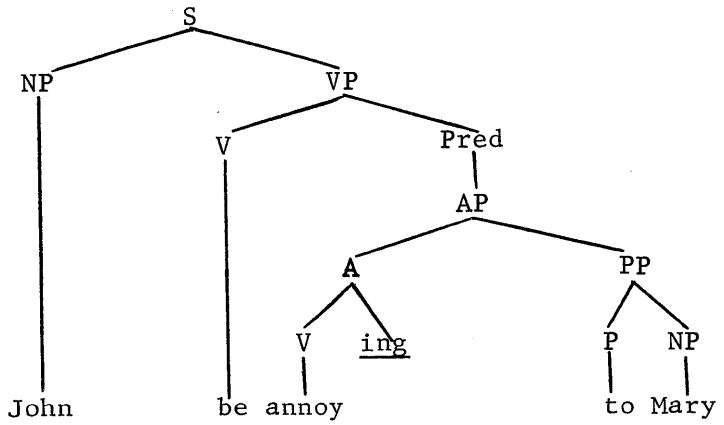
Notice, finally, that the correct surface forms of these sentences can be derived automatically from structures such as (472) and (473), without the addition of any new rules to the grammar. Thus, for example, the sentence he is worried about Bill's behavior will be derived from (473) by means of the regular rules of Preposition Deletion, Object-Preposing (in the VP), and Object-Preposing again (on the S-cycle).

We see, then, that in English, Adjectives which are formed from Verbs by addition of the suffix -EN are, in a sense, the intransitive forms of causative Verbs such as annoy, amuse, and so on. However, it would be incorrect to maintain that the Verbs are derived from the Adjectives directly by means of causativization. Rather, the AP's are parallel in structure to underlying intransitive Verbs, which are themselves obligatorily causativized. It should be stressed once again that these facts are syntactic peculiarities of English. In other languages, the syntactic relationship between transitive and intransitive Verbs of the "Psych-Movement" type is more straightforward. The virtue of the analysis proposed here is that it allows us to capture the idiosyncratic syntactic facts about English, and, at the same time, to account for the system of grammatical relations which underlies these surface forms.

Let us consider next sentences such as John is annoying to Mary, which contain Adjectives formed from Verbs by the addition of the suffix -ing. Sentences of this type are easily accounted for, by deriving

them from structures of the following form:

(475)



We see immediately that the AP annoying to Mary is exactly parallel in structure to the intransitive VP which underlies causative sentences such as John annoys Mary. Thus the Adjective annoying will be subcategorized as follows:

(476) annoying: NP ___ to NP

While the intrasitive Verb annoy must have a subcategorization feature of the following form:

(477) annoy: NP ___ to NP

The relationship between these two features can be accounted for by means of a lexical redundancy rule of the following sort:

(478) [NP - V - to NP] $\longrightarrow$ [NP - [$_{Adj}$V+ing] - to NP]

Similarly, the relationship between annoy and the Adjective annoyed, which must be subcategorized as follows:

(479) annoyed: NP ___ to NP (at NP)

can be accounted for by means of the following lexical redundancy rule:

(480) [NP - V - to NP] $\longrightarrow$ [NP - [$_{Adj}$V+EN] - to NP (at NP)]

Notice, incidentally, that if we were to extend the angled brackets notation used in Section 4.4. to allow paired dependencies, we could then combine the subcategorization features (476), (477), and (479) in the following manner:

(481) annoy: $\langle_1 \underline{NP}_1\rangle$ —— $\left\{ \begin{matrix} \langle_1 +\underline{ing}_1\rangle \\ \langle_2 +EN_2\rangle \end{matrix} \right\}$ to $\underline{NP}$ $\langle_2 (\text{at } \underline{NP})_2\rangle$

Whether or not the notations for collapsing subcategorization conditions should be extended in this manner is a question that I leave open.

Consider, finally, the derived nominal forms corresponding to the constructions just discussed. As has already been noted, there are no derived nominal forms corresponding to transitive sentences such as John amuses Mary, just as there are no derived nominal forms corresponding to transitive sentences such as John moved the ball. Both of these facts are accounted for by deriving the transitive sentences in question from an underlying causative construction. On the other hand, notice that we do find derived nominal forms corresponding to the obligatorily causativized intransitive Verbs which, we have hypothesized, underlie sentences such as John amuses Mary, because these Verbs are base forms. Thus the feature (477), under the Lexicalist Hypothesis, accounts immediately for nominals such as the following:

(482) a. Mary's amusement.

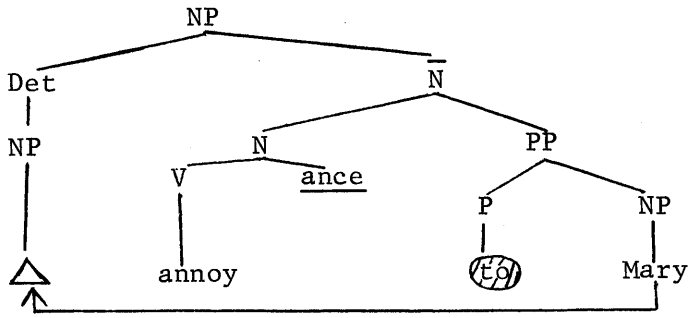
b. Bill's boredom.

c. Harry's amazement.

d. Their annoyance.

which we may derive from underlying forms such as the following:

(483)



by means of the regular rules of Preposition Deletion and Object-Preposing. Note that there are no surface nominals of the form *the annoyance to Mary, *the boredom to Bill, *the amazement to Harry, etc. Hence, the empty NP in the Subject position of (483) must be obligatory. On the other hand, nominals of the form:

(484) a. the amusement of Bill.

b. the boredom of the spectators.

c. the amazement of the reporters.

d. the annoyance of the umpire.

are obviously derived from the intermediate forms in (482) by the inverse of Object-Preposing. Nouns such as annoyance, therefore, must be subcategorized as follows:

(485) annoyance: NP ___ to NP (of NP)

Consider next sentences containing Adjectives such as annoyed, amused, amazed, and so on. Since sentences of this type are base forms, we naturally expect to find the corresponding derived nominal forms. This expectation is borne out by the facts, as the following examples show:

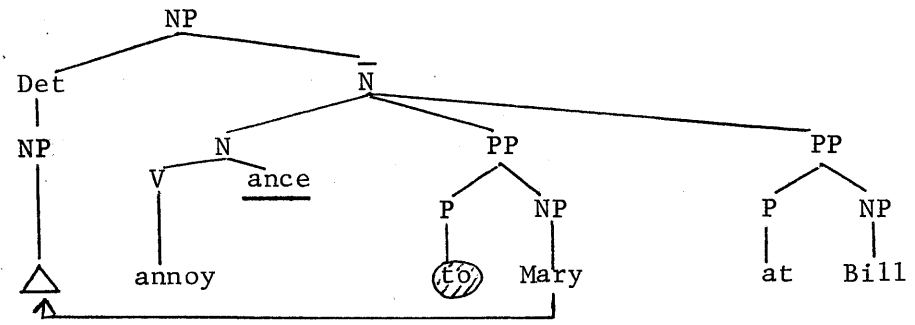
(486) a. Mary's annoyance at Bill.

b. The childrens' amusement at John's antics.

c. Bill's interest in Linguistics.

Nominals of this form are obviously derived from underlying forms such as the following:

(487)



Furthermore, observe that the inverse of Object-Preposing may apply after Preposition Deletion and Object-Preposing, thus deriving alternative surface forms such as the following:

(488) a. the annoyance of Mary at Bill

b. the amusement of the children at John's antics

c. the boredom of the spectators with the game

We may therefore combine the feature that is necessary to account for examples such as those in (486) and (488) with the subcategorization feature (485) which accounts for examples such as (482) and (484), yielding a feature of the following form for Nouns such as annoyance:

(489) annoyance: NP ___ to NP (of NP) (at NP)

Notice, incidentally, that certain Adjectives, such as envious, afraid, and a number of others, require a deep structure Direct Object:

(490) a. Bill is envious of Mary.

b. Harry is afraid of drowning.

The structure-preserving constraint explains immediately why the inverse

of Object-Preposing cannot apply in the nominal forms of these Adjectives:

(491) a. Bill's envy of Mary.

b. *the envy of Bill of Mary.

(492) a. Harry's fear of drowning.

b. *the fear of Harry of drowning.

Thus for Nouns of this sort Object-Preposing obligatorily moves the Indirect Object into the Subject position, but the subsequent application of the inverse of Object-Preposing is blocked, since the Direct Object position is already filled. The subcategorization feature for the Noun fear, then, in contrast to that for annoyance, is as follows:

(493) fear: NP ___ to NP (of NP)

We turn, finally, to the Adjectival forms which are formed with the suffix -ing. The subcategorization feature (476) predicts that we should expect to find derived nominals containing a deep Subject-NP, plus an Indirect Object-NP. In fact, it is somewhat difficult to find nominals of this form which do not sound extremely awkward. Nevertheless, there are a few, as the following examples show:

(494) a. The annoyance to John of having to get a new ticket.

b. The boredom to Mary of going to parties all the time.

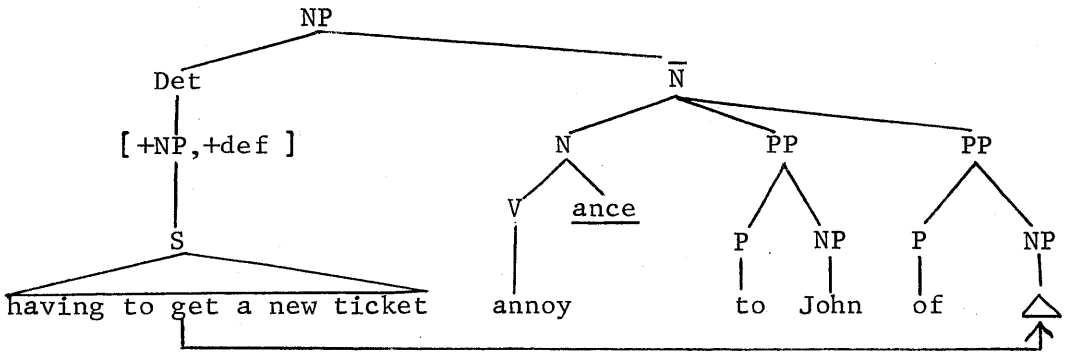
c. The interest to Harry of Linguistics (lies in the fact that...).

d. The benefit to John of having people to talk to.

Note that the Gerundive nominals which appear in the of-phrase in examples (494) a., b., and d. are clearly derived from the Subject position in deep structure, as is argued in Bowers (forthcoming).

However, there is a general restriction in English which prevents complex NP's of all kinds from appearing in the Subject position in nominals in surface structure, and hence the Subject-NP in such cases is obligatorily postposed by means of the inverse of Object-Preposing. Thus the underlying structure of the examples in (494) must be of the following form:

(495)



These, in turn, are clearly parallel in structure to sentences such as the following:

(496) a. Having to get a new ticket was annoying to John.

b. Going to parties all the time is boring to Mary.

c. Linguistics is interesting to Mary.

d. Having people to talk to is beneficial to John.

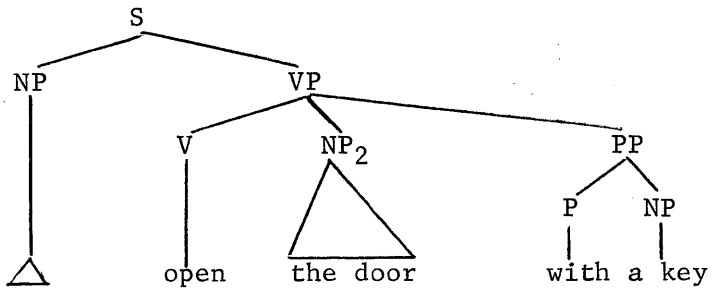
The examples in (494) therefore lend some further support to the analysis of -ing Adjectives proposed earlier.[20]

6.3.0. Instrumental Phrases

We must now reconsider briefly the Instrumental-phrases discussed in Section 5.0. in the light of the causative analysis just proposed. Let us consider first the Verb open. Transitive sentences such as John opened the door clearly derive from a causative construction, since

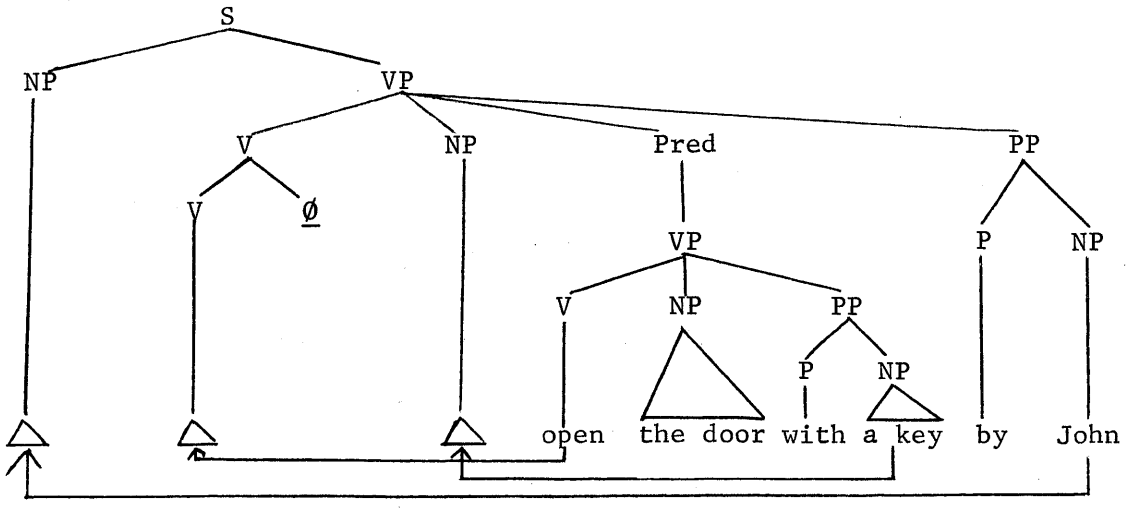
we have non-pseudo-intransitive sentences such as the door opened. However, as was noted earlier, open may also occur with a "true" Instrumental-phrase, in which case we can get either of the sentences the door will open with a key and a key will open the door. In order to account for these sentences, we proposed to set up underlying forms such as the following:

(497)



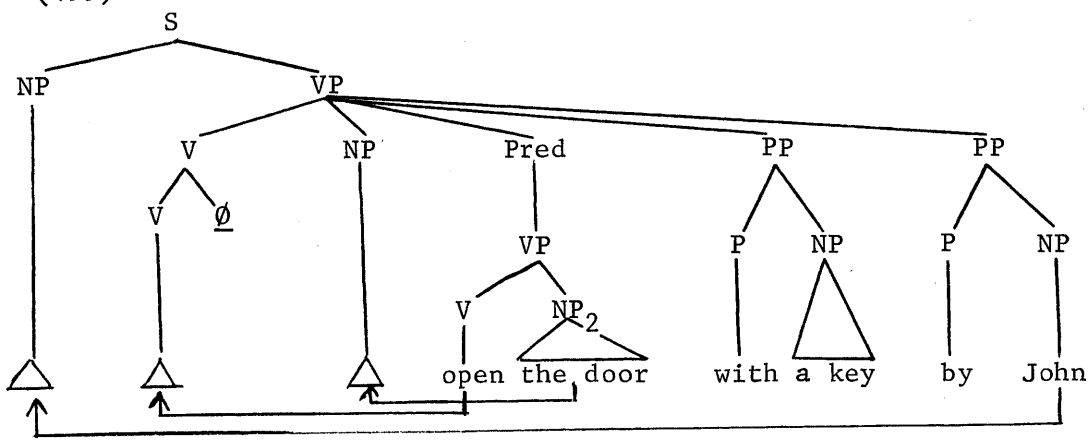
If the rule of Instrumental-Preposing applies to (497), then we will derive the surface sentence a key will open the door. If it does not, then Object-Preposing must apply instead, and we will derive the sentence the door will open with a key. Notice, however, that this analysis creates difficulties, for if we embed (497) in a causative construction, in the following manner:

(498)



then we should expect Instrumental-Preposing to be able to apply, deriving ungrammatical sentences such as *John opened a key the door. Furthermore, notice that in order to account for sentences such as John opened the door with a key, we must allow Instrumental-phrases to occur with the causative suffix -Ø. In other words, we must assume a structure such as the following, for transitive sentences with an Instrumental-phrase:

(499)



But now observe that if (497) is correct, we will have to have an ad-hoc condition preventing both the causative suffix and the embedded Predicate-VP from an Instrumental-phrase, in order to account for the ungrammaticality of the following examples:

(500) a. *John opened the door with a key with a chisel.

b. *A key will open the door with a chisel.

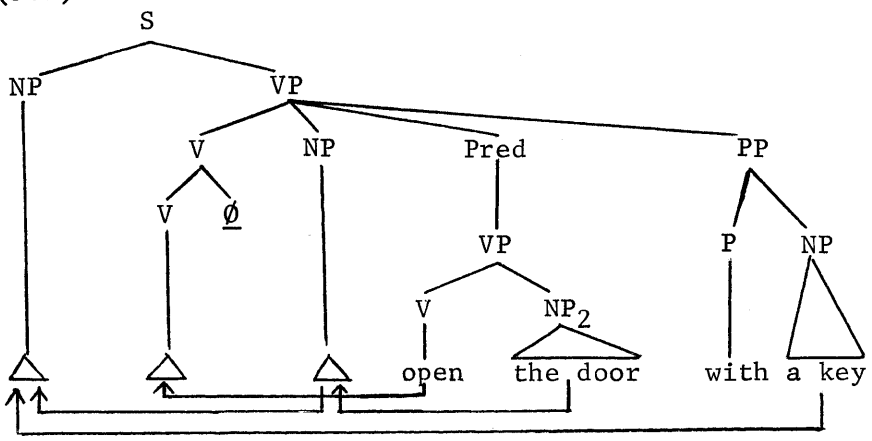
c. *John opened a chisel the door with a key.

d. *The door opened with a chisel with a key.

This suggests that our earlier analysis was incorrect, and that intransitive open is not subcategorized to take an Instrumental-phrase at all. Rather, we must assume that the Instrumental-phrase is in every

case associated with the causativizing suffix -$\emptyset$ in deep structure. Examples such as the door will open with a key and a key will open the door will then be derived from a structure of the following sort:

(501)



The derivation is straightforward. On the upper VP-cycle, Object-Preposing will move the NP the door out of the Predicate-VP into its surface position as Object of V+$\emptyset$. At the same time the Verb open will be moves into the empty V-node, by means of Predicate-Raising. Now, since there is no Agent-phrase present, the empty Subject-NP must be filled in either by Object-Preposing, in which case we get the door will open with a key, or by Instrumental-Preposing, in which case we will derive the sentence a key will open the door.

Notice that this analysis claims that Agent-less sentences of this type are not intransitive sentences at all, but rather are pseudo-intransitives. This claim seems to be correct, for in fact the sentences in question have all the characteristics of the pseudo-intransitives discussed earlier. Thus they invariably imply an Agent (though the Agent is not "understood", as it is in Agent-less passives). To say that the door opened with a key necessarily implies that someone opened the

door with a key. Likewise to say that the key opened the door also implies that the action was performed by someone. Furthermore, sentences of this type naturally occur with AP's such as easily, without difficulty, and so forth, another characteristic of pseudo-intransitives:

(502) a. This door will open easily with a key.

b. A key will open this door easily.

Finally, as has often been noted, the semantic interpretation of such sentences is different from normal intransitives. They are typically interpreted as ascribing some property of quality to the Subject-NP, rather than as merely describing an event. Furthermore, they are frequently used in a generic or habitual sense:

(503) a. This door always opens with a key.

b. My key always opens this door.

c. Doors like this open easily with a key.

d. A key won't open a door of that type.

Again, these are just the semantic properties that are associated with other pseudo-intransitive sentences.

As further support for this analysis, note the fact that Agent-less sentences with Instrumental-phrases of this type may also be formed freely from non-causative transitive Verbs. Thus we find examples of the following sort:

(504) a. This tree will chop down easily with an ax.

b. An ax will chop this tree down easily.

c. *The tree chopped down.

(505) a. This fabric doesn't clean well with detergents.

b. Detergents don't clean this fabric well.

c. *The fabric didn't clean.

(506) a. Fenders that are too thin will dent easily with a hammer.

b. A hammer will dent fenders that are too thin, easily.

c. *The fenders dented.

Notice also that these considerations lend further support to the distinction between "true" Instrumentals and deep structure Subject-NP's, for only the former may appear in pseudo-intransitive constructions. Thus the b.-sentences in the following examples are ungrammatical:

(507) a. A rock hit Bill on the head.

b. *Bill hit on the head with a rock.

(508) a. The train struck the car head-on.

b. *The car struck head-on with the train.

(509) a. Something touched may arm.

b. *My arm touched with something.

because the Subject-NP's in the a.-sentences are not Instrumental-phrases, but rather are derived from the Subject position in deep structure.

I conclude, then, that the Verb open is to be subcategorized simply as follows:

(510) open: NP ___ NP_2

which accounts for non-pseudo-intransitive sentences such as the door opened. All the other sentences in which open may appear can be derived from underlying causative constructions.

6.4.0. Some General Remarks on Causatives

If the observations in the preceding sections are correct, then a rather striking fact about causative Verbs in English emerges: namely, that the only Verbs from which morphological causatives may be formed are intransitive Verbs. Note that it does not matter what the deep grammatical relation of the NP-'argument' to the intransitive Verb is, as long as there is only one. Thus we have discussed instances in which causatives are derived from intransitive Verbs which take Direct Objects (i.e. melt, grow, roll, etc.); instances in which causatives are derived from intransitives which require deep Agent-phrases (i.e. gallop, walk, run, etc.); and instances where a causative is formed from an intransitive Verb which requires a deep Indirect Object (e.g. amuse, annoy, worry, etc.). On the other hand, there are no instances in English of a causative being formed from a transitive Verb. Thus it is impossible to form sentences such as *John grew the corn by Bill, meaning "John had Bill grow the corn", or *John amused the children by his stories, meaning "John caused the children to be amused by his stories." Instead, sentences with an intended meaning of this sort can only be expressed in English by means of various "paraphrastic" constructions, a number of which we shall discuss in considerable detail in the next chapter.

It is important to observe that this restriction is specific to English. There are many languages which have more extensive causative constructions in which sentences analagous to *John grew (+causative) the corn by Bill are perfectly possible. To name only two, with which I am somewhat familiar, both Telegu and modern Hindi[21] have morphologically marked causative forms of the Verb, not only for intransitive

Verbs of the same type as English grow, move, melt, etc., but also for transitive Verbs with Agent- or Subject-phrases, such as hit, strike, and so forth. It cannot be argued, therefore, that the peculiar properties of English causative Verbs are explainable on the basis of universal semantic properties of the Verbs in question, since we would, in that case, expect languages such as Hindi and Telegu to have exactly the same restrictions on the occurence of causative Verbs.

On the other hand, one would like to inquire as to where the difference between languages like English and languages which have more extensive causative constructions actually lies. It will turn out, as a consequence of the discussion of Predicate-VP constructions in the next chapter, that the differences are actually fairly trivial. Notice that one of the paraphrastic constructions which may be used in English to express the "causative" of a transitive Verb is the have-construction. Thus we find sentences of the form: John had the garbage taken out by Bill. I shall present strong arguments that sentences of this type are not, as has commonly been assumed, derived from structures containing embedded S's, but rather must be analyzed as Predicate-VP's of the same kind that occur in the causative construction in English. Now observe that if English allowed Predicate-Raising to apply not only to Predicate-VP's containing intransitive Verbs, but also to Predicate-VP's containing transitive Verbs, the result would be sentences of just the type that actually occur in languages such as Telegu and Hindi, i.e. sentences with a causative Verb, in which the Object of the transitive Verb from which the causative is derived appears as the Direct Object, and in which the Subject of the transitive appears with a special

Agentive marker. If this proposal can be maintained, then it may well turn out that typological differences of this kind can be very simply described in terms of the various restrictions that languages impose on rules such as Predicate-Raising.

One might think of a number of ways of expressing restrictions of this sort. Perhaps the simplest, within the framework developed here, would be to extend the subcategorization conditions to allow a Verb to specify what grammatical relations may be present in a Predicate-VP or AP which occurs as a complement to that Verb. Adopting this convention, we could then account for the facts of English by means of a subcategorization feature of roughly the following form for the causativizing suffix -$\underline{\emptyset}$:

(511) V+$\underline{\emptyset}$: NP ___ $\underline{NP}_2$ $[_{VP}$ $\underline{V}$ $\left\{\begin{matrix}\underline{NP}_2 \\ \text{to } \underline{NP} \\ \text{by } \underline{NP}\end{matrix}\right\}$] (with $\underline{NP}$) (by $\underline{NP}$)

However, it is an open question whether this, or some other type of mechanism entirely, is the most appropriate way of representing generalizations of this kind.

Additions - Chapter II

[1]See Chomsky (1970).

[2]J. R. Ross (personal communication) has objected to my treating Object-Preposing and its inverse as the same rule on the grounds that the two rules have different exceptions. However, this is a fairly weak objection, since exceptions of this type do not have to be handled in this framework by means of rule features, but can, in general, be accounted for by assigning appropriate subcategorization conditions to the Noun, Verb, or Adjective in question. In some cases, it may be necessary to specify a rule as obligatory, in addition. Thus, in order to account for the ungrammaticality of *the tragedy's report by the newspaper, we need only specify that Agent-Preposing is obligatory for the Noun report, thus ensuring that if there is an empty NP in the Subject position, we will get only the newspaper's report of the tragedy. Notice that this still does not account for the ungrammaticality of *the tragedy's report. Even here a small sub-regularity may be extractable, however, since we can assume a lexical redundancy rule of the form:

(a) ___ ... by NP ⟶ NP ___ ... by NP

In fact, if we allow the use of angled brackets, to express discontinuous dependencies, we can build this information directly into the subcategorization feature for tragedy in the following manner (cf. Sections 4.4. and 4.5. of this chapter):

(b) tragedy: ⟨NP⟩___ NP ⟨by NP⟩

(b) states that the presence of an empty Subject-NP implies the presence

of an Agent-phrase, and vice-versa, thus automatically preventing the application of Object-Preposing, when there is no Agent-phrase.

There are, in fact, other instances where the theory proposed here allows us to dispense with ad-hoc rule-features. (Cf. Section 4.2.3. of this chapter). In general, this is a point in the theory's favor, since the device of subcategorizing empty nodes is more restricted a system of rule features.

[3]Examples of the type that picture of John of Bill's would appear to be counterexamples to the analysis just presented. These can be accounted for, however, if, following Chomsky (1970), we assume that the of-phrases in (72)-(74) derive from the deep structure configuration N-NP, with the of being inserted automatically before the Object of a Noun by a late rule, while the postposed Possessive phrase in the above example is derived by a separate rule which puts the 'Subject' of the NP into a deep structure of-phrase. This accords well with the fact that the conditions on the Possessive postposing rule are quite different from those which govern the rules involving Objects and Agents.

[4]Notice that the "two-way" rules discussed earlier are not permutation transformations. The latter type of rule exchanges two nodes simultaneously, whereas the former is simply an abbreviation for two rules which have the same structural description, but which apply in opposite directions. In fact, as was pointed out in section 3.1.1.1., the notation adopted here for the statement of structure-preserving rules specifically precludes the use of permutation rules, while permitting the abbreviation of "two-way" rules.

[5]This is by no means true in all cases. See Fraser (1969) for some discussion of these matters.

[6]There is an alternative way of accounting for these facts which does involve making To-Dative obligatory when there is no Object, if we are willing to allow the 'linked parentheses' notation proposed by Fillmore (1968). Instead of (184), we would then have the following subcategorization condition:

(a) pay: NP ___ (NP_1 NP_2) to NP by NP

(a) states that at least one of NP_1 or NP_2 must be chosen, and thus prevents the to-phrase from occurring without either an Object or an empty Indirect Object-NP. This analysis would require us to revise the Dative Movement rule slightly, making term 4 of the structural description of (170) optional. Whether or not there is sufficient empirical motivation for allowing the additional expressive power of the linked parentheses notation into the theory of lexical redundancy is a question that I shall leave open. So far, I have been unable to find any compelling reason for using it.

[7]See Jackendoff (1972) for arguments in support of this view.

[8]Ross (personal communication) has stated that the b.-sentences in (209)-(213) are out for phonological reasons, presumably because the Verbs in question have more than one syllable (not counting the Past Tense affix, when it is syllabic). However, there appear to be numerous exceptions to this rule, e.g.:

A. (1) I relayed the message to Bill.

(2) I relayed Bill the message.

B. (1) We awarded the prize to Bill.

(2) We awarded Bill the prize.

C. (1) I offered a cookie to the monkey.

(2) I offered the monkey a cookie.

D. (1) I telegraphed the money to Mary.

(2) I telegraphed Mary the money.

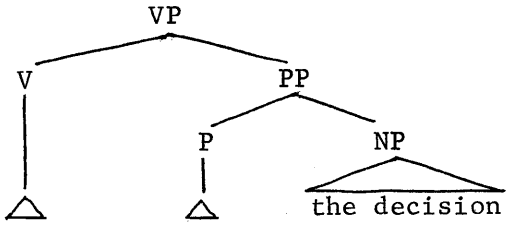
Furthermore, the rule does not work for _for_-Datives either, e.g. _I designed a house for Bill_, _I designed Bill a house_; _I generated a sentence for Bill_, _I generated Bill a sentence_; _I dissected a fish for Bill_, _I dissected Bill a fish_; etc. It is somewhat difficult to see why, in any case, the application of the Dative Movement rule _should_ depend on the phonological structure of the Verb. I suspect that if Ross's observation has any validity at all, it is a reflection of the fact that monosyllabic Verbs of Germanic origin tend to occur with _to_- and _for_-phrases of a type that are generally not subject to Dative Movement.

[9]As a matter of convenience, I shall continue to refer to the Indirect Object by means of the notation "NP_1", and likewise to the Direct Object by means of the notation "NP_2". However, it should be borne in mind that NP_1 is simply an _ad-hoc_ abbreviation for an underlying PP, whose head Preposition _to_ has been deleted by the rule of Preposition Deletion.

[10]Chomsky (1970) has argued that the Preposition _of_ should be inserted in nominal forms, rather than being deleted in VP's, on the grounds that the latter proposal would require an arbitrary bifurcation of the lexicon into those Verbs which require _of_-deletion, and those which do not. Furthermore, he notes, this division extends, in certain cases, even to different senses of the same lexical item, cf., for example, _John_

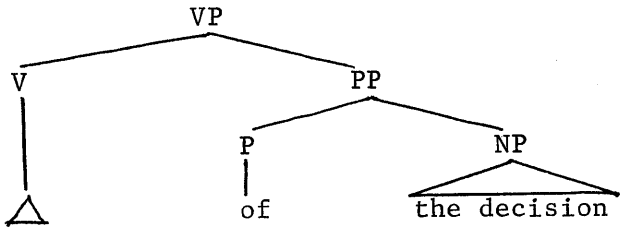
approved the decision, vs. John approved of the decision, where approve, in one sense, requires that the reposition of be deleted, while in another sense it requires that the Preposition be retained. There are, however, ways of avoiding this conclusion. Suppose, for example, we treat all Verbs which take "PP-Objects", e.g. look at, approve of, talk about, listen to, etc. as being essentially idioms, which must therefore be entered in the lexicon as wholes. We could thus assume a structure such as the following for the phrase approve of the decisions:

(a)



The lexical insertion rule would then be formulated so as to insert the Verb approve into the empty V-node and the Preposition of into the empty Preposition-node. In the sense of approve in which it requires the "unmarked" Preposition of, on the other hand, the Verb and the PP would be inserted independently of one another. Hence the lexical insertion rule for Verbs would apply, in such cases, to a structure of the form:

(b)



If, furthermore, we place a general restriction on transformational rules which prevents them from deleting parts of phrases which constitute a semantic unit, then we need not restrict the Preposition Deletion rule

at all, since the lexical item "approve of", in contrast to the lexical item "approve", is a semantic unit, and hence protected from Preposition Deletion. Note that a similar condition on transformations is proposed in Chomsky (1972) to account for the difference between PP's which allow Pseudo-Passives, e.g. We decided on the boat, in the sense of "We chose the boat", which allows the Pseudo-Passive the boat was decided on, and those which do not allow Pseudo-passive forms, e.g. We decided on the boat, in the sense of "We made the decision on the boat", which has no Pseudo-passive form.

Note, furthermore, that these two criteria for whether a Verb+Preposition is a semantic unit do, in general, coincide. Thus listen to, as in John listened to the music, does not allow Preposition deletion, even though to is immediately to the right of the Verb (cf. *John listened the music), and, at the same time, has the Pseudo-passive form the music was listened to by John. Likewise, approve of, which is impervious to Preposition Deletion has the Pseudo-passive the decision was approved of by everyone.

[11]Compare this sense of receive with the one found in a sentence such as John received his guests in the foyer, which is quite different in meaning. In the latter sense of receive, the surface Subject comes from the Agent position in deep structure, and it would therefore have a subcategorization feature of the following sort:

(a) receive: NP ___ NP (PP) by NP

[12]Notice, however, that this analysis raises certain problems. As things stand, there is apparently no way of preventing the derivation of

ungrammatical sentences such as *the ball hit by John through the application of Object-Preposing to an underlying string of the form: NP - V - NP_2 - by NP. Similarly, it would appear to be possible to derive the ungrammatical string *the wall hit by the rock from the underlying string NP - V - NP - by NP, through the application of Subject-Postposing and Object-Preposing. Notice, furthermore, that we cannot deal with this problem simply by having the Passive Auxiliary be+EN inserted by the rule of Object-Preposing, since that would make it impossible to derive Intransitive sentences such as the ice melted from underlying structures of the form: NP - V - NP_2. Worse yet, if we assume that the Passive Auxiliary is present in base forms, then we will apparently be able to generate, in addition to the ungrammatical sentences cited above, sentences such as *John was hit the ball and *the rock was hit the wall.

The proper solution to this problem cannot be given until we have discussed the precise form of the Passive construction (cf. Chapter III, Section 5.3.). However, it is perhaps sufficient to note here that if the Passive Auxiliary is present in the base, and if we can make Subject-Postposing an obligatory rule which applies in the presence of the Passive Auxiliary and Agent-Preposing an obligatory rule which applies in the absence of the Passive Auxiliary, then all of the ungrammatical examples cited above can be prevented. This, in turn, will allow us to formulate Object-Preposing in such a way that it applies perfectly generally to any NP immediately to the right of the Verb, regardless of the construction in which it occurs, so that the derivation of Intransitives such as the ice melted will no longer be a problem. Furthermore, ungrammatical

sentences such as *John was learned French (from Bill) and *French learned (from Bill) by John will be prevented in exactly the same way.

[13] Notice that this analysis would lead one to expect pairs of sentences such as those in ( )-( ) to be non-synonymous. This conclusion seems to me to be correct, despite the seemingly wide-spread conviction that the opposite is true. (See, for example, ruber (1965), Katz (1968).) This it is perfectly possible for one to learn something from someone without that person's having taught it to one, so that we have, for example:

(a) John learned French from Bill by listening to him speak it.

but hardly:

(b) *Bill taught John French by (John's) listening to him speak it.

Similarly, there are distributional assymetries of the following sort:

(c) 1. John learned French from a textbook.

2. *A textbook taught John French.

(d) 1. John learned French from a teaching machine.

2. *A teaching machine taught John French.

Consider also the Verb borrow, and its 'converse' lend. It is perfectly possible for me to borrow something from someone without that person having lent me the thing. Thus it is possible to say:

(e) John borrowed a book from Bill without his knowledge (without asking him, without telling him, etc.).

but not:

(f) *Bill lent John a book without his knowledge (without giving him permission, without John's asking him, without John's telling him, etc.).

Likewise, it is possible to take something from someone without the person's having given it to one, to receive something without it's having been given to one, and so forth.

Perhaps the most convincing case for synonymity can be made in the case of buy and sell, where it is admittedly harder to conceive of a situation in which person A could be described as having bought something from person B, but where B could not be described as having sold the thing in question to A. However, consider the case of a person at an auction who has had the misfortune to raise his finger at the wrong moment, as a consequence of which he has been sold an item that he had no intention of bidding for. It seems to me that such a person can be said to have been sold something, without having bought it. There are other curious assymetries. Thus the government can buy land which it wants for the construction of highways, without the owner's agreeing to sell the land. The assymetry in the proposed underlying forms of sentences containing the Verbs buy and sell reflects an assymetry which is inherent in the buyer-seller relationship. If an individual, say John, has something which I wish to purchase, then John is in a privileged situation, in the sense that while I, the potential buyer, am completely dependent on John's willingness to sell, in order to be able to buy the thing in question, John is not dependent on me as far as selling it is concerned. In other words, with the respect to the thing which John has possession of, he has a range of potential buyers, whereas each potential buyer can only purchase that thing from one person, namely, John. The general point is, I think, that pairs of sentences containing buy and sell are related to one another,

at the syntactic level, in much the same way as lexical items such as butterfly and caterpillar, or the Morning Star and the Evening Star, which may have the same reference, but differ in sense. Thus the sentences John bought a book from Bill and Bill sold a book to John may, under the right conditions, refer to the same event, yet still differ in meaning.

[14]Note that ungrammatical sentences such as *This book is buying like hotcakes by the students, *these apartments rent from the university by the students, *Spanish learns pretty easily by students who already know Italian, etc. will be prevented by the restrictions on Subject-Postposing mentioned in footnote 12. Since Subject-Postposing only applies in the presence of the Passive Auxiliary in English, these sentences are impossible. What we get instead are the (grammatical) passive forms: this book is being bought like hotcakes by the students, these apartments are rented from the university by the students, Spanish is learned pretty easily by students who already know Italian, etc. Note also that since there restrictions on Subject-Postposing and Agent-Preposing are peculiar to English, we might well expect to find languages in which sentences corresponding to the non-Passive examples cited above are perfectly possible.

[15]In fact, of course, the question of whether or not there is a separate level of deep structure, distinct from both surface structure and semantic interpretation, is quite independent of the question of whether deep structure is to be represented in terms of Phrase-Structure rules of the usual kind, or in terms of a system of labelled functional relations. However, if we can show that Fillmore is wrong on the latter

question, then it will not even be necessary to discuss here whether or not a system of the type he proposes provides evidence that there is no need for a distinction between deep structure and semantic interpretation. Cf. Chomsky (1969), (1970), for a general discussion of these issues.

[16]We could, alternatively, formulate this as an interpretive rule requiring the Instrumental-NP to have a possessive Pronoun, coreferential with a deep Subject-NP. For our purposes here, it makes no difference whether the rule is a syntactic rule or an interpretive rule. See Helke (1970) for a similar treatment of Reflexives and the possessive Pronoun which occurs in constructions such as John blinked his eyes (cf. *John blinked the eyes).

[17]Note, however, that while the sentences in (370) imply an Agent, the Agent is not "understood", as it is, for example, in the short form of the Passive. This is shown by the fact that Adverbs which require an Agent-phrase may appear in the latter, but not in the former. Thus we have the book was read carefully, but not *the book reads carefully, and likewise the book was deliberately sold for only $20, but not *the book deliberately sold for $20.

[18]In some cases it seems that the affix -en may be prefixed to the Verb, as in enlarge, engorge, etc., while in other cases the Verb is formed from a different stem, as in lengthen. In still others, only the quality of the Vowel changes, e.g. hot/heat. Syntactically, all of these morphological variants have the same properties.

[19]Note that we do not get much in an "inchoative" sentence when there

are no degree modifiers: *The metal hardened much, *The sky darkened much, etc. This follows from the general convention that all nodes which dominate only null terminal symbols are deleted in surface structure. Thus, after Predicate-Raising applies in (388) and(390), Pred dominates only the null terminal symbol, and is therefore wiped out, so that much cannot be inserted. In (392), however, the Predicate node dominates the lexical items so...that we couldn't break it, and therefore is not deleted, aloowing much to be inserted.

[20]It should be pointed out that the paucity of derived nominal forms corresponding to Adjectives formed with the suffix -ing is, in all likelihood, an "accidental gap" in the lexicon of English. My reasons for believing this are the following: It is a fact about English morphology that the derived nominal forms of Adjectives which require deep structure Subject-NP's are most commonly formed with the suffix -ness. Thus we find, for examples, pairs such as the following (cf. Bowers (forthcoming), for some discussion of nominalizations of this type):

(A) 1. The table is white.

2. The table's whiteness.

(B) 1. That cookie is stale.

2. The staleness of that cookie.

(C) 1. The deck is slippery.

2. The deck's slipperiness.

(D) 1. The talk was lengthy.

2. The lengthiness of the talk.

(E) 1. The train was slow.

2. The train's slowness.

Now there seems to be no reason, in principle, why nominals with the suffix -ness should not be formed from Adjectives such as annoying, boring, amusing, etc., for, as we have just seen, these Adjectives require deep Subject-NP's. In fact, nominals formed in this manner, though awkward, do not seem entirely unacceptable:

(F) 1. ?The boringness to Mary of our conversation.

2. ?The annoyingness to John of having to buy a new ticket.

3. ?The amusingness to the children of going to the zoo.

4. ?The frighteningness of that horror movie.

5. ?The worrisomeness to me of Bill's behavior.

This suggests that the unacceptability of the examples in (F) has more to do with the theory of performance than it does with the theory of grammar. If this view can be maintained, then the apparent lack of derived nominal forms corresponding to -ing Adjectives can be seen merely as an accidental gap in the lexicon of English.

[21] See Krishnamurti (1970) for an interesting discussion of causative Verbs in Telegu, and Bai (1970) for a discussion of the Hindi causative.

CHAPTER III

THE PREDICATE

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1.0. Introduction

In the preceding chapter, we started out with the rather simple problem of accounting for the syntactic relation between the Transitive and Intransitive forms of Verbs such as turn, melt, burn, and so forth. Trivial as this problem may seem, it is extremely difficult to find a syntactically motivated solution to it within the transformational component of a grammar which is not subject to the structure-preserving constraint. However, once we allow empty nodes to be generated in deep structure, and to be subcategorized by lexical items (a device which does not in itself increase the complexity of the grammar, since it is needed in any case), problems of this sort immediately become amenable to a syntactic treatment which is not only simple and natural, but is also well motivated, in the sense that the rules which are necessary are merely extensions of rules which are needed independently in the grammar anyway. Further confirmation for the correctness of this approach can be found in the fact that with a slight revision of the standard account of the Passive rules, it becomes possible to formulate a rather natural constraint on the power of lexical redundancy rules. This result is an important one, since in a non-structure-preserving framework, the only way of accounting for the relationships in question is by means of lexical redundancy rules. However, this immediately poses the problem of how to constrain the power of lexical redundancy rules in such a way as to exclude, in principle, the possibility of

treating the Active/Passive relation, say, as merely an instance of lexical redundancy.

The price which one pays for these limitations on the power of lexical redundancy rules and transformations is, as one might expect, an increase in the "abstractness" of grammatical relations. However, it is a striking fact that though the underlying representations proposed in the course of Chapter II are more abstract than those which have generally been assumed, the resulting grammar, evaluated in terms of rule complexity, is no more complex than earlier grammars. In fact, in many instances it seems clear that particular rules, in this framework, can be formulated more generally, and hence are actually simpler, in terms of any reasonable evaluation measure, than the same rules in the standard framework. It is difficult to think of a more striking confirmation for the essential correctness of a theory than a result of this sort.

Pursuing this line of thought, it quickly becomes apparent that other syntactic relationships which grammarians have intuitively felt to be present in the language are equally amenable to syntactic treatment within our framework. In particular, as a result of our investigation of the Dative Movement rules, it turns out that the distinction between the Direct Object and the Indirect Object plays a central role in English syntax at the level of deep structure, though virtually all traces of this distinction are obliterated at the level of surface structure through the interaction of various transformations. Finally, as another result of our discussion of the Dative Movement rules, we were able to return

to the problem with which we started out, namely Verbs with both Transitive and Intransitive forms, and to construct a genuine explanation for the fact that just these Verbs, and no others, have the properties that they do.

In order to achieve this last result, it was necessary to assume the existence of 'Predicate-VP's, that is, VP's which are dominated by the node Predicate and which are parallel syntactically to certain AP's and NP's traditionally analyzed as deriving from that position. The bulk of this chapter is devoted to an examination of the consequences of this assumption. It will be shown that not only is our analysis supported by a variety of independent considerations, but that it leads to some rather interesting conclusions regarding the deep structure representation of, among other things, the Passive, the Progressive 'aspect', as well as various other constructions, usually referred to in the literature as "pseudo-Passives". Finally, in the last section, we shall take up the matter of There-Insertion, a rule which has provoked a great deal of discussion, but which has never, to my knowledge, been stated in a satisfactory manner in the framework of generative grammar. It will be shown that in our framework There-Insertion can be properly stated in an exceedingly simple way, and furthermore that it provides strong evidence in favor of the theoretical framework.

2.0. The Predicate Adjective-Phrase

We have already had occasion to mention briefly the Predicate-AP in the preceding chapter. In Section 6.1. it was observed that there exist Transitive/Intransitive pairs of the following sort:

(1) a. John got the metal hot.

b. The metal got hot.

(2) a. John turned the paint blue.

b. The paint turned blue.

and it was shown that these must derive from underlying structures in which the Object of the a.-sentences and the Subject of the b.-sentences both derive from the Direct Object position. Notice that this analysis immediately explains another property of these sentences, namely, the fact that the Object of the transitive and the Subject of the intransitive both have the same deep structure grammatical relation to the Predicate Adjective-Phrase. Thus the property of hotness is predicated of the NP the metal in both (1) a. and (1) b. This fact is explained by our analysis, since in both cases the NP the metal derives from a deep structure position immediately to the left of the Predicate-AP. We need only define the "Subject" of a Predicate-AP as that NP which occurs immediately to the left of the AP node and is immediately dominated by VP.

In the light of these preliminary remarks, let us now consider pairs of sentences such as the following:

(3) a. Goldilocks found a bear asleep in her bed.

b. A bear was asleep in Goldilock's bed.

(4) a. He made me angry.

b. I became angry.

(5) a. I drove him crazy.

b. He went crazy.

(6) a. She makes me happy.

b. I am happy.

(7) a. We have a doctor available now.

b. A doctor is available now.

(8) a. We kept Bill sober for an hour.

b. Bill $\left\{\begin{matrix}\text{stayed}\\\text{was}\end{matrix}\right\}$ sober for an hour.

(9) a. They called him crazy.

b. He is crazy.

(10) a. The jury pronounced him guilty.

b. He is guilty.

Observe that in every example the Object of the a.-sentence bears the same grammatical relation to the AP following it as the Subject of the b.-sentence does to the AP following the Verb. Thus in (3) a. the AP asleep in her bed is predicated of the Object-NP a bear, just as in (3) b. the same AP is predicated of the Subject-NP. This is shown, for example, by the fact that the Object and Subject, respectively, share identical selectional restrictions with respect to the head Adjective:

(11) a. *Goldilocks found a rock asleep in her bed.

b. *A rock was asleep in Goldilocks' bed.

(12) a. *He made the idea angry.

b. *The idea became anry.

(13) a. *We kept the chair sober for an hour.

b. *The chair $\left\{\begin{matrix}\text{stayed}\\\text{was}\end{matrix}\right\}$ sober for an hour.

(14) a. *The jury pronounced the theory guilty.

b. *The theory was guilty.

Notice that the ungrammaticality of these examples cannot be attributed to the relationship between the main Verb and the Object in the a.-sentences, or to the relation between the main Verb and its Subject in the b.-sentences, since the same Nouns can appear with these Verbs, as long as there is an appropriate AP (or some other Complement):

(15) a. Goldilocks found a rock by her bed.

b. A rock was by Goldilocks' bed.

(16) a. He made the idea attractive.

b. The idea was attractive.

(17) a. We kept the chair intact for an hour.

b. The chair was intact for an hour.

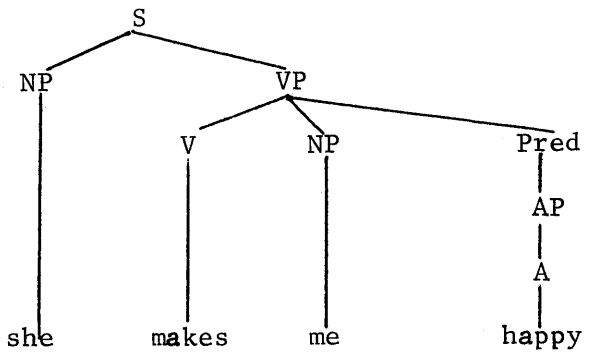
(18) a. The jury pronounced the theory absurd.

b. The theory was absurd.

It thus appears that the relationships noted in examples (1) and (2) are far more widespread than we might at first have supposed.

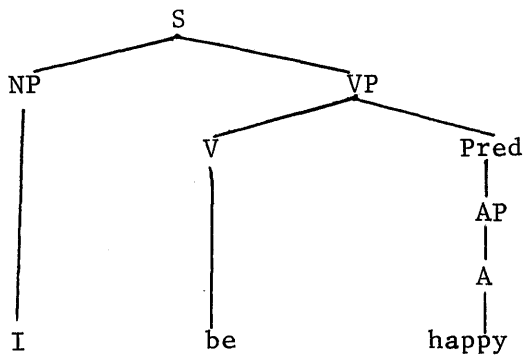
In the standard treatment of these sentences, an example such as (6) a. would be assigned a deep structure of the following sort:

(19)



while (6) b. would be derived from a source such as (20):

(20)



Observe that in this theory there is no way of expressing the fact that in both (19) and (20) the Noun I is the 'Subject' of the Predicate-AP, except by means of lexical redundancy rules. Furthermore, the redundancy rule that is necessary is of the type that we have argued must be excluded from the grammar. That is, it must relate the Subject-NP in (20) to the Object-NP in (19), so that formally the relation is the same as that which exists between Transitive turn and Intransitive turn. The strings in question are the following:

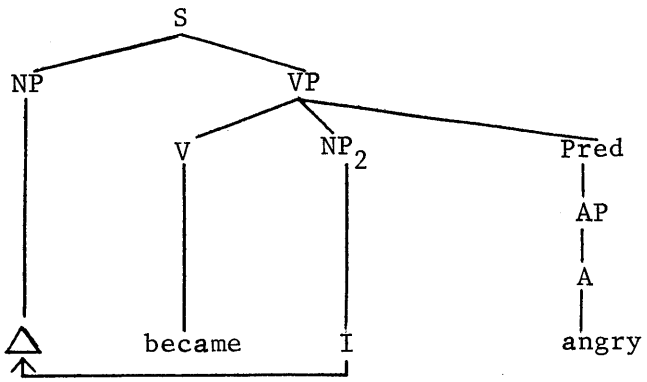
(21) a. NP_1 - V - NP_2 - AP

b. NP_2 - V - AP

Clearly, there is no way of collapsing these strings by means of parentheses and braces, from which it would follow, according to the principle proposed in Chapter II, that NP_2 in (21) a. cannot be related to NP_2 in (21) b. by means of a lexical redundancy rule.

Suppose, however, that in accordance with our analysis of sentences such as (1) and (2), we were to derive the b.-sentences in (3)-(10) from underlying structures containing a Direct Object and an empty Subject-NP. We would then have the following deep structure for a sentence such as (4) b.:

(22)

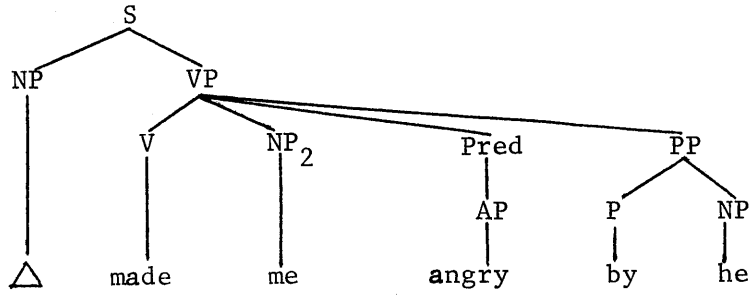


Given a deep structure of this sort, the rule of Object-Preposing would automatically apply, moving the NP I into the empty Subject position and producing the correct surface structure I became angry. The Verb become, then, would be subcategorized as follows:

(23) become: NP ___ NP_2 AP

A sentence such as (4) a., on the other hand, would derive from the following deep structure:

(24)



and the Verb make would, accordingly, be subcategorized as follows:

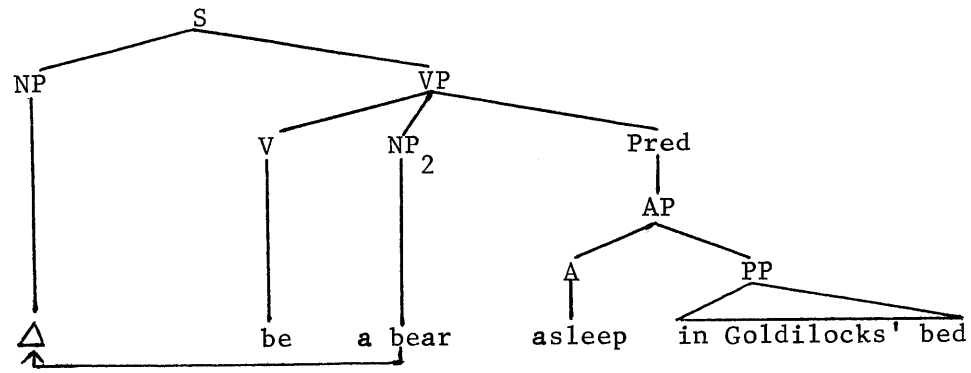
(25) make: NP ___ NP_2 AP by NP

Notice that in both (22) and (24) the NP I is the 'Subject' of the Predicate-AP, since by the definition given in the first paragraph above, the Subject of a Predicate-AP is the NP immediately to the left

of the AP which is immediately dominated by VP.[1]

As a particular case of the analysis just proposed, it follows that the surface Subject of all sentences containing the copula <u>be</u> plus a Predicate-AP will be derived from deep structures containing a Direct Object. Thus (3) b., for example, will derive from a deep structure of the following sort:

(26)



to which Object-Preposing will automatically apply, moving the Direct Object-NP into the empty Subject position.[2] This result will eventually lead to some rather startling consequences, as will be seen in due course. The subcategorization feature for <u>be</u>, then, will be roughly as follows:

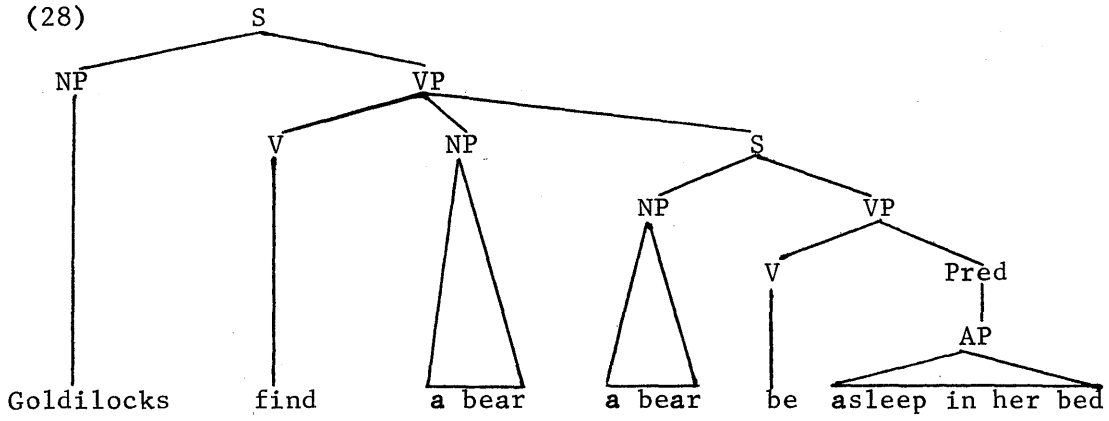
(27) <u>be</u>: NP ___ $\underline{NP}_2$ <u>AP</u>

Note that in order to achieve a consistent definition of the grammatical relation 'Subject-of an AP' at the level of deep structure, we have not had to add any new rules to the grammar, or complicate the theory of grammar, as here conceived, in any way.

There is, however, an alternative to our proposal, within the standard theory, which would, if correct, also be capable of avoiding the use of lexical redundancy rules in accounting for the relationship between the a.- and the b.-sentences in (1)-(10). Suppose that one were to argue

that all of those sentences in which the 'Subject' of the AP appears in the Object position in deep structure are in fact derived from underlying structures containing an embedded sentence with the copula be plus a Predicate-AP, so that (3) a., for example, would be derived from a deep structure of roughly the following sort:

(28)



In favor of this analysis, it could be argued that not only are the necessary rules needed in the grammar anyway (e.g. Equi-NP Deletion, Complementizer Deletion, Be-Deletion, etc.), but in many cases the putative underlying forms show up on the surface as Infinitive complements with the main Verb be. Thus we have pairs such as the following:

(29) a. Goldilocks found a bear to be asleep in her bed.

b. Goldilocks found a bear asleep in her bed.

(30) a. I consider that to be unwise.

b. I consider that unwise.

(31) a. They want the specimens to be undamaged.

b. They want the specimens undamaged.

Furthermore, it could be argued, the obviously close meaning relationship between the above pairs supports a derivation of this kind. The

only new rule that would be required would be one which optionally deletes the string to be, when it is followed by a Predicate-AP. This proposal, while at first glance an attractive one, quickly runs into difficulties. Notice, to begin with, that a great many Verbs will have to be specially marked as obligatorily undergoing the rule of to be-Deletion. Thus the following intermediate forms are all ungrammatical, showing that the rule of to be-Deletion must be obligatory in these cases:

(32) a. *I drove him to be crazy.

b. *We have a doctor to be available now.

c. *We kept Bill to be sober for an hour.

d. *They called him to be crazy.

e. *John got his clothes to be wet. (cf. John got his clothes wet.)

This fact does not, in itself, necessarily constitute a strong counter-argument, since it is by no means unknown for lexical items to be marked as obligatorily undergoing a rule which is otherwise optional. However, notice that a vast number of lexical items will also have to be marked as obligatorily not undergoing the to be deletion rule. Thus none of the a.-sentences below can be transformed into the ungrammatical b.-sentences:

(33) a. John forced Mary to be attentive.

b. *John forced Mary attentive.

(34) a. Mary persuaded John to be careful.

b. *Mary persuaded John careful.

(35) a. Bill told Harry to be good.

b. *Bill told Harry good.

(36) a. John got Bill to be reasonable.

b. *John got Bill reasonable.

and the same is true of innumerable other examples of this kind. In order to make this analysis work, therefore, the lexicon will have to be arbitrarily divided into three classes of Verbs, those which must undergo the rule, those which may undergo the rule, and those which may not undergo the rule. Of course a solution along these lines is perfectly possible in a grammar which contains an exception mechanism of the type outlined in Lakoff (1965). However, the extreme lack of generality of such an analysis constitutes a strong argument against it, especially in view of the fact that there is an alternative (namely, the one we have just proposed above) which does not require the use of Lakoff's exception mechanism at all.[3]

Finally, notice that in a great many cases (probably, in fact, in the majority of such cases) sentences containing the Infinitive form of the Verb be are quite clearly not synonymous with sentences containing the Predicate-AP alone. Consider, for example, the following pairs of sentences:

(37) a. John got Bill to be angry.

b. John got Bill angry.

(38) a. She makes me be happy.

b. She makes me happy.

(39) a. We pronounced him to be guilty.

b. We pronounced him guilty.

(40) a. We found John to be very amusing.

b. We found John very amusing.

(41) a. I sliced the meat to be thin.

b. I sliced the meat thin.

It seems to me that this difference in meaning is actually a general fact about pairs of sentences such as the above, but that it is more apparent in (37)-(41) than it is in examples (29)-(31), for reasons that I do not fully understand. At any rate, it is difficult to see how this difference in meaning can be accounted for at all in an analysis which derives Predicate-AP's from underlying sentences.

Taking all of these objections together, I think that it is fair to conclude that a unified account of the Predicate-AP is impossible under the assumption that just those Predicate-AP's whose 'Subject' occurs as the Object of the matrix Verb are to be derived from underlying for-to complements containing the Verb be, plus a Predicate-AP. Our proposed analysis, on the other hand, is subject to none of these objections. In fact, given the independently motivated analyses of the previous chapter, it can be incorporated into the grammar without the addition of a single new rule and without complicating the theory of grammar in any way.

3.0. Perception Predicates

We are now in a position to analyze a class of Verbs which Postal has referred to as 'Perception Predicates.' (cf. the discussion of "Psych-Movement" in Postal (1968), Chapter II, Section 4.3.2.). These are Verbs such as appear in the following sentences:

(42) a. I tasted the soup.

b. The soup tasted funny to me.

(43) a. I smelled the soap.

b. The soap smelled strange to me.

(44) a. I felt the rug.

b. The rug felt rough to me.

(45) a. I heard the piano.

b. I listened to the piano.

c. The piano sounded loud to me.

(46) a. I saw the house.

b. I looked at the house.

c. The house looked old to me.

Postal proposed to account for the relationship between the a.- and the b.-sentences in (42)-(44) (and also the b.- and the c.-sentences in (45) and (46)) by means of a rule which he calls "Psych-Movement". Although the details of the operation of this rule have nowhere been made explicit, Postal does indicate that it would operate on an underlying string of the form:

(47) I tasted the soup funny.

and would simultaneously permute the Subject-NP and the Object-NP, as well as providing the former with the Preposition to, thus deriving the surface similar to (47), except that they would lack the post-verbal AP, and Psych-Movement would not apply in the course of their derivation. Aside from the fact that there are strong reasons for suspecting that permutation rules of this kind should be excluded from the grammar altogether, note that there is very little syntactic support for Postal's analysis. It was pointed out in Chapter II, for example, in connection with a class

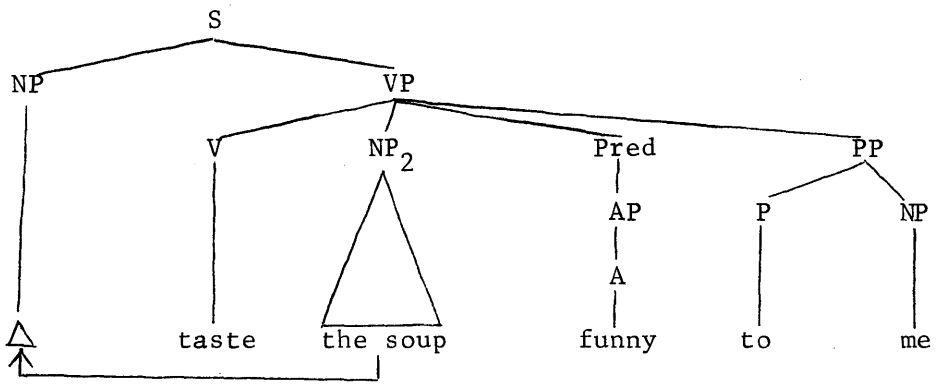
of sentences which is similar in some ways to the examples under consideration here, that there is no actual syntactic evidence that the NP which appears after the Preposition to in sentences such as (42) b. derives from the Subject position in deep structure. The evidence that Postal offers involves similarity of selectional restrictions and the distribution of the Adverb personally. However, as was pointed out earlier, evidence of this sort is, in general, compatible with either a syntactic analysis or a semantic analysis of the relationship between the two NP's. Postal also fails to point out that it is only under one interpretation of the a.-sentences above, that the grammatical relation of the surface Subject to the Verb is similar to the relation of the Indirect Object to the Verb in the b.-sentences. The other interpretation remains unaccounted for in his analysis. Finally, notice that Postal's only argument for regarding the surface Object of (42) a. as deriving from the same deep structure position as the surface Subject of (42) b. is again the fact that they share selectional restrictions.

Nevertheless, I think that Postal is correct in arguing that there is a syntactic relationship between these pairs of sentences. Furthermore, notice that if even one of the grammatical relations in the a.-sentences is the same as one of the grammatical relations in the b.-sentences, this relationship cannot, in our framework, be expressed in terms of lexical redundancy rules, unless the deep structure underlying these sentences is more abstract than appears on the surface. Thus, if we were to assume that the deep structures of (42) a. and b. were more or less the same as their surface structures, our principle governing the use of lexical

redundancy rules would prevent us from expressing either a relationship between the Object of (42) a. and the Subject of (42) b., or between the Subject of (42) a. and the Indirect Object of (42) b., since in neither case would the required subcategorization features be collapsible by the use of parentheses and braces. Let us consider, therefore, how the relation between these sentences might be accounted for in terms of the theory that we have developed so far.

Notice, to begin with that if the remarks in the preceeding section concerning the source of sentences with Predicate-AP's are correct, then the surfact Subjects of (42)-(44) b. must derive from the Direct Object position in deep structure, in order to account for the fact that they are the 'Subjects' of the Predicate-AP. Consider next the NP which appears as the Object of the Preposition to in these same sentences. The simplest assumption, that if the surface Subject of (42)-(44) b. were derived from the deep structure Direct Object position, then the independently motivated rules established in Chapter II would ensure (1) that the Direct Object moves into the Subject position in surface structure, and (2) that the Object of the to-phrase does not undergo To-Dative Movement, but rather stays in its deep structure position as the Object of to. Given the rules that we have established so far, then, the simplest assumption is that (42) b. has a deep structure source of roughly the following sort:

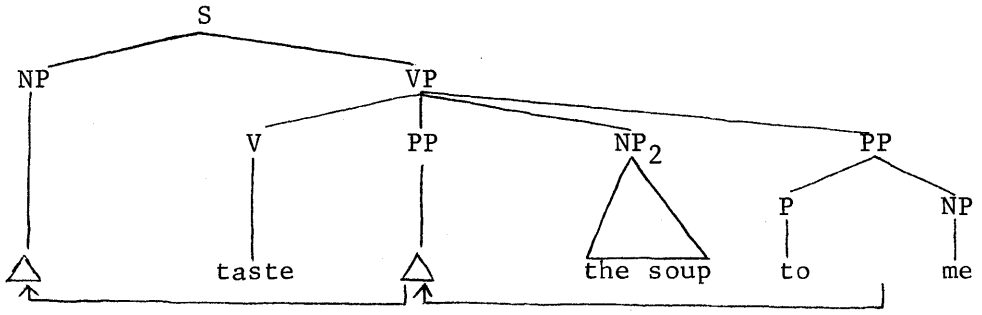
(48)



The only rule that would apply to (48) would be Object-Preposing, as is indicated by the arrow. To-Dative Movement would not apply, because there is no empty Indirect Object node in (48). This derivation thus accounts automatically for the correct surface form of sentences (42)-(44) b.

Let us turn now to the a.-sentences in (42)-(44). There is, as Postal has shown, a certain amount of evidence to show that the surface Subjects of these sentences have the same grammatical relation to the Verb as the Indirect Objects do in the b.-sentences. We shall assume, therefore, that the surface Subject of (42) a., for example, derives from the to-phrase in deep structure. It is also evident that (42) a., unlike (42) b., does not have a deep structure Predicate-AP. Now observe that if the NP the soup in (42) a. could be derived from the deep structure Direct Object position, and furthermore if taste, in this sense, could be subcategorized with an empty Indirect Object-NP, then the correct surface form I tasted the soup would automatically be derived by rules that we already have in the grammar. Thus I propose that underlying sentence (42) a. is a structure of roughly the following kind:

(49)



If (49) is correct, then To-Dative Movement will apply to it, followed by Preposition Deletion and Object-Preposing, and we will have the surface structure I tasted the soup. We cannot derive the ungrammatical sentence:

(50) *The soup tasted to me.[4]

through the application of Object-Preposing, since the environment for Dative Movement would no longer be met, and hence the empty Indirect Object-node would be left unfilled at the end of the derivation. Likewise, the fact that (48) contains no empty Indirect Object node explains why sentences such as the following are ungrammatical:

(51) *I tasted the soup funny.

Notice that neither of these facts can be explained in Postal's analysis, except by placing otherwise unmotivated conditions on the rule of Psych-Movement, whereas in our analysis they follow automatically from the different deep structures which we have assigned to (42) a.and b., respectively, plus the independently motivated rules of To-Dative Movement and Object-Preposing. At the same time our analysis accounts for the fact that the 'Experiencer'-NP, in both cases, derives from the same underlying grammatical position, namely, the Object of the Preposition to, in spite of the fact that it shows up in different positions

entirely in surface structure.

Further evidence for the correctness of our analysis can be derived from the fact that the a.-sentences in (42)-(44), but not the b.-sentences, have grammatical Passive forms:

(52) a. The soup was tasted by everyone.

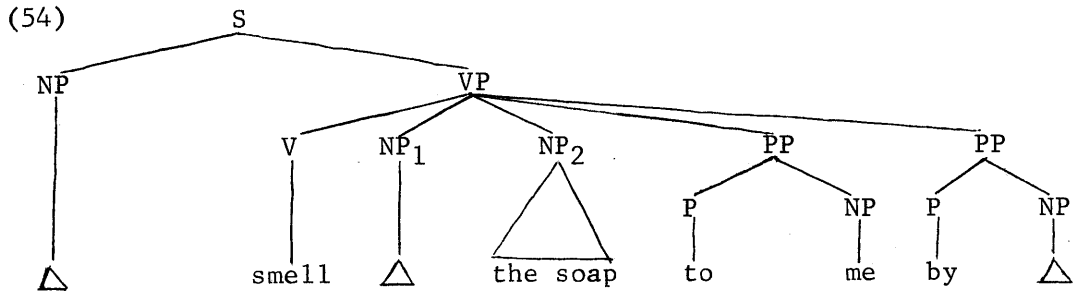
b. *The soup was tasted funny $\left\{\begin{matrix}\text{to}\\\text{by}\end{matrix}\right\}$ me.

(53) a. The soap was smelled by Mary.

b. *The soap was smelled strange $\left\{\begin{matrix}\text{to}\\\text{by}\end{matrix}\right\}$ Mary.

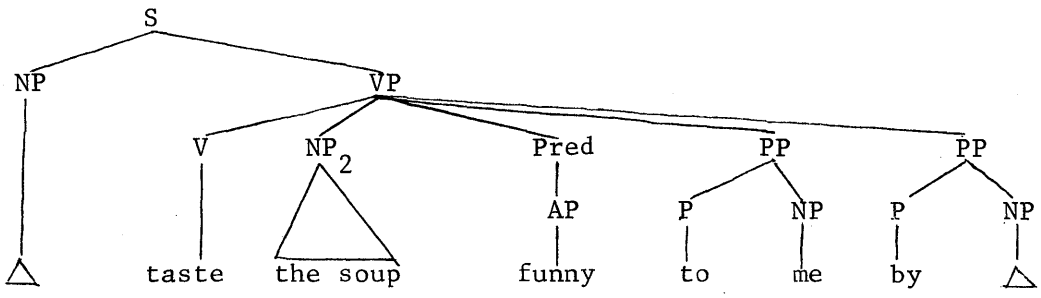
Sentence (52) a. can be derived, by the rules that we have already, from a deep structure identical to (49), which contains in addition an empty by-phrase:

(54)



The rules of To-Dative Movement, Preposition Deletion, Object-Preposing, Subject-Postposing, and Object-Preposing will apply automatically, in that order, deriving the surface form: The soap was smelled by me. Notice, however, what happens if we tack on an empty by-phrase to the deep structure (48):

(55)



The rules of Object-Preposing, and Subject-Postposing will apply, as usual, yielding the intermediate string:

(56) ___ - taste - ___ - funny - to me - by the soup

But at this point condition (259) (cf. Chapter II, Section 4.4.), governing the application of structure-preserving rules, will automatically prevent the NP the soup from being moved back into the Subject position by the rule of Agent-Preposing. Since, as will be demonstrated shortly (cf. Section 5.3.), Passive sentences are derived from structures containing a Predicate-VP embedded below the main Verb be, this will have the effect of making it impossible for the empty Subject of be to be filled, and hence the derivation will be rejected. Thus the existence of Passives of the form (52) a. and (53) a., as well as the non-existence of the Passive forms (52) b. and (52) b., follows automatically from our analysis.

We must now consider the subcategorization features which must be assigned to Verbs such as taste, smell, and feel. Clearly, the feature which accounts for the deep structures underlying the a.-sentences, namely, (49) and (54), must have the following form:

(57) taste_1: NP ___ PP NP_2 to NP (by NP)

while that which specifies the deep structure (48), which underlies

sentence (42) b., must be as follows:

(58) taste$_2$: NP ___ NP$_2$ AP to NP

If there were no optional empty by-phrase in (57), then these two features could be collapsed very simply as follows:

(59) taste: NP ___ $\begin{Bmatrix} NP_1 & NP_2 \\ NP_2 & AP \end{Bmatrix}$ to NP

However, we have already shown that if an empty by-phrase is added to the deep structure specified by (58), the derivation will block anyway. Hence, we can simply add an optional, empty by-phrase to (59), giving us the final form of the subcategorization feature for taste, (60):

(60) taste: NP ___ $\begin{Bmatrix} NP_1 & NP_2 \\ NP_2 & AP \end{Bmatrix}$ to NP (by NP)

There is one final point regarding (60) which needs clarification. Notice that we have made the to-phrase obligatory for taste both when it occurs with an AP, and when it does not. However, sentences such as the following would make it appear as if the to-phrase could be optional in the former case:

(61) a. The soup tastes strange.

b. The soap smells funny.

c. The rug feels rough.

If this were in fact the case, then we would no longer be able to collapse (57) and (58) into a single feature, since the to-phrase is clearly not optional in (57). Notice, however, that although there is no overt 'experiencer'-NP in the examples of (61), it could be argued that semantically they must be interpreted as having an unspecified experiencer, the meaning of the Verbs taste, smell, etc.being such that a thing can

only have a taste, smell, or feel relative to some animate perceiver. We could, therefore, account for this semantic fact about Perception Predicates, as well as for the meaning of (61), if we were to assume that obligatorily filled nodes may have as one of their realizations the terminal symbol Δ, which must then be interpreted by a semantic rule as having the meaning "unspecified individual having the grammatical relation X to the Verb", where X in this case would be the grammatical relation 'Object-of the Preposition to'. Alternatively, we could simply allow obligatorily filled NP's to appear in deep structure with a semantic representation, but no associated phonological features. Whichever device is the correct one, the result is the same for the matter at hand. Notice that this proposal is not an innovation in the theory of grammar. Exactly the same device, or its equivalent, has generally been accepted as the explanation for the meaning and surface form of 'Agentless Passives' such as John was hit, the book was bought yesterday, and so forth, which require, semantically, an 'understood' Agent.

It appears, then, that there is strong syntactic evidence for deriving sentences such as (42)-(44) from more abstract underlying structures in which the surface Subjects of the a.-sentences derive from the same position as the Objects of to in the b.-sentences. On the other hand, there is equally strong motivation for deriving the Objects and Subjects of the a.- and the b.-sentences, respectively, from the Direct Object position. This situation is precisely reflected in the subcategorization feature (60), which combines the features (57) and (58) into

a single feature in accordance with the conventions governing the use of parentheses and braces, thus providing further evidence for the correctness of the principle proposed in the preceding chapter for limiting the power of redundancy rules in the lexicon. The subcategorization feature (60), plus the independently motivated transformational rules established earlier, combine to determine uniquely just the class of possible surface structures in which Verbs such as taste, smell, and feel may appear, as well as providing a deep structure which is appropriate as the input to the semantic component. This last point is one to which we shall return in much more detail in the last chapter. However, there are several obvious remarks which might be made here. Clearly, the semantic component, in these cases, must assign the semantic role 'Experiencer', or the like, to the Object of the Preposition to in the b.-sentences and to the Subject-NP in the a.-sentences. This can be accounted for in our analysis by simply assigning the role 'Experiencer' to the Object of the to-phrase in both cases. Thus our syntactic analysis explains why, for these Verbs, either the Subject-NP or the Object of to can be interpreted semantically as the 'Experiencer', depending on the syntactic environment. Similarly, the semantic role 'Thing-experienced', or the like, is associated with the Object-NP in the a.-sentences, but with the Subject-NP in the b.-sentences. Under our analysis, the semantic component can be simplified considerably, since we need only assign the semantic role in question once, to the deep Object-NP.

Notice, however, that there is a subtle difference in meaning

between sentences such as John tasted the soup and The soup tasted good to John. In the former, we seem to be saying something about John, i.e. we are reporting something that he did, whereas in the latter, it seems that we are attributing some property to the soup, and the 'Experiencer' John is only secondarily involved. But if the NP John (and likewise the NP The soup) derives from the same position in both sentences, how can this difference in meaning be accounted for? In fact, it seems likely that this meaning difference is due to a general property of the surface structure Subject and Object relations. It has often been noted that there is a strong tendency in English, and other languages like it, to regard an Animate (surface) Subject as, in some sense, the 'Actor', and to regard a surface Object as the 'Patient' or 'Acted-upon'. If this generalization is valid, then it would explain immediately why the Subject-NP in the sentence John tasted the soup is in some way "felt" to be the "actor", and why the Object-NP The soup is felt to be the "thing acted upon." A similar rule of surface structure interpretation applies to sentences containing a "copular" Verb and a Predicate-phrase. In these cases, it seems that there is a tendency to regard the sentence as attributing some "property" to the Subject-NP. This fact, if true, would immediately account for the feeling that in the sentence The soup tasted good to John, the property of "tasting good to John" is being predicated of the NP the soup, and that the role of the 'Experiencer'-NP is, in this case, of secondary importance.

If these observations are correct, then there is no longer any contradiction between the fact that the underlying grammatical relations

in pairs of sentences such as those in (42)-(44) are the same and the fact there are also subtle differences in meaning between them. Hence, the subcategorization feature (60) not only determines the correct input to the transformational component, and thereby determines in the simplest possible manner the possible surface structure configurations in which the Verbs of this class may appear, but it also specifies a deep structure which can be used to determine correctly the semantic relationships between the Verb and its NP "arguments."

It is interesting to note that the subcategorization features (57) and (58) are in many cases associated with different Verbs. Thus hear and see in (45) a. and (46) a., respectively, are just like the 'transitive' use of taste in (42) a., while sound and look correspond to the 'intransitive' use of taste in (42) b. It follows that hear and sound, for example, would be subcategorized as follows:

(62) a. hear: NP ___ NP_1 NP_2 to NP (by NP)

b. sound: NP ___ NP_2 AP to NP

Notice that hear and sound have exactly the same syntactic properties as $taste_1$ and $taste_2$. Thus we do not get *I heard the piano loud, and, conversely, the sentence *I sounded the piano is ungrammatical, except in a rather different sense, i.e. it does not mean "I heard the piano." The only essential difference, then, between hear and sound, on the one hand, and $taste_1$ and $taste_2$, on the other, is that the latter, but not the former, may be collapsed into a single subcategorization feature (60), because of the fact that the phonological form which is associated with the two features (57) and (58) happens to be the same for Verbs such as

taste and smell.

It may not have escaped the reader's notice that sentences (42)-(44) a. are themselves ambiguous. In one interpretation a sentence such as I felt the rug means simply "I could feel the rug (touching me)". This is the interpretation with which we have been concerned so far. However, there is another interpretation in which the surface Subject is an Agent, and the sentence just mentioned means something like "I touched the rug to see what it felt like". Again, it should be pointed out that in some cases this interpretation is associated with a different Verb. Thus listen to in (45) b. is the Agentive corresponding to hear, while look at is the Agentive corresponding to see. The difference between the Agentive and the non-Agentive interpretation of taste, smell, and feel is associated with a difference in the other PP's with which they may occur. If the organ of taste, smell, or touch is mentioned explicitly, then it must occur in an Instrumental-phrase in the former case, but in a Locative-phrase in the latter case. Compare, for example, the following:

(63) a. I tasted the soup with my tongue.

b. I could taste the soup on my tongue.

(64) a. I smelled the soup with my nose.

b. I could smell the soup in my nostrils.

(65) a. I felt the rug with my hand.

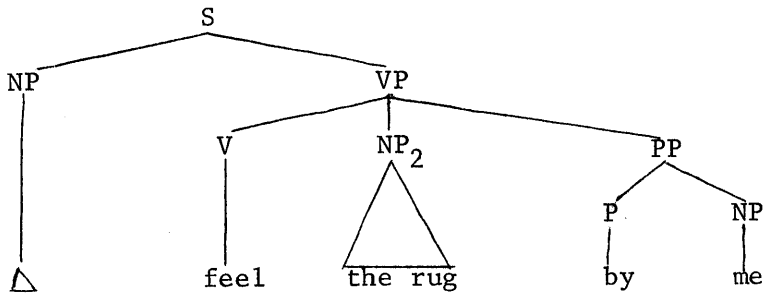
b. I felt the rug on my hand.

(66) a. I listened to the sound of the piano with my ears.

b. I heard the sound of the piano in my ears.

The difference between these two senses of the Verbs taste, smell, etc. is easily accounted for in our framework. We need only assume that the surface Subjects of the a.-sentences in (63)-(66) derive from a deep structure by-phrase, whereas the surface Subjects of the b.-sentences derive, as we have just seen, from a deep structure to-phrase. Furthermore, this will allow us to associate the optional Instrumental-phrase which occurs in the Agentive sentences with the presence of an Agent-phrase, whereas the optional Locative which occurs in the b.-sentences can be associated with the presence of a deep to-phrase. The Agentive interpretation of the sentence I felt the rug would therefore derive from a deep structure of the following sort:

(67)



Notice that with the transformations we have available the only possible surface structures which can result from (67) are I felt the rug and The rug was felt by me, derived by means of Agent-Preposing and Object-Preposing, respectively. This prediction is of course correct. Finally, the subcategorization feature associated with feel, in this sense, (let us call it '$feel_3$'), must look as follows:

(68) $feel_3$: NP ___ NP_2 (with NP) by NP

In contrast, the subcategorization feature for the non-Agentive sense of feel, modified to allow for the optional Locative-phrase, would now look

roughly as follows:

(69) $\underline{\text{feel}}_1$: NP ___ PP $\underline{\text{NP}}_2$ ($\left\{\begin{matrix}\underline{\text{on}} \\ \underline{\text{in}}\end{matrix}\right\}$ $\underline{\text{NP}}$) $\underline{\text{to}}$ $\underline{\text{NP}}$ ($\underline{\text{by}}$ NP)

Notice that there is no obvious way in which (68) and (69) can be collapsed by means of the parentheses and braces notation. Furthermore, since $\underline{\text{taste}}_1$ and $\underline{\text{taste}}_2$ can be collapsed in the manner shown in (60), our theory makes the important prediction that $\underline{\text{taste}}_2$, like $\underline{\text{taste}}_1$, should be able to occur with a Locative-phrase, and not with an Instrumental-phrase. This prediction is borne out by the facts, as the following examples show:

(70) a. The soup tasted funny (to me) on my tongue.

b. *The soup tasted funny (to me) with my tongue.

(71) a. The soap smelled strange (to me) in my nostrils.

b. *The soap smelled strange (to me) with my nostrils.

(72) a. The rug felt rough (to me) on my hand.

b. *The rug felt rough (to me) with my hand.

(73) a. The piano sounded loud (to me) in my ears.

b. *The piano sounded loud (to me) with my ears.

A more convincing demonstration of the reality of the notational conventions which we have claimed govern the collapsing of subcategorization features is difficult to imagine. As the final form of the subcategorization feature for the non-Agentive sense of $\underline{\text{feel}}$, then, we would have the following:

(74) $\underline{\text{feel}}$: NP ___ $\left\{\begin{matrix}\text{NP}_1 & \underline{\text{NP}}_2 \\ \underline{\text{NP}}_2 & \underline{\text{AP}}\end{matrix}\right\}$ ($\underline{\text{on}}$ $\underline{\text{NP}}$) $\underline{\text{to}}$ $\underline{\text{NP}}$ ($\underline{\text{by}}$ NP)

while that for the Agentive sense of $\underline{\text{feel}}$ would be exactly as shown in

(68). Notice that the facts just discussed also provide evidence of the strongest kind in favor of our claim that deep structure Agent-phrases must be distinguished from other grammatical relations such as Subject, Indirect Object, Direct Object, etc., since without this distinction the generalization expressed in (74) could not be stated in the grammar. Thus suppose that there were no deep structure Agent-phrase. In that case, the only reasonable alternative would be to derive the surface Subject of both $taste_1$ and $taste_3$ from the same source. Suppose that we derived both from the to-phrase. Then (74) would make the wrong prediction that a Locative-phrase can occur with both the Agentive and the non-Agentive interpretation of the to-phrase. Worse yet, if we tried to account for the possibility of there being an Instrumental-phrase in sentences containing the Verb feel, by, for example, allowing either an optional Locative or an optional Instrumental to occur in (74), we would also make the wrong prediction that an Instrumental-phrase can occur with the feel which occurs with AP's. The only way out of these difficulties would be to set up, quite arbitrarily, a second subcategorization feature for feel, identical to (69), except that it would have an optional Instrumental-phrase instead of an optional Locative-phrase. Not only would this proposal violate the otherwise valid conventions for collapsing subcategorization features, but also it would fail to explain the existence of this second subcategorization feature in a satisfactory manner. On the other hand, in our theory, the fact that (68) is a distinct feature from (74) follows automatically from the conventions governing collapsing of subcategorization features. Further-

more, the fact that feel in its Agentive sense can also have an optional Instrumental-phrase is subsumed under the general rule that Verbs which take Agent-phrases may also take Instrumental-phrases. Our analysis thus explains the facts regarding the distribution of Instrumentals and Locatives in a way that the alternative proposal just outlined cannot.[5]

To my mind, the way in which the independently motivated rules and deep structures developed in the preceding sections combine with the conventions governing the collapsing of subcategorization features to explain the behavior of the class of 'Perception Predicates' in English constitutes a particularly compelling example of the descriptive power of the theory of syntax which is subject to the structure-preserving constraint. When we add to a grammar in which the class of possible transformations is narrowly constrained in accordance with the structure-Preserving hypothesis a theory of lexical representation in which the class of possible redundancy is a theory of grammar which begins, I believe, to approach the goal of explanatory adequacy, at least in one small area of English syntax. Within the framework which we have been developing here, it is difficult to imagine an analysis of sentences containing Preception Predicates which differs in any fundamental way from the one just proposed, though of course there still remain numerous alternatives which need to be explored in more detail. If, as seems at least possible, it turns out there is also semantic support for our analysis, then I do not think it would be grandiose to claim at least a measure of explanatory adequacy for the thoery of syntax from which this analysis follows.

4.0. The Main Verbs Have and Be

It was argued in Section 2. that the 'Subjects' of Predicate-AP's which occur as complements to the Main Verb be are to be derived from the NP_1 position following be in deep structure. We then went on to show, in the following section, that this fact, combined with the certain results of the preceding chapter, would allow us to explain the system of grammatical relations underlying the surface environments in which Preception Predicates such as taste, feel, etc. may occur. However, the Verb be in English is of considerable interest in its own right. The number of different constructions in which be plays a crucial role is staggering. It is my contention that the theory of syntax proposed here is capable of providing at least a partial explanation of the bewildering array of surface structures in which the Verb be is found. Furthermore, there is a whole complex of syntactic relations between the be and the Verb have, many of which have been noted in the literature, but which have never been sorted out in a satisfactory way. This section, and indeed the greater part of this whole chapter, can be regarded as an attempt to explain the central role of the Verbs have and be in English syntax. To the extent that we are successful, the results of t his investigation will confirm or disconfirm the correctness of the theory outlined in the preceding chapter

4.1. Verbs of Possession

Let us begin by considering simple sentences containing the Verb have, such as the following:

(75) a. John has a book.

b. Bill has a new car.

c. They have three children.

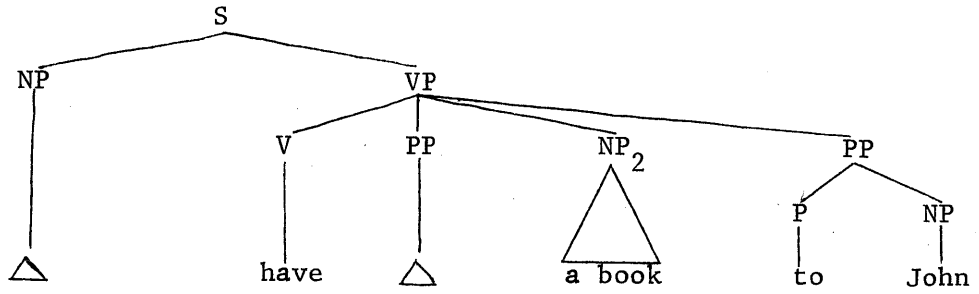
d. She has beautiful eyes.

e. I had a dream last night.

Ignoring for the moment the 'inalienable' sense of have exhibited in the last three sentences, let us concentrate on sentences (75) a. and b., in which the Verb has the sense of 'alienable' possession. Now it has often been noted that there is a relationship between have, in this sense, and Verbs involving transfer of possession, such as give, take, buy, sell, receive, and so on. Thus the sentence John gave the book to Bill implies the truth of the sentence Bill has the book. Conversely, Bill took the book from John implies Bill has the book; Bill received the book from John implies Bill has the book; and so on. It is evident that the grammatical relationship of the surface Subject of have to its surface Object is similar to the relationship which holds between the surface Subject of take and its Object, and likewise to the relationship of the to-phrase and the Object in sentences containing Verbs such as give. However, in the standard theory there is little motivation for assuming that sentences (75) a. and b. differ in any essential way in deep structure from the form in which they appear at the level of surface structure.

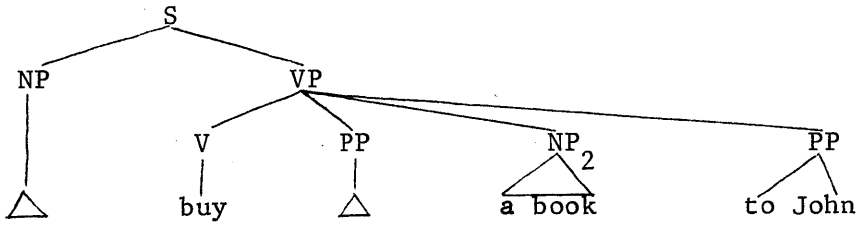
Recall now that we have already analyzed the Verbs give, take, etc.in Chapter II (cf. Section 4.4.). In fact, we already have the machinery to deal with the relation between have and the Verbs of this class. Suppose that we were to assume a more abstract underlying structure for (75) a. of the following sort:

(76)



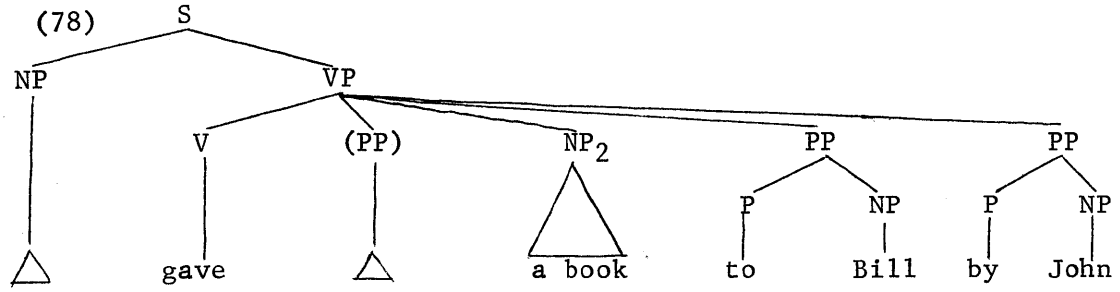
Observe that the rules of To-Dative Movement and Object-Preposing will apply automatically to a structure of this kind, giving us the correct surface form John has a book. Furthermore, notice that (76) is identical, in terms of the underlying grammatical relations present, to the structure which we have argued must be assigned to Verbs such as receive and buy. Compare, for example, (76) with the following structure:

(77)



This accounts for the fact that the surface Subject of have has the same grammatical relation to the Verb as the surface Subject of buy and receive do. Consider next the structure underlying a sentence such as John gave the book to Bill:

(78)



Comparing (78) with (76), we see that the only difference between them is that give requires an Agent-NP, whereas have does not allow an Agent-phrase. (Also, of course, the empty PP is optional for give, whereas it is obligatory for have.) Otherwise the underlying grammatical relations are the same. The Verb have, then, in these cases, can be subcategorized simply as follows:

(79) have: NP ___ PP NP_2 to NP

There are other advantages that accrue immediately to this analysis. There is, in fact, a whole class of Verbs which have properties similar to those of the Verb have. Consider, for example, the following sentences:

(80) a. John owns the book.

b. Bill possesses a yacht.

c. Harry will inherit his uncle's money.

Clearly, these Verbs are related to buy, give, etc. in much the same way that have is. Thus if it is true that Bill bought a yacht, then it follows logically that Bill now possesses the yacht, or owns it. Likewise, if John gives a yacht to Bill, or sells him one, it follows that Bill afterwards owns, possesses, etc. the yacht. Similarly, if Harry does, in fact, inherit his uncle's money, then it will be true that he possesses his uncle's money. The only respect in which have appears to differ from own, possess, and inherit is that the latter can have Passives, whereas the former cannot:

(81) a. The book is owned by John.

b. The yacht is possessed by Bill.

c. The money was inherited by Harry.

d. *The book is had by John.

Thus own, for example, will be subcategorized as follows:

(82) own: NP ___ PP NP_2 to NP (by NP)

Notice that if own occurs in deep structure with an empty by-phrase, as is permitted by (82), then the correct Passive form will be produced by the rules of To-Dative, Object-Preposing, Subject-Postposing, and Object-Preposing, applying in that order.

Finally, consider a sentence such as the following:

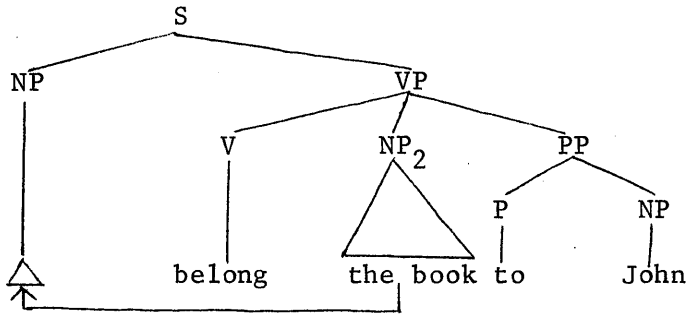
(83) The book belongs to John.

Sentence (83) is similar to a sentence such as John owns the book, except that here the thing possessed shows up in the Subject position in surface structure, while the possessor is in the to-phrase. Furthermore, we do not have:

(84) *John belongs the book.

We can account for these properties of the Verb belong, as opposed to own, have, etc., simply by preventing the former from occurring with an empty Indirect Object node:

(85)



Object-Preposing will then apply automatically, deriving the correct surface form. Notice that own and belong, in this analysis, are parallel

to hear and sound, with respect to their underlying grammatical relations. They differ in that the former are Verbs of possession, semantically, whereas the latter are Verbs of perception. Thus belong would be sub-categorized as follows:

(86) belong: NP ___ NP_2 to NP

Just as in the case of hear and sound, there is a subtle semantic difference between sentences containing belong and those containing own, which can be associated with their different surface structures. The sentence the book belongs to John states a property of the NP the book, namely, that it is in the possession of the person specified in the to-phrase, whereas the sentence John owns the book does not attribute the property of being in John's possession to the NP the book. This semantic difference is correlated with the fact that in the former the book is the surface subject, whereas in the latter John is the surface subject.

It is this difference which perhaps accounts for the fact that the Adverb rightfully can occur with belong, but not with own, possess, etc.:

(87) a. That land rightfully belongs to the Indians.

b. *The Indians rightfully own that land.

c. *The Indians rightfully possess that land.

4.1.1. Alienable and Inalienable Possession

Let us consider next sentences (78) c.-e. There is, as Chomsky (1970) has noted, a discernible distinction in English between alienable and inalienable possession. Chomsky's point was made in connection with possessive NP's such as John's leg, which are ambiguous in that they may

refer either to John's own leg or to some other leg which John happens to have in his possession. Chomsky proposed to account for this distinction by deriving the possessive NP, in the case of inalienable possession, directly from the Determiner of the head Noun leg, while in the case of alienable possession, he would derive it from an underlying relative clause containing the Verb have, i.e. the leg that John has (alienable) would become optionally John's leg. However, it is by no means obvious, as Chomsky assumes, that have is restricted to alienable possession. In fact, sentences (75) c.-e. are counterexamples to this claim, and even Chomsky's own example doesn't hold up under examination. For example, someone suffering from a 'phantom limb' might well describe his situation in the following terms:

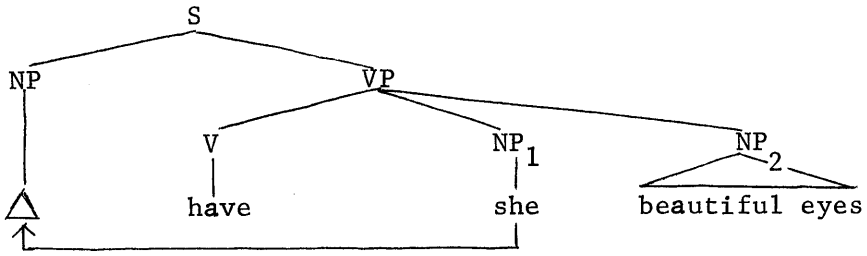
(88) The leg that I had last year is still hurting me.

and certainly it is possible to say the dream that I had last night, the beautiful eyes that she has, and so on. It seems then, that some other explanation is necessary. In particular, it is necessary to account for the fact that the alienable/inalienable distinction occurs in sentences containing have.

As it happens, we already have at our disposal a natural means of accounting for the distinction in question. We have just shown that the surface Subject of have in cases of alienable possession is derived from the to-phrase in deep structure. What I would like to propose is that the surface Subject of have in cases of inalienable possession is derived not from the deep structure to-phrase, but rather from the deep structure Indirect Object position. This means that a sentence

such as (75) d. would be assigned to the following sort of deep structure:

(89)



Again, observe that the independently motivated rule of Object-Preposing will automatically account for the surface form of these sentences. Notice that semantically, this use of the deep structure Indirect Object relation fits in with everything that we have said about the possible semantic roles which can be associated with Indirect Object-NP's. For example, in discussing the grammatical relation of the NP the ice in the sentence the ice melts to the Verb, we observed that the fact that it is an Indirect Object, rather than a Direct Object would help to account for the fact that such Verbs as melt have both an intransitive and a transitive form, and furthermore that the grammatical relation Indirect Object could then be associated, in these cases, with a semantic interpretation such as "inherently capable of V-ing", where V represents the particular Verb. The Object of a Verb such as hit, on the other hand, which does not have an Intransitive form and whose object is a deep structure Direct Object, rather than an Indirect Object, would not receive this interpretation. Now the semantic notion of 'inalienable possession' bears an obvious similarity to this notion of 'inherent capability', except that it must be defined in relation to the semantic notion of 'possession', instead of in relation to processes such as melting, freezing, and so forth. In both cases there is an abstract

semantic concept of 'intrinsic connection', to use a term coined by Chomsky, involved, which, in our analysis, can be directly associated with the deep structure Indirect Object relation. Similar remarks can be made about example (75) e., where it is clear that a dream is 'inalienable' with respect to the one who is dreaming. Finally, consider example (75) c. The proposed analysis would allow us to distinguish between the interpretation of this sentence in which it means "they have three children (with them)" (alienable) and the interpretation in which it means that the children are their own (inalienable). In the former case, the NP they would derive from the deep structure to-phrase, while in the latter, it would be derived from the Indirect Object position.

There is also crucial syntactic evidence which supports this analysis of inalienable possession. Consider the following sentences, which are clearly instances of inalienable possession, and whose surface Subjects must there fore be derived from the Indirect Object position:

(90) a. I have a cold.

b. Mary has the flu.

c. I have a stomach-ache.

d. John has a headache.

e. I have a sore throat.

f. He didn't have a chance to reply.

g. I don't have any spare time.

h. The house has a new coat of paint.

i. We won't have an opportunity to visit him.

It so happens that all of these sentences have related constructions

involving the Verb give, just as alienable possessives such as (75) a. and b. have related constructions of the form Bill gave a book to John. However, and this is the crucial point, the surface Subjects in (90), unlike those of (75) a. and b., can only appear in the Indirect Object position in the related give-sentences, not in the to-phrase. Thus the following are all grammatical:

(91) a. Staying out in the cold gave me a cold.

b. John gave Mary the flu.

c. That meal gave me a stomach-ache.

d. That movie gave me a headache.

e. Mary gave me her sore throat.

f. He won't give me a chance to reply.

g. My duties don't give me any spare time.

h. We gave the house a new coat of paint.

i. The schedule we have arranged won't give us an opportunity to visit him.

while the sentences below are not:[6]

(92) a. *Staying out in the cold gave a cold to me.

b. *John gave the flu to Mary.

c. *That meal gave a stomach-ache to me.

d. *That movie gave a headache to me.

e. *Mary gave her sore throat to me.

f. *He won't give a chance to me to reply.

g. *My duties don't give any spare time to me.

h. *We gave a new coat of paint to the house.

i. *The schedule we have arranged won't give an opportunity to us to visit him.

The contrast between (91) and (92) demonstrates quite clearly that the surface Subjects of some have and give constructions must originate in the Indirect Object position in deep structure, while the Subjects of others must originate in the to-phrase. Furthermore, those which originate in the Indirect Object position are also just the ones for which the Verb has the sense of inalienable possession, while those which derive from the to-phrase are the ones for which the Verb has the sense of alienable possession.

We can now go back to the examples in Section 4.1. of Chapter II which originally motivated our hypothesis that there is a deep structure Indirect Object relation in English, and relate them to the examples just discussed. Notice that, in fact, several of the constructions discussed there involve the Verb give. To take only one of them, consider (155), repeated here for convenience:

(93) He gives me { the creeps / the shivers / the shakes / etc. } (*to me).

Not surprisingly, we find that there are sentences containing the Verb have corresponding to these sentences:

(94) I have the { the creeps / the shivers / the shakes }

Furthermore, it is obvious that the states referred to by the expressions "the creeps", "the shakes", etc. are 'inalienable' with respect to their possessor, i.e. to the individual referred to by the Indirect Object-NP.

Similar observations can be made concerning the other examples discussed in the section referred to above.

Quite generally it appears to be the case that a wide variety of psychological states of one sort or another come under the heading of 'inalienable possession', semantically, and in each such case, there is evidence that the NP referring to the individual who is in that state must derive from the deep structure Indirect Object position. Recall, for example, that another large class of sentences which provided us with motivation for the existence of an Indirect Object position in deep structure was the class containing Verbs such as amuse, irritate, annoy, bother, interest, amaze, astound, and so forth. In the light of our discussion of the alienable/inalienable distinction, it is easy to see that the fact that the surface Objects of these Verbs must be Indirect Objects in deep structure really reflects a much deeper fact about these Verbs, which is, that states such as amusement, anger, irritation, amazement, boredom, and so on, are 'inalienable', in the obvious sense, with respect to the individual experiencing them. It is gradually becoming apparent, I hope, that if the theory I am proposing is correct, then the implications extend beyond the scope of 'pure' syntax and into the domain of semantic theory. Roughly speaking, what this discussion of the various semantic roles which may be assigned to deep structure Indirect Objects suggests is that deep structure grammatical relations are, in fact, extremely abstract semantic relations. These 'abstract' semantic relations are mapped onto more 'concrete' or specific semantic relations by means of general rules which take into account the semantic environments in which the grammatical relation

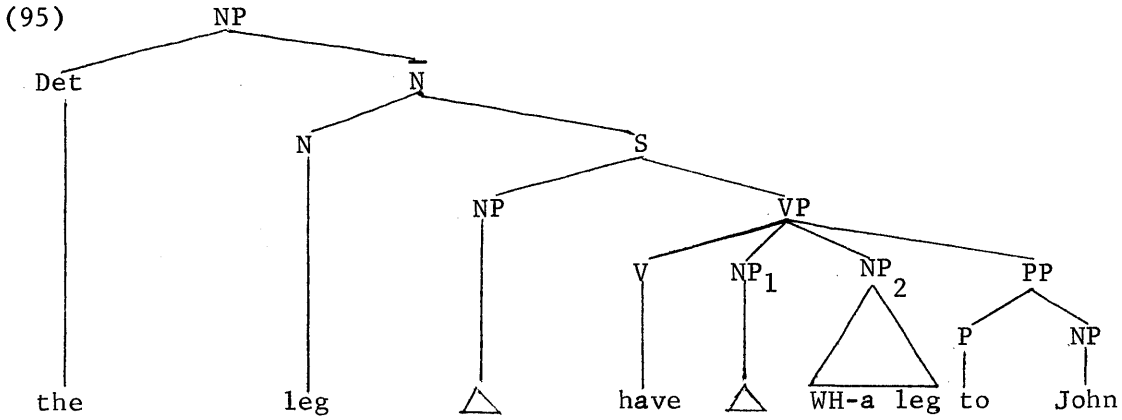
appears, in much the same way that abstract underlying phonological representations are mapped onto phonetic representations. However, I must refer the reader to the final chapter for an attempt to state in a more precise fashion what the content of this rather vague and intuitive remark is.

4.1.2. Possessive Noun Phrases

We can now reconsider the NP's which originally motivated the alienable/inalienable distinction. As has already been noted, Chomsky's proposal to derive the alienable sense of the NP John's leg from an underlying relative clause containing the Verb have, while reserving the base NP John's leg for the inalienable sense, can be seen to be untenable, as soon as it is realized that the distinction in question also manifests itself in have-senteces. However, since we now have two deep structure sources for a sentence such as John has a leg, one (the alienable sense) in which the Subject-NP is derived from the to-phrase and the other (the inalienable sense) in which the Subject-NP is derived from the Indirect Object position, it is possible simply to derive both senses of the possessive NP from an underlying Relative containing the Verb have.

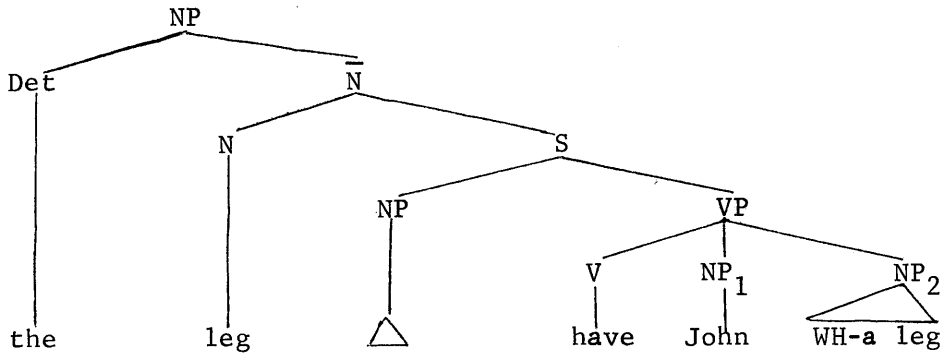
Thus the NP John's leg in the alienable sense is, I propose, derived from the following sort of deep structure:

(95)



while the same NP in the sense of inalienable possession derives from a source of roughly the following kind:

(96)



Both (95) and (96) will, of course, be transformed into the ambiguous intermediate structure the leg that John has, their three children, her beautiful eyes, Bill's nightmares, and so on, would derive from intermediate structures such as the dream I had last night, the three children that they have, the beautiful eyes that she has, etc., and these in turn would come from structures of the form (96).

There are a number of strong arguments in favor of this analysis. For one thing, it allows us to explain, at least in part, the difference between 'Action' nominals and 'Object' nominals in English. Consider,

for example, nominals of the following sort:

(97) a. Bill's possessions.

b. Bill's belongings.

c. Bill's inheritance.

These nominals differ in several respects from Action nominals such as John's refusal of the offer or Bill's inheritance of the money. Thus the nominal Bill's inheritance refers to the process by which Bill came to inherit the money. Furthermore, it is generally the case that Object nominals have a corresponding sentence with the Verb have:

(98) a. Bill has many possessions.

b. Bill has few belongings.

c. Bill has an enourmous inheritance.

whereas Action nominals do not:

(99) a. *Bill has the inheritance of the money.

b. *Bill has the refusal of the offer. (compare: Bill has had many refusals)

c. *The enemy had the destruction of the city.

This naturally suggests that the possessive-NP in Object nominals such as those in (97) derive from a source such as (95), i.e. the possessions that Bill has, the inheritance that Bill has, etc., whereas the 'Subject' of an action nominal derives from some position in the nominal itself, rather than from a Relative Clause. Similar contrasts are abundant. Thus we have John's accomplishments, meaning "things that John has accomplished", and related to it John has many accomplishments. On the other hand, the Action nominal John's accomplishment of the impossible

has no related form: *John has the accomplishment of the impossible. Note also that the 'Subject' of the Action nominal derives from the by-phrase in this case, as is shown by the existence of the accomplishment of the impossible by John. However, there is no nominal: *the accomplishments by John, a fact which is explainable in our analysis, since the possessive-NP in this case must derive from a relative clause. Likewise, we have John's many interests, beside John has many interests, where the nominal refers to things which John is interested in, but not *John's many interests in Linguistics, or *John has many interests in Linguistics. Similarly, there is a contrast between Mary's amusement, John's anger, Bill's astonishment, etc., which cannot derive from *the amusement that Mary has, *the anger that John has, etc., but Mary's amusements, meaning "things that amuse Mary", is deriveable from the amusements that Mary has, parallel to the toys that Mary has.

Further support for this analysis comes from the fact that it will allow us to explain certain apparent counterexamples to the Lexicalist Hypothesis. Consider, for example, nominals such as the following:

(100) a. John's difficulties in persuading Mary.

b. John's impression that we had already left.

c. Bill's wierd beliefs.

d. His chances of being elected.

none of which have corresponding sentential forms:

(101) a. *John is difficult in persuading Mary.

b. *John impressed that we had already left. (*It impressed John that...)

c. *Bill believes wierdly.

d. *He chanced (of) being elected.

In each case, we can account for the possessive-NP in the nominal form by deriving it from a relative clause containing have plus an Indirect Object:

(102) a. The difficulties that John had in persuading Mary.

b. The impression that John had that we had already left.

c. The wierd beliefs that Bill has.

d. The chances that he has of being elected.

There are many other phenomena of this sort which can be handled with the proposed analysis. Consider, for example, the contrast between the following pair of sentences:

(103) a. Our appreciation of the music was ruined by some noisy people in the front row.

b. The (intense) appreciation of music that the child had surprised me.

The latter, but not the former, may occur with the 'Subject'-NP in a relative clause containing have:

(104) a. *The appreciation of the music that we had was ruined by some noisy people in the front row.

b. The (intense) appreciation of music that the child had surprised me.

This accords with the fact that semantically, the nominal in (103) a. is an 'Action' nominal, whereas in (103) b. it is a property, or quality, associated with the NP the child. Furthermore, this same contrast is

found for Nouns which are not derivationally related to Verbs or Adjectives:

(105) a. Your opinions on the war don't interest me.

b. I didn't ask for your opinion on the war.

Again, only in the first sentence can the Subject-NP be derived from a relative clause:

(106) a. The opinions on the war that you have don't interest me.

b. *I didn't ask for the opinion on the war that you have.

There are similar ambiguities involving alienable possession as well. Thus the NP John's letter to Mary can mean either "the letter to Mary that John has (in his possession)", in which case it derives from a structure like (95), or it can be an 'Action' nominal meaning "the letter that John wrote to Mary", in which case the Subject-NP derives from the Agent-phrase in the NP, parallel to the sentence John wrote to Mary.

A variety of considerations, then, tend to support the derivation of alienable and inalienable possessive-NP's, from underlying sentences with the main Verb have. Obviously these remarks must be considered merely as suggestive. There are many interesting questions raised by this analysis, as well as a vast amount of additional data, which space prevents me from examining in detail. Furthermore, there are other possible approaches to the problem which need to be explored, as well. Nevertheless, the basic idea, which is that the possessor-NP derives from the Indirect Object position in the case of inalienable possession, but from the to-phrase in the case of alienable possession, seems to me

to be well-motivated.

4.1.3. Possession vs. Ownership

We can thus account for the difference between the alienable sense of possession and the inalienable sense of possession found in possessive NP's such as John's leg. Observe, however, that the alienable sense can itself be further analyzed. A NP such as John's book, for example, may mean either the book that John has in his possession, or it may be interpreted as referring to the book that belongs to John. But notice that the putative source of such NP's is not similarly ambiguous. Thus the phrase the book that I have does not necessarily imply that I own the book in question; it could be one that someone has lent to me. Similarly, the phrase the apartment that I have does not imply that I own the apartment, since I could be renting it.

These facts suggest that there must be still another source for possessive NP's, one which unambiguously denotes ownership, as opposed to (temporary) possession. Consider, in this light, pairs of sentences such as the following:

(107) a. John has the book.

b. The book is John's.

(108) a. John has the manuscript.

b. The manuscript is John's.

(109) a. Bill has a goldfish.

b. That goldfish is Bill's.

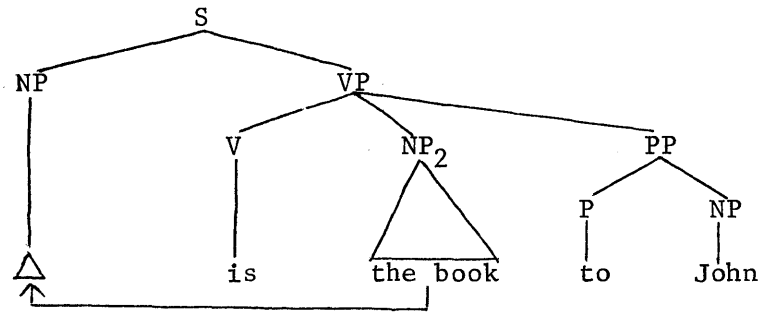
It seems that the b.-sentences, in contrast to the a.-sentences, refer unambiguously to ownership. Further confirmation of this comes from the

fact that while a sentence such as John has that book that belongs to Bill is non-contradictory, the sentence that book that belongs to Bill is John's does seem contradictory, unless, perhaps, it is interpreted as a denial that the book in fact belongs to Bill. Similarly, we have the non-contradictory statement that book that John has is Bill's, beside the clearly contradictory statement that book that is John's is Bill's. Furthermore, while one can say the book that Bill has is his own, it seems redundant to say the book that is Bill's is his own.

On the basis of these facts, I would like to propose that possessive NP's, in the sense of ownership, as opposed to temporary possession, are derived from underlying sentences of the type in (107)-(109) b., so that one source of the NP John's book would be the structure underlying the phrase the book that is John's. This immediately leads us to ask what the source of the underlying sentence might be. It has been proposed in the literature that phrases of the form the book that is John's are an intermediate stage in the derivation of possessive NP's from underlying phrases such as the book that John has. However, this proposal gives the wrong semantic results, as we have just seen. Hence we must find a different source for the sentences in the former.

Recall that in our discussion of Predicate-AP's, we argued that the surface Subject of the Copula was to be derived from the NP_2 node in deep structure. Furthermore, we have already seen that sentences such as the book belongs to Bill must derive from a structure containing a Direct Object and a to-phrase. This suggests the possibility of deriving sentences such as the book is John's from a parallel structure:

(110)



We need only assume that there is a low level rule of English grammar which converts a to-phrase into a possessive NP, when it follows the copula. Object-Preposing will, of course, account for the surface position of the Direct Object. It is interesting to note that in many languages, ownership is expressed in surface forms of just this sort. Thus in French, for example, there is a contrast between sentences such as Jean a le livre and le livre est a Jean, where the latter means that John owns the book in question, whereas the former indicates possession, without implying ownership. The proposed analysis, then, claims that English and French differ only in that English has a low-level rule which obligatorily converts a to-phrase into a NP with the Genitive marker 's, and at the same time deletes the Preposition to.

Let us consider now the subcategorization features which must be assigned to have and be, respectively. Have may occur in structures such as (76) and (89) and must therefore be subcategorized as follows:

(111) have: NP ___ $\left\{ \begin{array}{lll} NP_1 & NP_2 & \text{to NP} \\ NP_1 & NP_2 & \end{array} \right\}$ (a) (b)

The Verb be, on the other hand, occurs in structures such as (110), and must have the following subcategorization feature:

(112) be: NP ___ NP_2 to NP

Notice that this analysis automatically explains a number of interesting facts. For one thing it explains why the possessive construction with be never has the sense of 'inalienable' possession or 'intrinsic connection'. Thus none of the sentences discussed in the last section which derive from the structure specified by (b) in (111) have counterparts of the form NP - be - NP's:

(113) a. *That dream is mine.

b. *The headache is Bill's.

c. *The sore throat is Mary's.

d. *No spare time is mine.

e. *The new coat of paint is the house's.

f. *The opportunity to visit him was not ours.

g. *Those beautiful eyes are Mary's.

h. *That leg is John's.

(Observe that (113) g. and h. are grammatical, but only under the alienable interpretation, according to which the body part in question is not a part of the possessor's body.) Furthermore, the same is true of the Verb belong, which has exactly the same subcategorization feature as be:

(114) a. *That dream belongs to me.

b. *The headache belongs to Bill.

c. *That leg belongs to John.
etc.

Finally, notice that own, which has the subcategorization feature (a) in (111), but not (b), behaves in exactly the same way:

(115) a. *I own that dream.

b. *Bill owns the headache.

c. *I own no spare time.

d. *John owns that leg.
etc.

We have been referring to the difference between the a. and the b.-sentences in (107)-(109) as the difference between Possession and Ownership, respectively. However, that is not quite correct, as is shown by the fact that sentences such as John owns the book derive from the same source as the sentence John has the book, and certainly the former denotes ownership, as opposed to temporary possession. In fact, the sense of possession which is associated with the Verb when the 'thing possessed' occurs in the Subject position in surface structure has already been discussed in connection with the Verb belong, which is derived in a similar manner. Sentences of the form (107)-(109) b. have exactly the same properties that distinguish belong from own. Thus, for example, the Adverb rightfully patterns in the same way:

(116) a. That land is rightfully ours.

b. That land rightfully belongs to us.

c. *We rightfully own that property.

d. *We rightfully possess that property.

Let us refer to this sense of possession, in which the 'thing possessed' inherently belongs to the 'possessor', as "true possession". Retaining the terms 'alienable' and 'inalienable' possession, respectively, for the two senses of the Verb have, we can then summarize the types of possession that we have analyzed in the following chart:

(117)

'Thing possessed'	'Possessor'		
		In D.S. to-phrase	In D.S. NP_1
	In surface Structure Subject position	True Possession (belong, be+Gen)	
	In Surface Structure Object position	Alienable Possession (have, own, possess) get)	Inalienable possession (have, get)

All three types of possession can, as we have seen, become neutralized in the surface structure possessive construction NP's - N.

Finally, let us consider the relationship between the Verbs have and be in the light of this analysis. It is interesting to observe that, syntactically, the Verbs have and be are related in much the same way as the Transitive and Intransitive senses of feel, smell, and taste. Both have and Transitive feel derive from a deep structure containing a Direct Object, an empty NP_1, and a to-phrase, while neither be nor Intransitive feel permit an empty Indirect Object. Our analysis thus gives some empirical content to the frequently-made observation that have is, intuitively, the 'Transitive' form of be. The differences between have and be, on the one hand, and the class of Preception Predicates, on the other, have obviously to do with the fact that they belong to different semantic classes. Thus have, be, own, get, etc., in the constructions we have been discussing, all belong to the natural

class of Verbs referring to semantic notions such as 'possession', 'ownership', and the like, whereas feel, smell, taste, and so on, all refer to perceptual abilities of various kinds. Furthermore, for Verbs of the former class, it is a general semantic rule that the NP in the to-phrase must be assigned the role 'possessor', while for Verbs of the latter class it must be assigned the role 'perceiver'. Notice that these generalizations are stateable only by virtue of the rather abstract deep structures which we have assigned to the sentences containing these Verbs. Hence, the semantic facts provide independent motivation for our syntactic analysis.

4.1.4. Psychological Predicates with Indirect Objects

Before continuing to explore the relationship between have and be any further, it is necessary to discuss one further consequence of the analysis we have been proposing. We have just argued that syntactically the relation between have and be is similar to that which holds between the transitive and the intransitive forms of the Preception Predicates discussed previously in Section 3.0. Notice, however, that there is an unexplained gap in our analysis, for although the Verbs have, get, give, and the like may occur with a deep structure Direct Object, plus either a to-phrase or an Indirect Object, the class of Preception Predicates occurs only with a to-phrase. Thus the situation is as follows:

(118)

(a) Deep Structure: NP ___ NP_1 NP_2 to NP

- Verbs of Possession:
  John has the book, John owns the car, etc.
- Verbs of Perception:
  John heard the music, John touched the cloth, etc.

(b) Deep Structure: NP ___ NP_1 NP_2

- Verbs of Possession:
  I had a dream, Bill got a headache, we had fun, etc.
- Verbs of Perception(?):
  ???

The question is, then, whether there is some class of Verbs corresponding to the class of Perception Predicates whose surface Subject originates in the Indirect Object position in deep structure. I believe that there is. Consider the Verbs which occur in sentences such as the following:

(119) a. John admires sincerity.

b. Mary loves music.

c. He appreciates good writing.

d. I feel that he will succeed.

e. Bill understands the Theory of Relativity.

f. Scientists believe that the earth is round.

g. Bill dreamed about Mary.

h. We described the assailant (to the police).

i. I don't doubt that the war will go on.

j. He didn't intend to insult you.

Notice that all of the Verbs in (119) refer to mental activities of one

sort or another. Furthermore, observe that in every case the nominalized form may appear in a have construction:

(120) a. John has great admiration for sincerity.

b. Mary has a deep love of music.

c. He has an appreciation of good writing.

d. I have the feeling that he will succeed.

e. Bill has some understanding of the Theory of Relativity.

f. Scientists have the belief that the earth is round.

g. Bill had a dream about Mary.

h. The police have a description of the assailant.

i. I have no doubt that the war will go on.

j. He had no intention of insulting you.

A natural source for the Subject-NP's in (120), given the analysis of the preceeding sections, would be the Indirect Object position, and, correspondingly, it would be natural to derive the surface Objects in (119) from the deep structure Direct Object position. Finally, notice that in many instances, the nominalized forms of these Verbs may occur in sentences with give:

(121) a. John's upbringing has given him a great admiration for sincerity. (*to him).

b. Her trip to Germany gave Mary a deep love of music. (*to Mary).

c. Being an editor gives him an appreiation of good writing (*to him).

d. Something gives me the feeling that he will succeed (*to me).

e. The book gave Bill an understanding of the Theory of Relativity (*to Bill).

f. Who gave you the belief that the earth is round (*to you).

g. Bill's upset stomach gave him bad dreams (*to him).

Once again, it is the crucial fact that the surface Subjects of the sentences in (119) and (120) may appear in the Indirect Object position in these give constructions, but not in the to-phrase, which demonstrates that they must originate in the Indirect Object position in deep structure.

I would like to propose, therefore, that it is the class of psychological predicates such as admire, love, believe, think, doubt, dream, and so forth, that fill the gap illustrated in (118) (b). Thus admire, for example, will be subcategorized in the following manner:

(122) admire: NP ___ NP_1 NP_2

There is thus a kind of complementary distribution within the class of psychological Verbs between those which describe purely "mental" phenomena, and whose surface Subjects derive from the deep structure Indirect Object position, and those which describe perceptual phenomena, and whose surface Subjects derive from the to-phrase in deep structure. Note that in a few cases the same Verb may belong to both classes. Thus feel, in the perceptual sense, is quite distinct from the sense which occurs in (119) d., where it describes a purely mental phenomena. Similarly, see, as used in the sentence I saw the house, is a Perception Predicate, whereas the sense in a sentence such as I see that you are right is quite different. Under our analysis, the surface Subject

would derive from different deep structure positions in these two senses, a fact which is directly related to the difference in semantic interpretation. Finally, consider the difference between Mary had a taste of the soup and Mary has a taste for expensive cars, where the former is a Perception Predicate, the latter a Mental Predicate similar to like, prefer, etc., or likewise the rather different senses of taste in Mary had a good taste of the soup and Mary has good taste, respectively. The status of hear in I hear that he is going to Europe is less certain. However, since we also have sentences such as Your proposal sounds fine to me, where the NP me can only derive from the to-phrase, I am inclined to treat hear as a Perception Predicate. Notice that we do not have sentences such as *that he will succeed feels likely to me or *that you are right looks true to me, a fact which further confirms the notion that see and feel, in the senses just discussed, are not Perception Predicates.

This analysis, if correct, is a rather striking demonstration of the highly abstract nature of deep structure grammatical relations, for recall that in the previous chapter we showed that the surface Objects of the large class of Verbs which includes frighten, bore, amuse, disgust, amaze, etc. derive from the Indirect Object position in deep structure. Significantly, all the Verbs of this class are Psychological Predicates, semantically. Furthermore, they belong specifically to the subclass of psychological predicates which refer to mental phenomena. Our theory thus allows us to capture a significant generalization, namely, that for psychological predicates that describe mental phenomena, the deep

structure Indirect Object-NP must be assigned the semantic role 'Experiencer'.

The difference between Verbs such as bore and amuse, on the one hand, and Verbs such as admire and love, on the other, is that the former require a deep structure Subject-NP, whereas the latter require a deep structure Direct Object. The different surface forms of sentences containing these Verbs follows automatically, given the independently motivated rule of Object-Preposing, since this rule can only apply if the Subject-NP is empty, a condition which is met in the case of admire, but not in the case of bore. This analysis, then, accounts for certain examples cited in Chomsky (1965) as illustrations of the need for "an even more abstract notion of grammatical function and grammatical relation than any that has been developed so far in any systematic way." Among the examples given by Chomsky were the following:

(123) a. John strikes me as pompous - I regard John as pompous.

b. I liked the play - the play pleased me.

Regard and like, obviously, are just like love and admire, and hence must be subcategorized in the manner shown in (122), while strike and please are like bore and amuse, and are therefore subcategorized with a filled Subject-NP:

(124) strike: NP ___ NP_1 ...

Notice that it is crucial, in our analysis, for strike to have a deep Subject and for regard to have a deep Object. Postal (1968), however, attempts to argue that not only are the surface Objects and Subjects of Verbs such as strike and regard, respectively, to be derived from the

same deep structure source, but also that the Subject of strike and the Object of regard should be derived from the same deep structure grammatical relation. Then, in order to derive the correct surface forms, he is obliged to posit the existence of the permutation rule which he calls "Psych-Movement" (cf. Section 4.3.2., Chapter II). It follows that lexical items must be arbitrarily marked for whether or not they undergo the rule of Psych-Movement, since the deep structures underlying pairs such as those in (123) differ only in the phonological form of the Verb, in his analysis. (Cf., for example, the structures in 6. (46), p. [illegible], Postal (1968)). This consequence vitiates considerably the strength of Postal's proposal, for an arbitrary bifurcation of the lexicon in terms of rule applicability is the worst possible case, since it asserts, in effect, that the rule has no generality. In our analysis, on the other hand, the only rule needed, namely, Object-Preposing, is completely general, independently motivated, and requires no ad-hoc rule features to be assigned to lexical items. I take this as strong evidence that the pairs in (123), contrary to Postal, do in fact differ in their deep structure grammatical relations.

Furthermore, I think it can be shown that Postal's analysis gives the wrong semantic results, or else entails an unmotivated complication in the semantic component. What Postal is arguing is that the NP the play in both of the sentences in (123) b. derives from the same deep structure source namely, the Direct Object position. Notice that the two sentences in question are not synonymous. The fact that the play pleased me does not imply that I necessarily liked the play, and vice-

versa. Now if this difference in meaning cannot be related to a difference in the underlying grammatical relations, then it can only be attributed to a difference in the semantic representations associated with the lexical items please and like. In other words, the semantic role assigned to the NP the play must be different for the two Verbs, even though both originate in the deep structure Object position. Now consider the two sentences I hit the tree (in the non-Agentive sense) and the tree hit me. If it is correct to argue that the Subject of please and the Object of like derive from the same deep structure position, then there is surely an equally good argument for deriving the tree in these two sentences from the same deep structure position, say, the Object position, and the same goes for the NP I. In justification of this argument one might point out that both sentences involve physical contact between the objects denoted by the NP's the tree and I, respectively. Furthermore, they share selectional restrictions. Thus *I hit the problem and *the problem hit me are both anomolous, as are the sentences *the problem hit the tree and the tree hit the problem. From these observations, we can derive the absurd conclusion, following Postal's line of argument, that the sentences I hit the tree and the tree hit me have identical deep structures. It follows that the obvious difference in meaning between the two must be a property of the two distinct lexical items $\underline{\text{hit}}_1$ and $\underline{\text{hit}}_2$, which assign different semantic roles to the two NP's in question. However, there is obviously no motivation whatsoever for such an analysis, since the fact that different semantic roles are assigned to the two NP's is clearly predictable from the fact

one is the deep structure Subject of the sentence, while the other is the deep Object.

The point is that the difference in meaning between sentences containing like and please, regard and strike, and so on, is parallel to the difference in meaning between the tree hit me and I hit the tree. In both cases the observed meaning difference is due to the fact that different semantic roles are associated with deep structure Subjects and Objects, respectively. This generalization is obscured by an analysis such as Postal's, which tries to derive pairs such as those in (123) from deep structures with identical grammatical relations.

4.2.0. Locative Phrases

Continuing to explore the relationship between the Verbs have and be, we must discuss next the class of Prepositional Phrases which may occur after the Copula. In Section 2.0. it was argued that the surface Subjects of sentences containing the Copula plus an AP were to be derived from the Direct Object position in deep structure. In this section, we shall show that sentences containing the Copula plus a PP should be derived in a similar manner. Consider, to begin with, the following pairs of sentences:

(125) a. John put the book on the shelf.

b. The book is on the shelf.

(126) a. We keep the car in the garage.

b. The car is in the garage.

(127) a. Bill left Mary at the hotel.

b. Mary was at the hotel.

(128) a. I saw Bill near the house.

b. Bill was near the house.

(129) a. We have bought a present for Mary.

b. The present if for Mary.

(130) a. I received a package from Denver.

b. The package was from Denver.

(131) a. I put the chair beside the piano.

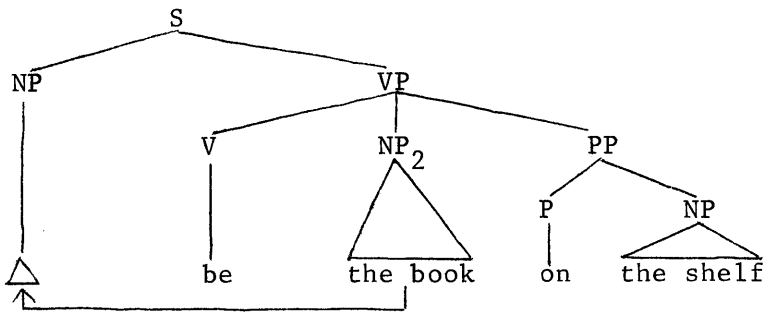
b. The chair is beside the piano.

(132) a. He placed the photograph under the painting.

b. The photograph is under the painting.

Clearly, we are faced with exactly the same sort of problem as we have encountered before: In order to account for the fact that the surface Objects of the a.-sentences have the same grammatical relation to the following Prepositional Phrase as the Subjects of the b.-sentences do, it would be necessary, in the standard theory, to permit lexical redundancy rules to relate the Subjects of the b.-sentences to the Objects of the a.-sentences. We could, however, dispense with such rules entirely by generating the b.-sentences in the base, in the following manner:

(133)



The rule of Object-Preposing would then automatically move the NP the book in (133) into its correct surface position as Subject of the

sentence.

Notice that this analysis is in fact merely a special case of the analysis of Intransitive/Transitive pairs discussed in the previous chapter. Thus for the following pairs of sentences, given in Section 2.0. of Chapter II, but repeated here for convenience:

(134) a. Mary dropped a pebble into the water.

b. A pebble dropped into the water.

(135) a. John grew the corn in his backyard.

b. The corn grew in John's backyard.

(136) a. Bill drained the water out of the tank.

b. The water drained out of the tank.

(137) a. Mary burned the paper in the fireplace.

b. The paper burned in the fireplace.

our analysis not only explains why the Objects of the a.-sentences and the Subjects of the b.-sentences have the same grammatical relation to the Verb, but it also explains the fact that they have the same grammatical relation to the following Prepositional Phrase. Thus in both (134) a. and b. it is the pebble which is going into the water, and similarly for the other examples. The Verb <u>be</u> them, according to this analysis, is simply an Intransitive Verb, which is to be handled in the same way as Intransitive <u>roll</u>, <u>drop</u>, <u>grow</u>, etc. Naturally, this result fits in perfectly with the results of Section 2.0., so that <u>be</u> can now be subcategorized as follows:

(138) <u>be</u>: NP ___ $\underline{NP}_2 \left\{ \begin{matrix} \underline{AP} \\ \underline{PP} \end{matrix} \right\}$

4.2.1. Locative-Preposing

This proposal, if correct, can now be used, in conjunction with the results of Section 4.1.0. , preceeding, to further elucidate the relationship between be and have. To begin with, we must consider the following sentences, discussed in Langendoen (1966):

(139) a. It is hot in this room.

b. This room is hot.

(140) a. It was very busy at the airport yesterday.

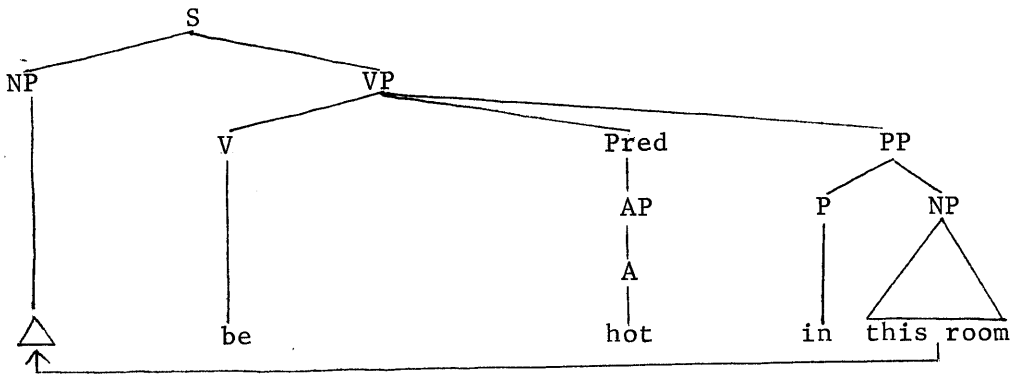
b. The airport was very busy yesterday.

(141) a. It was very crowded on the sidewalks.

b. The sidewalks were very crowded.

Langendoen proposed to account for the relationship between these pairs of sentences by generating the Locative-phrase in the Subject position as a complement to the Pronoun it. The a.-sentences were then derived by means of an extension of Rosenbaum's rule of Extraposition, while the b.-sentences he accounted for by means of a rule called Expletive Replacement, which replaced it with the Object of the Locative Preposition, and in addition deleted the Preposition. Without going into a detailed analysis of the pros and cons of Langendoen's analysis, it is perhaps sufficient to point out that since PP's never occur in the Subject-position in surface structure, the evidence for his analysis is far from convincing. Furthermore, it is possible, within the structure-preserving framework, to provide a rather natural alternative. In accordance with the subcategorization feature (138), let us assume the following deep structure for the sentences in (139)-(141):

(142)



Then in order to account for the b.-sentences, we need only assume that there is an optional rule, let us call it Locative-Preposing, which can be stated roughly as follows:

(143) Locative-Preposing:

$$X - NP - \underline{V} - Y - \underline{P} - \underline{NP} - z \Longrightarrow X - \underline{NP} - \underline{V} - Y - \emptyset - NP - Z$$

Conditions: (a) P - NP is dominated by PP.

(b) P dominates in, on, at.

Rule (143) will apply automatically to (142), giving us the correct surface structure this room is hot. If, on the other hand, Locative-Preposing does not apply, the Pronoun it will be inserted under the empty Subject-NP, by an extension of the rule proposed in Emonds (1969), which inserts it in an empty 'Subject'-NP, giving us the alternative surface structure it is hot in this room. Notice that (143) can be used to account for the relation between pairs of sentences such as the following, as well:

(144) a. It stinks in this room.

b. This room stinks.

(145) a. It smells in this room.

b. This room smells.

Finally, notice that Locative-Preposing combines with our analysis of the Perception predicates feel, look, sound, and smell to account for the relationship between the following pairs:

(146) a. It feels hot in this room.

b. This room feels hot.

(147) a. It smells horrible in the airport.

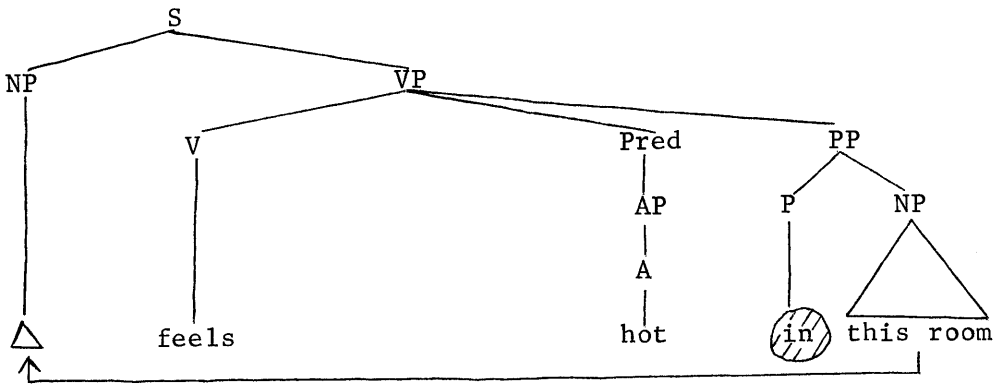
b. The airport smells horrible.

(148) a. It looks very busy at the bus station.

b. The bus station looks very busy.

Thus the sentences in (146), for example, would both be derived from an underlying structure of the following sort:

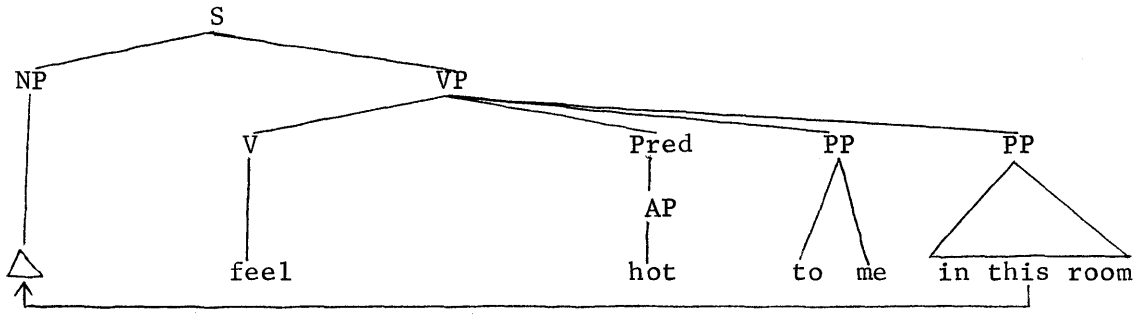
(149)



to which Locative-Preposing will automatically apply, giving us (146) b. If, on the other hand, Locative-Preposing does not apply, then it will be inserted and we will derive (146) a.

Notice that we also find sentences such as It smells horrible in the airport to me and the airport smells horrible to me, as is predicted by our analysis of Perception Predicates in Section 3.0. Sentences of this type will be derived from a deep structure of the following form:

(150)



Notice, incidentally, that the surface Subjects of senenctes such as the following:

(151) a. You smell horrible in the airport.

b. Bill looks very busy at the bus station.

are derived not from the to-phrase, but rather from the Direct Object position.

4.2.2. Possessive Sentences with Locative Phrases

Recall now that in the previous section we established that one of the possible subcategorization features for the Verb have was the following:

(152) have: NP ___ PP NP_2 to NP

Suppose that we simply add to (152) an optional Locative-phrase. We would then have the following subcategorization feature:

(153) have: NP __ PP NP_2 ($\left\{ \begin{matrix} \text{in} \\ \text{on} \\ \text{etc.} \end{matrix} \right\}$ NP) to NP

(153) predicts that we would expect to find sentences containing both a Locative-phrase and a 'Posessor'-NP. This prediction is in fact correct,

as sentences of the following sort demonstrate:

(154) a. I have ten books on my shelf.

b. John has a stolen Thunderbird in the garage.

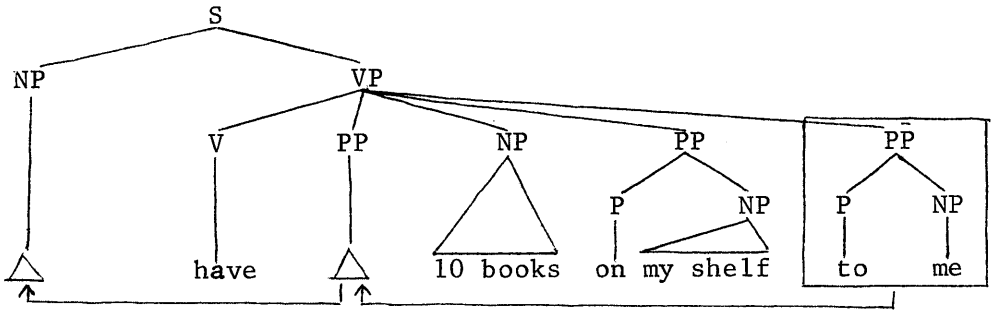
c. I have a suitcase at the hotel.

d. He has a chair beside his piano.

e. Bill has a photograph under the painting.

Sentences of this type will thus be derived automatically from underlying structures such as the following:

(155)



by means of Dative Movement, Preposition Deletion, and Object-Preposing.

Notice, however, that the rule of Locative Preposing is apparently blocked in structures such as (155), so that we have, for example, no sentences of the following form:

(156) a. *My shelf has me 10 books.

b. *The garage has me a stolen Thunderbird.

c. *The hotel has me a suitcase.

d. *His piano has him a chair.

e. *The painting has Bill a photograph.

How can we account for this fact? One possibility would be to extend the PS expansion rule for the category "Predicate", so as to allow not only NP's and AP's to be dominated by Predicate, but also certain PP's.

We could then restrict the rule of Locative Preposing to apply only to non-Predicate PP's. In fact, there is independent evidence in favor of such an analysis. It has often been noted that certain PP's are "closely linked" to the Verb, while others are "loosely linked" to it. Consider, for example, pairs of the following sort:

(157) a. We keep the car in the garage.

b. We washed the car in the garage.

(158) a. John put the table in the kitchen.

b. John polished the table in the kitchen.

(159) a. Bill left his gloves on the table.

b. Bill cleaned his gloves on the table.

This distinction has syntactic consequences. Thus, for example, the "loosely linked" PP's in the a.-sentences above may appear in nominal constructions such as the following:

(160) a. The washing of the car took place in the garage.

b. The polishing of the table was done in the kitchen.

c. The cleaning of the gloves took place in the table.

whereas these constructions are impossible for the "closely linked" a.-sentences:

(161) a. *The keeping of the car took place in the garage.

b. *The putting of the table was done in the kitchen.

c. *The leaving of the gloves took place on the table.

Furthermore, notice that additional PP's cannot naturally be inserted between the Direct Object and the Locative-phrase in the a.-sentences, whereas they are perfectly acceptable in that position in the b.-sentences:

(162) a. *We kept the car for Mary in the garage.

b. We kept the car in the garage for Mary.

c. We washed the car for Mary in the garage.

(163) a. *John put the table for Mary in the kitchen.

b. John put the table in the kitchen for Mary.

c. John polished the table for Mary in the kitchen.

(164) a. *John left the gloves for Mary on the table.

b. John left the gloves on the table for Mary.

c. John cleaned the gloves for Mary on the table.

If closely linked Locative-phrases are derived from the Predicate, this result follows automatically, since the Predicate-node must be generated directly after the Direct Object-NP in any case.

A third argument in favor of this analysis can be derived from the fact that though many Verbs (in particular, the Verb <u>be</u>) may occur with <u>either</u> a Predicate-AP <u>or</u> a Locative-phrase, they may never occur with both:

(165) a. We keep the car clean.

b. We keep the car in the garage.

c. *We keep the car clean in the garage.

(166) a. The gloves are old.

b. The gloves are on the table.

c. *The gloves are old on the table.

(167) a. John remained adamant.

b. John remained in the kitchen.

c. *John remained adamant in the kitchen.

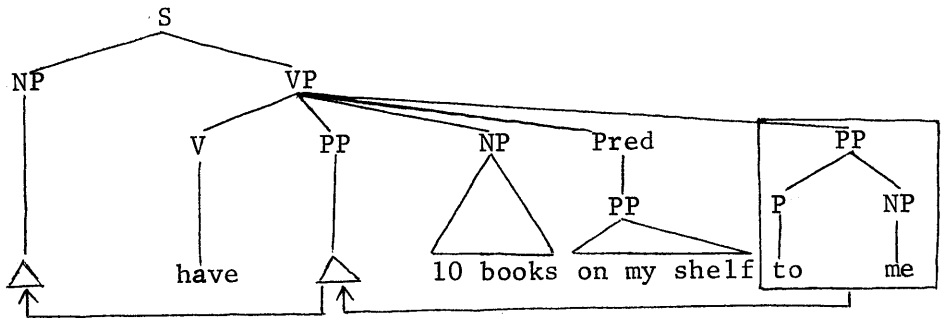
This fact would, of course, be explained automatically by an expansion rule for Predicate of the following form:

(168) Pred $\longrightarrow$ $\begin{Bmatrix} NP \\ AP \\ PP \end{Bmatrix}$

Furthermore, notice that it is just those Locative-phrases which <u>can</u> co-occur with a Predicate-AP (namely, those discussed in Section 4.2.1.) which are also subject to Locative Preposing. The proposed analysis thus explains both of these facts as an automatic consequence of the distinction between Predicate- and non-Predicate Locative-phrases.

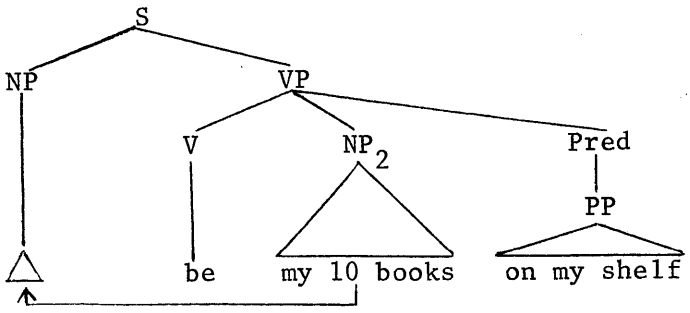
Assuming, then, that the Locative-phrase in the examples of (154) is dominated by Predicate in deep structure, we can derive the sentence <u>I have 10 books on my shelf</u> from the following structure:

(169)



At the same time, a sentence such as <u>my 10 books are on my shelf</u> would derive from the following structure:

(170)



Note that this analysis makes the claim that pairs of sentences such as I have 10 books on my shelf and my 10 books are on my shelf are, in general, non-synonymous, since they derive from different deep structures. This seems to be correct, for such pairs do in fact differ in meaning. Thus the latter presupposes that I have 10 books and asserts merely that they are on my shelf, whereas the former asserts both that I have 10 books and that they are on my shelf.

Consider next pairs of sentences such as the flollowing:

(171) a. Many toys are in the box.

b. The box has many toys in it.

(172) a. 10 books are on that shelf.

b. That shelf has 10 books on it.

(173) a. The photograph is under the painting.

b. The painting has a photograph under it.

(174) a. A chair is beside the piano.

b. The piano has a chair beside it.

It has been argued by Fillmore (1968) that pairs of this kind should be transformationally related. We have already accounted for the a.-sentences, which would be derived exactly as in (170) above, but what about the b.-sentences? It would naturally be tempting to try to extend the rule of Locative Preposing in some way to account for the relationship between the a.- and the b.-sentences. However, the considerations raised in the preceeding paragraphs preclude such a possibility, for the Locative-PP's, and, as we have just seen, only non-Predicate Locative-phrases are subject to Locative Preposing.

There are, in any case, other arguments against such an analysis.

For one thing, note that while Locative Preposing moves the NP which is the Object of the Locative Preposition into the Subject position and at the same time deletes the Preposition, the rule (if there is one) which produces the b.-sentences in (171)-(174) not only fails to delete the Preposition, but also leaves a "trace" of the Object-NP in the form of the Pronoun it. While it might be possible to argue that all of the sentences accounted for in Section 4.2.1. by means of Locative Preposing pass through an earlier stage in their derivation at which they are parallel to the b.-sentences above, such an analysis would require a special rule to delete the Preposition+Pronoun sequence. Furthermore, this rule would have to be obligatory in some cases, optional in others, and in still other cases the PP would have to be marked as a "positive absolute exception" to the deletion rule. The second objection to this analysis derives from the fact that the Locative Preposing rule applies to only a few specific Prepositions, whereas virtually any Preposition may appear in the constructions in (171)-(174). Finally, notice that it is apparently unnecessary for the rule that produces the b.-sentences to remove the whole NP from the Locative-phrase, since we find sentences such as the following:

(175) a. The car has many dents on its fender.

b. My book-case has magazines on some of its shelves.

c. This tree has no leaves on its branches.

d. The car has no engine under its hood.

Furthermore, it is easy to construct sentences of this kind in which there is no pronominal trace at all in the Locative-phrase:

(176) a. The car has dents on both fenders.

b. My book-case has magazines on some shelves, but no on others.

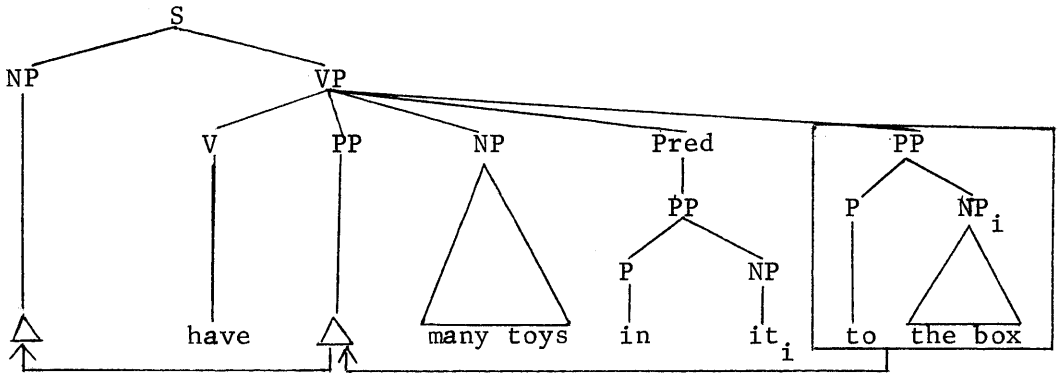
c. A healthy tree has leaves on every branch.

d. This car has an engine under the hood, but no transmission.

Examples of this kind strongly suggest that the b.-sentences in (171)-(174) are syntactically parallel to sentences such as those in (154), the only difference being that the deep structure to-phrase contains an Inanimate NP in the former case, and an Animate NP in the latter.

I propose, therefore, to derive a sentence such as (171) b. from a deep structure of the following sort:

(177)



to which the usual rules of Dative Movement, Preposition Deletion, and Object-Preposing will apply, producing the correct surface form.

Notice, incidentally, that this analysis sheds some light on certain peculiarities of the Pronominalization rules in English. Normally, within a simplex Sentence (cf. Lees and Klima (1963)) a Pronoun which is coreferential with some NP to its left must be in the Reflexive form, as in, e.g. John shaved himself, Bill looked at himself, Mary is talking about herself again, John bought a present for himself, etc. However, it has often been noted that certain PP's are exceptional in that they seem to require a non-Reflexive form:

(178) a. John kept the book near him (*himself).

b. Mary has the child beside her (*herself).

c. John took Bill with him (*himself) to the store.

d. Harry wrapped the blanket around him (himself).

In addition, of course, all of the b.-sentences in (171)-(174) are examples of this kind. It will be noted that it is generally just those Locative-phrases that we have claimed are Predicate-PP's for which the normal Reflexivization rule fails to work. This suggests, naturally enough, that the simplest way of handling these apparent exceptions to the Reflexivization rule is to formulate the rule in such a way that it applies only to Pronouns which are not dominated by the node Predicate. Examples of the type mentioned by Fillmore thus turn out to lend further support to the distinction between Predicate- and non-Predicate-PP's.

4.3.0. Predicate-Adjective Phrases

Let us now consider the subcategorization features that must be assigned to the Verbs have and be. We have already shown in Section 2.0. that the Subject of sentences containing be, plus a Predicate-AP, must originate in the Direct Object position. We have also shown that the Locative-phrase which may occur after be is also dominated by the node Predicate. We may therefore write the subcategorization feature for be simply as follows:

(179) be: NP ___ NP_2 Pred

We have also argued that the Verb have must be allowed to occur in deep structure with Predicate-PP's. Suppose, therefore, that we were to subcategorize have (in the sense of Alienable Possession discussed

earlier) in the following manner:

(180) have: NP ___ PP NP_2 (Pred) to NP

This immediately predicts that we should expect to find sentences with have plus a Predicate-AP, parallel to the sentences discussed in the preceeding section, containing have, plus a Predicate-Locative-phrase. It is a striking confirmation of the theory of subcategorization advocated here that we do, in fact, find sentences of just this type. Consider, for example, the following pairs:

(181) a. The operating room is ready now.

b. We have the operating room ready now.

(182) a. No doctors are available at the moment.

b. We have no doctors available at the moment.

(183) a. Only one room is free.

b. They have only one room free.

(184) a. At last the window is open.

b. At last John has the window open.

(185) a. The meat was raw.

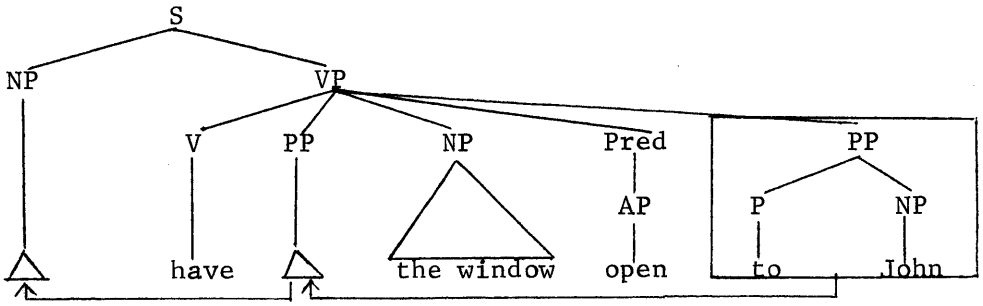
b. We had the meat raw.

(186) a. The children are asleep finally.

b. We have the children asleep finally.

A sentence such as (184) b., then, will be derived automatically from an underlying structure of the following form:

(187)



Comparing the subcategorization features for have and be, we observe an interesting fact. Except for the fact that the node Predicate is optional for have, the only difference between their environments is that have must have a to-phrase and an empty Indirect Object-node, whereas be may not:

(188) a. NP ___ PP $\underline{NP}_2$ Pred to NP

b. NP ___ $\underline{NP}_2$ Pred

We see immediately that these two environments can be collapsed by means of the angled brackets notation in the following manner:

(189) NP ___ $\langle$PP$\rangle$ $\underline{NP}_2$ Pred $\langle$to NP$\rangle$

It is interesting to note that in a great many languages the Verbs corresponding to have and be in English have exactly the same phonological form. In such languages it would presumably be possible to write a single lexical entry, corresponding to the two entries for have and be that are required for English.

However, the fact that English has the two phonological forms have and be should not obscure our understanding of the deep underlying relationship between the sentences in which they appear. The importance of this relationship with respect to other areas of English syntax will become evident in the remainder of this chapter, in which we shall discuss

in some detail the system of Predicate-VP complementation in English

5.0. The Predicate-VP

We turn now to a relatively little-explored area of English syntax, and one in which the theory of lexical redundancy and subcategorization proposed here leads to some rather striking consequences. Briefly, we shall argue that there are in English verbal complements which cannot be described adequately under the usual assumption (as, for example, in Rosenbaum (1967)) that all such complements are derived from the category S in deep structure. Suggestions along these lines have appeared in the literature recently (see, for example, Emonds (1969) and Bresnan (1970). However, the evidence presented has been scanty and far from convincing. Within the framework being developed here, on the other hand, I think it can be convincingly demonstrated that some verbal complements must be VP's in deep structure, rather than Sentences. Furthermore, this assumption, if correct, leads in turn to rather interesting consequences for the analysis of such basic constructions as the Passive and Progressive, consequences which, it should be noted, can only be formulated in the structure-preserving framework. Consequently, the results of this chapter provide strong evidence for the correctness of the structure-preserving hypothesis and for the theory of lexical representation proposed earlier in this work.

In fact, we have already dealt to some extent with the evidence for VP-Complements in Section 6.0. of Chapter II, in connection with our analysis of the causative construction in English. Thus another result of this chapter will be to lend further support to the analysis presented

there.

The types of complements with which we shall be concerned are exhibited in the following examples:

(190) a. I saw him {walk-Ø / walking} toward the door.

b. I heard Bill {shutting / shut-Ø} the door.

c. I felt someone {touching / touch-Ø} my arm.

d. We smelled the stew {burning / burn-Ø} .

e. She found a bear sleeping in her bed.

f. They caught him sneaking around the halls.

g. They kept the men working until midnight.

h. The men kept working until midnight.

i. We made the doctor examine John.

j. I got John examined by a doctor.

k. I got the children playing hop-scotch.

l. Mary watched him {operating / operate-Ø} the machine.

m. We left Bill standing in the rain.

n. I let him leave the house.

o. They observed us {removing / remove-Ø} the stones.

p. I saw the building (*be) demolished.

q. I started him talking about Africa.

r. John had the book stolen by a thief.

s. John had a book stolen from him.

t. I had Bill steal-Ø the book for me.

u. We had Bill stirring the soup.

There are a number of features of these complements which are immediately noticeable. Observe first of all that there are three types of verbal affixes to be found in the examples above: (1) the Ø-affix, or bare Infinitive, (2) the -ing affix, and (3) the past participial affix -EN. It is perhaps worth pointing out that these three affixes (excluding from consideration Infinitives and Gerunds, to which we shall return in the next chapter) are in fact the only affixes, aside from the Tns affixes, which may be attached to a main Verb in English. Thus the Modals, for example, require the Ø-affix on the main Verb, while the progressive auxiliary be requires the -ing affix, and the perfect and Passive auxiliaries both require that the main Verb have the -EN affix. More striking, however, is the fact that in no case may the Verb of the complement be accompanied by the verbal auxiliary which, in a main clause, it must invariably occur with. Thus it is impossible to have sentences such as the following:

(191) a. *I saw him can walk toward the door.

b. *I saw him be walking toward the door.

c. *John had a book be stolen from him.

This fact alone should be sufficient to make one start wondering whether such complements are really S's in deep structure, since there would be no non-ad-hoc way under such an analysis to prevent the Verb in the complement from occurring with the verbal auxiliaries which regularly occur in sentences.

For certain of these Verbs, this difficulty has not gone unnoticed.

Thus for Verbs such as hear, see, feel, catch, keep, observe, watch, etc. Rosenbaum (1967) was forced to set up a special "Progressive" complementizer, a position which is somewhat anomolous within his system in that every other kind of complement that he discusses is derived from one of the three complement types that, for-to, or POSS-ING. Furthermore, Rosenbaum fails to mention the fact that this same class of Verbs regularly occurs with the -Ø affix (cf. Examples (190) a., b., c., d., l., and o.). Presumably, still another "complementizer" of a special kind would be required for these examples. The only other alternative would be to claim that they are derived from Infinitives by means of a rule (mentioned briefly on p. 97) which at least plausible for the Verbs make, let, and help (the only examples Rosenbaum cites), it is surely implausible to derive sentences such as I saw him walk toward the door from underlying sentences of the form *I saw him to walk toward the door, particularly in view of the fact that for all Verbs of this class the rule is obligatory. Intuitively, one feels that such an analysis is merely obscuring a deeper generalization.

Even more implausible is an Infinitivial derivation of the -ing and -EN complements. To derive, for example, the sentence they kept the men working until midnight from a source like *they kept the men to be working until midnight seems ad-hoc. Likewise, a source like *I saw the building to be demolished for the sentence I saw the building demolished simply gives up on the possibility of a more systematic explanation. Furthermore, such an analysis would still fail to explain the strange fact that in these cases the aspect associated with the Verb of the for-

to complement is apparently determined idiosyncratically by the Verb in the matrix sentence, a type of restriction for which there is no precedent. In other words, not only would these Verbs have to be marked for a special rule deleting to plus a passive or progressive auxiliary, but also they would have to have special restrictions preventing such sentences as *I saw him have walked toward the door, *the men kept work until midnight, *I saw the building have demolished, and so forth. Again, it seems that such an approach is missing a regularity, for there is nothing particularly 'odd' about such Verbs. On the contrary, they seem quite regular.

Worse yet is the fact that in a few cases where Rosenbaum's to-deletion rule is evidently optional, there seems to be a clear semantic difference between the two sentence-types. Consider, for example, the Verb help, which Rosenbaum cites as an instance of the optional application of to-deletion:

(192) a. I helped Bill to write his paper.

b. I helped Bill write his paper.

To me, sentence (192) b. quite clearly implies that I actually participated in some way in the composition of the paper, whereas (192) a. seems merely to mean that I did something which resulted, perhaps indirectly, in Bill's being able to write his paper. For examples with the progressive affix in the Verb of the complement, consider the following pairs:

(193) a. Goldilocks found a bear to be sleeping in her bed.

b. Goldilocks found a bear sleeping in her bed.

(194) a. I observed Bill to be feeding the pigeons.

b. I observed Bill feeding the pigeons.

Sentence (193) b. can only mean that Goldilocks herself came upon a bear in the act of sleeping in her bed, whereas (193) a. is more vague and could mean, for example, that Goldilocks inferred, say, from the fact that every day when she came home she found rumpled sheets and bear hairs in her bed, that a bear was regularly using her bed during the day. To be more precise, it seems to me that the first sentence refers to Goldilocks' discovery of the fact that a bear was sleeping in her bed, whereas the second sentence refers to her stumbling upon a particular bear actually sleeping in her bed. Similar remarks apply to the sentences in (194). Thus (194) b. clearly states that I was watching Bill over a period of time, during which he was feeding pigeons, whereas (194) a. refers to an instantaneous perception on my part of the fact that Bill was feeding pigeons. Notice, for example, that one can say I turned my head to observe Bill feeding the pigeons, but not *I turned my head to observe Bill to be feeding the pigeons. Likewise, the sentence Goldilocks came into the room to find a bear sleeping in her bed is all right, but it seems anomolous to say *Goldilocks came into the room to find a bear to be sleeping in her bed. Similarly, it is possible to find contexts which distinguish the sentences in (192). For example, we have I looked up some information which I thought would help Bill to write his paper, but it seems odd to say *I looked up some information which I thought would help Bill write his paper.

Finally, there are examples in which the Verb in the complement has

the -EN affix, where the difference in meaning is even clearer. Thus the following two sentences mean quite different things:

(195) a. I got John to be examined by the doctor.

b. I got John examined by the doctor.

Sentence (195) a. means that I persuaded John to be examined by the doctor, whereas (195) b. simply means that I was successful in bringing about the examination of John by the doctor.

Considerations of this sort seem to me to argue strongly against the view that the complements in (190) can be regarded merely as instances of sentence complementation of the usual kind, fixed up with a few lexically idiosyncratic deletion rules.

Furthermore, there are other classes of Verbs which take -ing complements for which the standard treatment seems inadequate. Consider, for example, the class of Verbs which contains, among others, begin, continue, start, stop, cease, and quit. These occur in sentences such as the following:

(196) John { began / continued / started / stopped / ceased / quit } eating his dinner.

Rosenbaum (1967) analyzes such sentences as instances of Intransitive VP-complementation and assumes that they have a POSS-ING complementizer in deep structure. As such, they occupy a somewhat anomolous place in Rosenbaum's system, since they are the only examples of POSS-ING complements (as was observed by Emonds (1970)) which are not NP's in deep structure. Furthermore, Emonds (1970) has argued persuasively that all

Gerunds (=Rosenbaum's POSS-ING complement) should be derived from sentences which are dominated by NP in deep structure. If Emonds is correct, then either the examples in (196) are NP-complements or else they must be derived in some other way. But if they are NP-complements, then it is impossible to explain the facts which originally motivated Rosenbaum's decision to analyze them as VP-complements, namely, the fact that they cannot undergo the Passive or appear in the focus position in Cleft and Pseudo-cleft sentences. It would appear that the only alternative is to regard them as instances of VP-complementation with a special -ing complementizer, within Rosenbaum's system. Again, this seems ad-hoc. Finally, the possibility of deriving, for example, John began eating his dinner from an underlying Infinitive of the form *John began to be eating his dinner runs into the same difficulties mentioned above in connection with the Verbs see, observe, etc. It seems likely, therefore, that the -ing complements to Verbs of temporal aspect should also be included in the list of phenomena which do not fit into the standard treatment of complementation in a satisfactory manner.

Another class of Verbs which are analyzed by Rosenbaum as requiring POSS-ING complements is that which includes imagine, picture, remember, and visualize, as in the following examples:

(197) I { pictured / imagined / remembered / visualized } John feeding the pigeons.

Rosenbaum takes these to be instances of transitive VP-complementation, but again this is only possible, if Emonds is correct, if they are dominated by NP in deep structure. This in turn would require a

structure of the form [V-NP-NP], since the Subject of the complement sentence is also the Direct Object of the matrix Verb. However, there is no independent motivation for a complement structure of this kind. (Rosenbaum's base rules, in particular, do not allow for such a structure.) Finally, the other possible alternatives, namely, a special -ing complementizer, or else some sort of infinitival source, run into exactly the same difficulties discussed previously.

I think that these difficulties are sufficient to cast serious doubt on the standard treatment of the verbal complements in question. However, under the assumption that all Verbal complements must derive from underlying S's, there is really no other alternative to the standard analysis, which naturally suggests that this assumption is wrong.

5.1. An Alternative to Rosenbaum's Analysis

Suppose, then, that we were to regard the complements in (190) as deriving directly from the node VP in deep structure, rather than trying to treat them as reduced forms of deep structure clauses. If we also assume, following Emonds (1970), that the elements 'Tense' and 'Modal' are generated as daughters of the constituent S in deep structure, rather than as part of the VP, then notice that we can immediately explain why these elements never occur in complements of the type found in (190). Furthermore, let us assume that the Verbal affixes -Ø, -ing and -EN are simply generated in deep structure along with the Verb, rather than setting up discontinuous constituents such as (Be+EN), (be+ing), and so forth, as in Chomsky (1957). This will immediately allow us to simply subcategorize Verbs for the type of VP

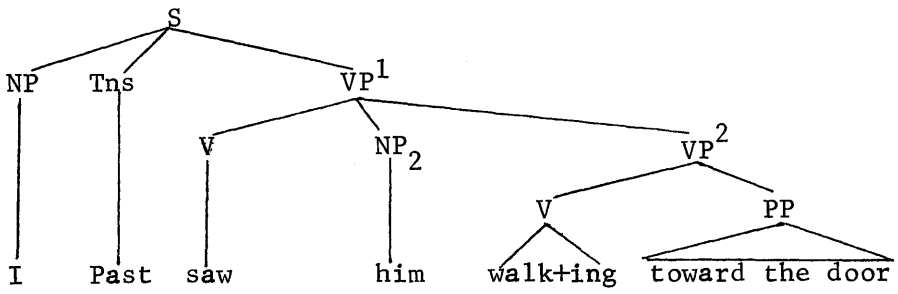
complement that they may take, thus explaining in a natural way the idiosyncratic lexical variations evident from the examples in (190). Thus see, hear, feel, and smell will be subcategorized so as to allow either a bare Infinitive complement or a progressive complement, but not a past participial complement, whereas catch and leave, for example, will be subcategorized for an ing complement only. Similarly, make and let may occur only with a bare Infinitive complement, whereas have will also take an -EN complement; and so on.

To be more concrete, I assume that the initial rule of the base component is roughly as follows:

(198) S ⟶ COMP NP Tns (M) VP^7

and that a sentence such as I saw him walking toward the door has, as a first approximation, roughly the following deep structure:

(199)



As already noted, this allows us to explain why the complements in question never occur with the elements Tense and Modal.

There are a number of arguments which support such an approach. Notice, to begin with, that in a few cases we find Transitive and Intransitive pairs of the sort discussed in Chapter II:

(200) a. I got John examined by the doctor.

b. John got examined by the doctor.

(201) a. They kept the men working until midnight.

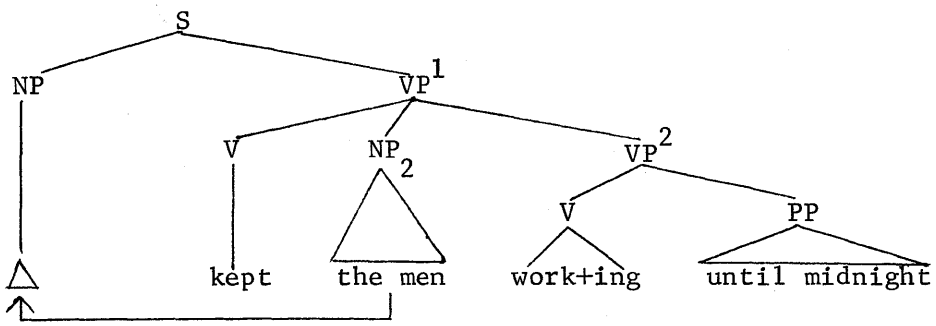
b. The men kept working until midnight.

(202) a. We started him talking about Africa.

b. He started talking about Africa.

Assuming that at some level the b.-sentences have a structure of the following sort:

(203)



the correct surface form will immediately be produced by Object-Preposing. More important, however, is the fact that this analysis, in the case of get, fits in perfectly with previous remarks we have made concerning this Verb and others like it. Recall that in order to explain pairs such as the metal got hot, we set up a subcategorization feature of the following form for get:

(204) get: NP ___ NP_2 AP

and that furthermore we proposed deriving the transitive variant from an underlying causative construction, exactly as in the case of melt, grow, etc. But clearly, given structures such as (199) and (203) for the verbal complements in question, we can easily explain the existence of the pairs in (200)-(202) in an exactly parallel fashion. All that we have to do is amend the subcategorization feature (204) slightly so as to allow either an AP-complement or a VP-complement:

(205) get: NP ___ NP_2 $\left\{\begin{matrix}\underline{AP}\\ \underline{VP}\end{matrix}\right\}$

The Verbs keep and start would be analyzed in exactly the same way.

This immediately leads to another interesting observation, which is that with only a few exceptions, the Verbs which take VP-complements of the type in (190) are also the Verbs which take Predicate-AP's in deep structure, suggesting that these VP-complements are not only VP's, but are in fact Predicate-VP's in deep structure. As pointed out in Chapter II, Section 6.1., this suggestion is entirely natural in that (1) it expresses perfectly the parallelism between pairs such as those in (200)-(202) and the corresponding pairs with deep structure Predicate-AP's; and (2) it allows us to expand the category Predicate into any of the four major phrase-node categories NP, VP, AP, PP. Finally, such a system explains automatically why these four types of Predicate-phrase are mutually exclusive. In other words, it explains the fact that Predicate-AP's, Predicate-NP's, Predicate-PP's, and Predicate-VP's may not co-occur in the same VP. I propose, therefore, to set up the following phrase-structure rules for the expansion of the node VP:

(206) 1. VP $\longrightarrow$ (PP) (NP_2) (Pred) (PP)* (S)

2. Pred $\rightarrow$ $\left\{\begin{matrix}NP\\ AP\\ VP\\ PP\end{matrix}\right\}$

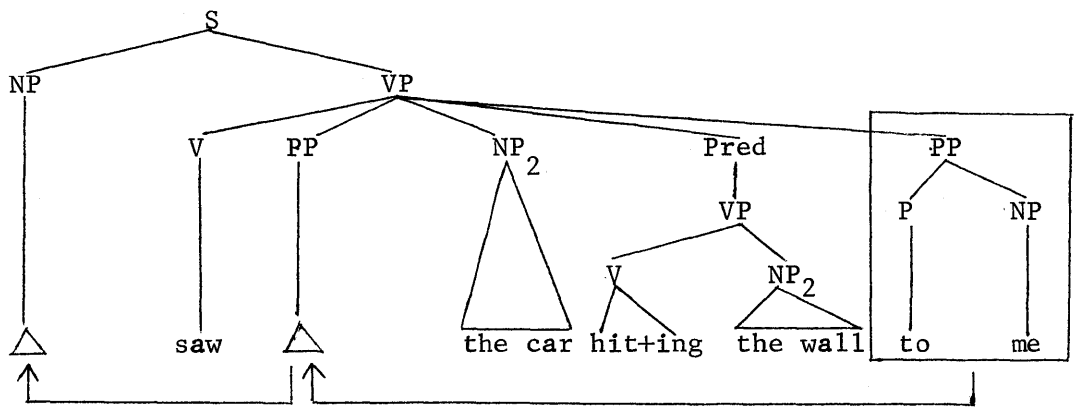
Still another argument for the base rules in (206), which, however, cannot be justified until the next chapter, is that it will allow us to distinguish structurally between Infinitival VP-Complements and VP-Complements of the kind we are discussing here, in a manner parallel to

the way in which Adjectival and Adverbial AP's are distinguished from one another, namely, in terms of whether or not the VP (or AP) occurs under the node Predicate in deep structure.

5.1.1. Lexical Insertion in VP's

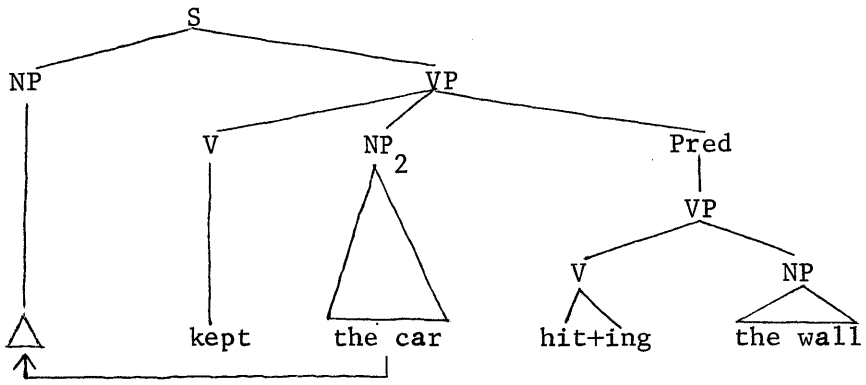
If the analysis just proposed is correct, then a sentence such as I saw the car hit the wall will be derived from a deep structure of the following form:

(207)



Notice that the only rules necessary to derive the correct surface form in this case are the rules of To-Dative, Preposition Deletion, and Object-Preposing. On the other hand, a sentence such as the car kept hitting the wall would have a deep structure of the following sort:

(208)

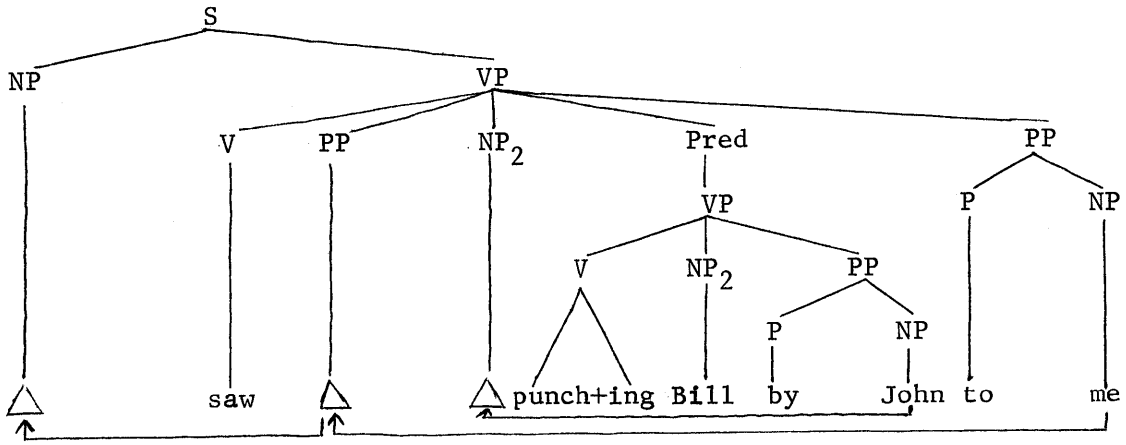


Again, the only rule necessary to derive the correct surface form is the

independently motivated rule of Object-Preposing.

There are, however, certain difficulties raised by this analysis. Notice that in the two examples just discussed, the Verb in the Predicate-VP requires a deep structure Subject-NP which is filled. Clearly, this condition is met by the deep structures (207) and (208). At the same time, the Verbs of the matrix VP require that there be a filled Direct Object-NP and a filled Indirect-Object-NP, respectively, in deep structure. Again, this condition is obviously met by the two deep structures in question. However, observe what happens if the NP which is the Object of the matrix Verb in surface structure has some other relation to the Verb of the Predicate-VP than the Subject relation. Consider, for example, the deep structure of a sentence such as <u>I saw John punching Bill</u>. The Verb <u>punch</u>, it will be recalled, requires a deep structure Agent-NP, rather than a deep Subject-NP. Therefore, if we are to account for the fact that the NP <u>John</u> is the Agent of the Predicate-VP, we must derive this sentence from a deep structure of roughly the following kind:

(209)



Observe that there is no problem in deriving the correct surface structure from (209) with the transformations already available to us, as long as we assume that VP is a cyclic node. Thus, on the Predicate-VP cycle no rules of relevance will apply. On the matrix VP cycle, however, To-Dative will first apply, as usual, moving the Indirect Object into the empty PP position. The next rule that can apply is Agent-Preposing, which will move the object of the by-phrase out of the Predicate-VP into the empty NP_2 node in the matrix VP. Finally, on the S-cycle, the Indirect Object will be moved, in the usual way, into the empty Subject-NP. These operations are indicated by the arrows in (209).

The problem comes when we consider the subcategorization features which must be assigned to the matrix Verb. In the standard theory, there are two assumptions which have generally been accepted concerning the operation of the lexical insertion transformations: (1) It has been assumed that lexical insertion rules apply before all the purely syntactic transformations; and (2) It has been assumed that the lexical insertion rules, unlike the syntactic transformations do not apply cyclically. Now consider what sort of subcategorization features must be assigned to see and punch, respectively. Clearly, see must be subcategorized in the following manner:

(210) see: NP ___ NP_1 NP_2 VP to NP

The Verb punch, on the other hand, is subcategorized as follows:

(211) punch: NP ___ NP_2 by NP

But notice that under assumptions (1) and (2) above, these two subcategorization features state contradictory conditions, when applied to the deep

structure (209). For (210) requires that the Direct Object-NP of see be filled in deep structure, while (211) requires that the NP immediately to the left of the Verb punch, which in this case is the Direct Object-NP for see, be unfilled in deep structure. Obviously, these two conditions are impossible to fulfill under the usual assumptions regarding the operation of the lexical insertion rules.

Examples such as (209), then, demonstrate that our ideas about the operation of lexical insertion must be modified. Notice that since a lexical insertion rule is, technically, a transformation, there is absolutely no reason why such rules could not operate cyclically, just as the purely syntactic transformations do.[8] I propose, therefore, to adopt the following convention concerning the operation of lexical transformations:

(212) The lexical insertion transformations apply cyclically and are ordered before all the purely syntactic transformations on each cycle.[9]

Let us now consider how the rules would apply to (209), given convention (212) on the operation of the lexical transformations. It should be noted first that since our subcategorization conventions always take into account the 'Subject'-NP, the lexical insertion rule for a VP must always apply on the cycle above it. This means that in (209), for example, the lexical items which appear in the Predicate-VP will be inserted on the matrix VP-cycle, and likewise any transformations which only affect constituents in the Predicate-VP cycle, i.e. which do not affect constituents in some cyclical node which is itself embedded in the Predicate-VP constituent,

will also apply (after the lexical insertion rule) on the matrix VP-cycle. Thus we will have the following derivation: On the Predicate-VP cycle, no rules will apply, lexical or otherwise. Next, we move up to the matrix VP-cycle, and first apply the lexical transformation represented by the subcategorization condition (211) for the Verb punch. Condition (211) requires that the Verb in the Predicate-VP have a filled Direct Object-NP, a filled by-phrase, and an unfilled 'Subject'-NP. Looking at (209), we wee that all three of these conditions are in fact met, so that we can now proceed to apply the syntactic transformations. We observe immediately that the environment for Agent-Preposing is met, and the NP John is therefore moved out of the Predicate-VP into the empty NP which is nearest to the Verb punch on the left. No other operations of relevance are applicable, and this cycle is therefore finished. Next, we move up to the S-cycle. The first thing that we must do, in accordance with condition (212), is to apply the lexical insertion rule (210) for the Verb see. Condition (212) requires that see have an empty Subject-NP, an empty Indirect Object-NP, a filled VP, a filled to-phrase, and last of all a filled Direct Object-NP. We see that all of these conditions are met. In particular, note that the requirement that the Direct Object-NP be filled is met, by virtue of the application of Agent-Preposing on the previous cycle. Thus the two conditions (210) and (211) are no longer contradictory, because of the way that the lexical insertion transformations work under condition (212). Finally, the syntactic operations applicable to the matrix VP can apply. In this case, the environment for To-Dative is met, followed by Object-Preposing, so that the NP me is moved into its correct surface position as Subject of the Verb see.

It should be pointed out that in order for this proposal to work, we must generalize slightly a condition which is implicit in the standard treatment of lexical insertion. As was pointed out in the previous chapter, the distinction between filled and unfilled nodes is not an innovation in linguistic theory. In fact this device has always been used to explain, for example, the "unspecified Agent" which is found in short forms of the Passive such as John was hit, which must be interpreted as having an Agent, even though the Agent is not specifically identified in any way. However, there was previously never any reason to suppose that an obligatorily filled node was ever filled in anywhere except at the beginning of the derivation by the lexical insertion rule. Thus the following condition was at least implicit in the standard theory:

(213) A filled node must be filled in deep structure, i.e. it must be filled at the beginning of the derivation, before any of the non-lexical transformations have applied.

However, as we have just seen in the derivation of (209), this condition is no longer met, since the obligatorily filled Object of see is filled in not by a lexical transformation, but rather by a non-lexical transformation (namely, Agent-Preposing) applying on the previous VP-cycle. Clearly, we must generalize condition (213) slightly, in such a way that it is simply the first lexical string in the derivation which comes to be dominated by an obligatorily filled node which is relevant to the semantic interpretation of the sentence, i.e. which bears the relevant grammatical relation to the Verb. This revised condition may be formulated in the following manner:

(214) Given a node X which is specified by some subcategorization condition as being obligatorily filled, this condition must be interpreted as meaning that it is the first sequence of lexical items which comes to be exhaustively dominated by X in the course of the derivation which is relevant to the semantic interpretation of the sentence.

Condition (214) thus states that it does not matter whether an obligatorily filled node comes to be filled by virtue of the lexical insertion rule or by virtue of a non-lexical transformation: as long as the lexical sequence in question is the first in the derivation which comes to be dominated by that node, we know that it is that lexical sequence which is relevant to the semantic interpretation of the sentence. In particular, it is that sequence of lexical items which bears the relevant grammatical relation to the Verb.

The fact that lexical insertion must be cyclic is of some theoretical importance, since it means, for one thing, that there is no level, in the technical sense, of deep structure. That is, given the class of derivations, i.e. sequences of phrase-markers, which is specified by the syntactic component of the grammar, there is no single phrase-marker, definable for any arbitrary derivation, which can be said to provide all of the information concerning grammatical relations, which is relevant to semantic interpretation. Rather, it must be determined on each syntactic cycle, after the lexical insertion transformations have applied, which of the grammatical relations definable in the phrase-marker at that point are relevant to semantic interpretation. Taking again (209) as an example, it

is evident that after the lexical insertion rule has applied on the matrix VP cycle, it is possible to determine that the NP John is the Agent-of the Verb punch and that the NP Bill is its Direct Object, and furthermore that punch has no NP which serves as its Subject. However, we do not know, at this point, what NP is the Direct Object of see. This can only be determined on the S-cycle, after the lexical transformations have applied, at which point it can be determined that the NP John is in fact the Direct Object of see. Of course, for a simplex S, with no embedded VP's, it will be possible to determine from one particular phrase-marker all of the grammatical relations relevant to the semantic interpretation of that S. However, this is not in general the case, and hence it follows that there is, in this framework, no level of deep structure, in the technical sense in which the term level has generally been used.

It is important to point out, however, that the fact that there is no level of deep structure does not imply that there is no distinction between syntax and semantics, i.e. that "Syntax is Semantics". On the contrary, that implication is quite plainly false. This point is important in the context of current debate concerning the relation of Syntax to Semantics, because it seems to have been assumed in many recent writings that the absence of a "level" of deep structure automatically implies no distinction between the syntactic component and the semantic component of grammar. However, the theory advocated here is a clear example of a theory in which there is no level of deep structure, but where there is nevertheless a distinction between syntax and semantics -- a distinction which is in fact absolutely necessary, as I hope to have shown by the end of this work.

There is, however, another point which is brought out quite clearly

by this discussion, and that has to do with the crucial role which lexical insertion transformations play in the relationship between syntactic structure and semantic interpretation. It should be evident that in the theory proposed here lexical subcategorization and lexical redundancy rules do not "merely" state generalizations of very limited scope which hold between classes of lexical items and which are not capturable in the transformational component of the grammar. Rather, they constitute one of the essential links between formal syntactic structure on the one hand and absolute, or universal, semantic representations on the other. Putting it rather metaphorically, one might say that subcategorization conditions of the type proposed here are "Janus-faced" in that they contain information which is essential both for the proper functioning of syntactic transformations and also essential for the correct semantic interpretation of the syntactic structures involved. One way in which this dual role of the subcategorization conditions is evident is made clear in the above discussion of the cyclic application of these conditions, for in the example discussed, not only do the subcategorization conditions for <u>see</u> and <u>punch</u> partially determine which syntactic rules must apply to derive the correct surface structure, but also they contain the information necessary for determining which NP in the sentence is to be interpreted as the Direct Object of the Verb <u>see</u>. In fact, it would be correct to say that insofar as the grammatical relations relevant to semantic interpretation are concerned, the subcategorization conditions take over the function which deep structute had in the standard theory.

Notice that our theory fits in rather will with what Chomsky has termed the "extended standard theory". In fact it constitutes a further

refinement, i.e. a stronger version, of the extended standard theory. It has become evident as a result of recent investigations into the role of surface structure in semantic interpretation[10] that the strong form of the Katz-Postal Hypothesis, which maintains in essence that all the information relevant to semantic interpretation is contained in deep structure, is no longer tenable. In fact, it appears quite likely that the only contribution of deep structure to semantic interpretation is to provide the information concerning grammatical relations which is necessary to determine the system of semantic relations which constitute part of the meaning of a sentence. However, it seems obvious that the level of deep structure, as defined in the standard theory, contains a great deal more information than is necessary for defining grammatical relations on the basis of structural relations present in deep structure phrase-markers, information which is in fact irrelevant for the determination of the system of semantic relations. Our theory goes one step further and proposes to replace "deep structure" by a system of subcategorization conditions, which are interrelated by means of "lexical redundancy rules", and which are furthermore subject to very tight constraints on the class of possible redundancy rules, and maintains that it is only that syntactic information which is governed by the subcategorization conditions which is relevant to the determination of the universal semantic functional relations which constitute part of the semantic interpretation of sentences. Thus our theory makes a more specific claim about the relation between syntactic structure and semantic interpretation, and is more tightly constrained, than the extended standard theory, and

hence is a stronger theory of grammatical relations than the one provided by the extended standard theory. To the extent that it turns out to be correct, then, the theory of grammatical relations presented here is a step toward the goal of explanatory adequacy.

5.2. The Progressive

Assuming for the moment that the analysis just proposed is correct and that there exist PredicateVP complements of the kind described in the previous section, observe that a number of interesting consequences are immediately open for consideration.

Consider, for example, the matter of the so-called 'progressive aspect' in English, as exemplified in the following sentences:

(215) a. Someone was touching my arm.

b. The bear was sleeping in her bed.

c. Bill is shutting the door.

d. The children are playing hopscotch.

Comparing such sentences with the examples in the previous section of VP-complements with the -ing affix on the Verb, it is immediately evident that there is a close syntactic and semantic relationship between the two classes of examples. Thus the sentence I felt someone touching my arm has associated with the embedded VP exactly the same 'progressive' interpretation as that which is associated with a sentence such as (215) a. Similarly, in the children continued playing hopscotch and I imagined the children playing hopscotch, the interpretation of the embedded VP is progressive also, just as it is in example (215) d. It hardly seems coincidental that two different types of sentence, each containing a Verb with the affix -ing, should both have this progressive interpretation.

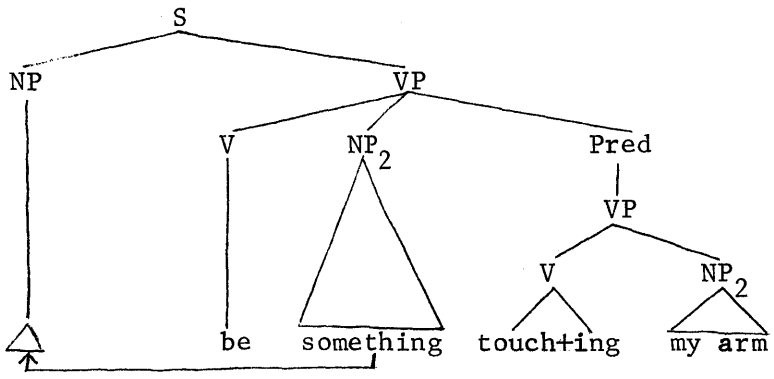
Yet in the standard theory sentences such as those in (215) are derived from a source which is rather different from the one that we have argued must underlie the examples of the preceeding section. This fact has often been remarked on in the literature, but a satisfactory account of the syntactic relation between sentences containing the progressive aspect and sentences containing progressive complements has never been arrived at.

Recalling our discussion of the Verb be in Section 4.0., notice that we are now in a position to explain this relationship in a very simple way. We need only revise the subcategorization feature (179) for the Verb be so as to allow either a Predicate-VP or a Predicate-AP. Furthermore, this slight revision is entirely natural in view of the fact that the phrase-structure rules allow for any of the major phrase nodes NP, AP, and VP to occur beneath the node Predicate. We would then have the following subcategorization condition for be:

(216) be: NP ___ $\underline{NP}_2$ Pred

This feature will automatically allow the Verb be to occur in deep structure trees of the following sort:

(217)

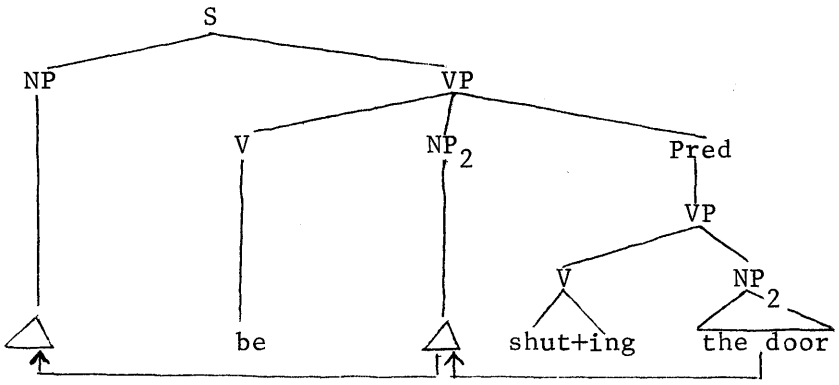


Notice that Object-Preposing will immediately account for the surface

position of the 'Subject' of the Predicate-VP without the addition of any ad-hoc rules to the grammar.

Furthermore, notice that the principle of cyclic application of lexical insertion transformations will automatically insure the right results in cases where the Verb of the embedded VP requires an empty Subject-NP. Thus a sentence such as the door is shutting, for example, would derive from the following sort of structure:

(218)



The derivation will proceed as follows: On the Predicate-VP cycle no transformations of interest will apply. On the matrix VP cycle, we first apply the subcategorization condition for the Verb shut, which requires an empty Subject-NP and a filled Indirect Object-PP. Clearly, these conditions are met, so that we then proceed to apply the non-lexical transformations. In this case, the environment for Object-Preposing is immediately to the left of the Verb shut. We now go to the S cycle, first checking the subcategorization conditions for the Verb be. According to (216), be may occur with an empty Subject-NP, a filled NP_2, and a Predicate-VP. These conditions are met; in particular, notice that the Direct-Object position is filled, as required, by virtue of the

application of Object-Preposing on the previous VP-cycle. We therefore proceed to the non-lexical transformations. Once again, Object-Preposing is applicable, so that the NP the door is automatically moved into its correct surface position as Subject of the Verb be.

The relationship between progressive sentences such as those in (215) and the ing-Complements discussed earlier is now apparent. In fact, the former are simply special instances of the latter, in which the main Verb happens to be be.

Let us now consider the Verb have. If our analysis of the relationship between have and be is correct, we might expect to find that have also occurs with Predicate-VP's. Furthermore, if the subcategorization feature (188) is correct, we would expect such sentences to take a Direct Object, as well as either an Indirect Object or a to-phrase. This prediction is in fact correct. Consider, for example, sentences such as the following:

(219) a. Goldilocks has a bear sleeping in her bed.

b. We have some friends staying with us.

c. I have people running in and out of my office all day long.

d. Mary had Bill believing in Women's Liberation in no time.

e. I have several ideas floating around in my head.

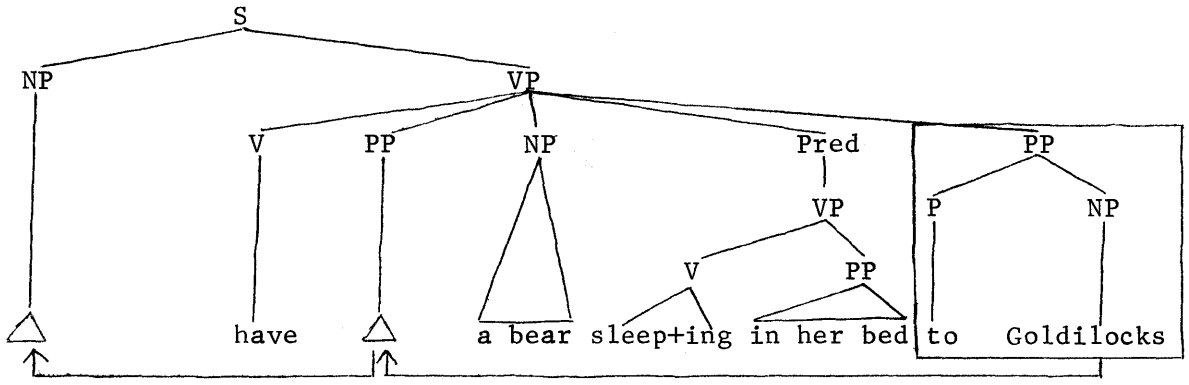
f. We had the children playing games in the basement.

These examples can easily be accounted for by revising the subcategorization feature for have in the following manner:

(220) have: NP ___ $\left\{\begin{matrix}\underline{PP}\\ \langle \underline{PP} \rangle\end{matrix}\right\}$ $\underline{NP}_2$ $\left\{\begin{matrix}\underline{PP}\\ \underline{AP}\\ \underline{VP}\end{matrix}\right\}$ $\langle \underline{to}\ \underline{NP} \rangle$

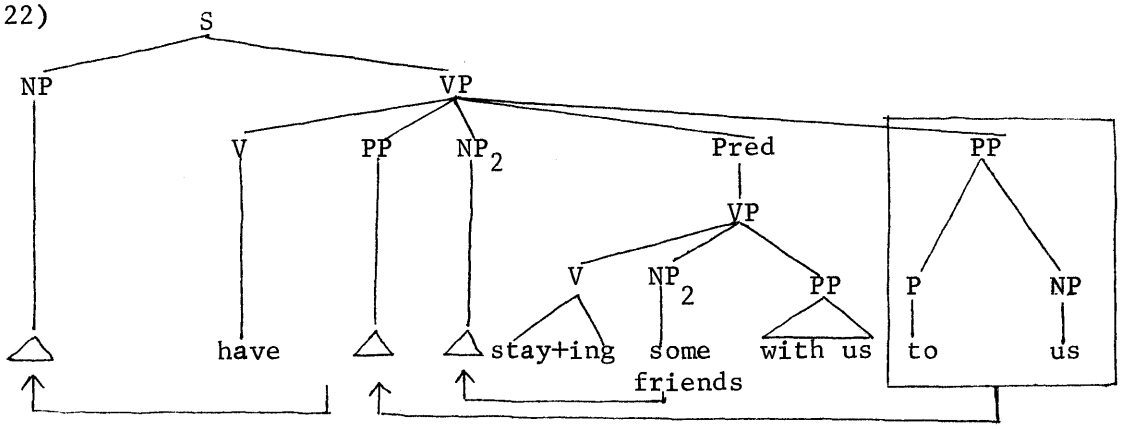
Thus sentence (219) a. would be derived from a structure of the following sort:

(221)



Once again, notice that independently motivated transformations, namely, To-Dative, Preposition Deletion, and Object-Preposing, will automatically account for the correct surface form of (221). Furthermore, the cyclic application of the lexical transformations ensures once more that we get the right results when the Predicate-VP contains a Verb which requires an empty Subjec-NP. Thus, (219) b., for example, would have the following representation:

(222)



The crucial point here is that when the subcategorization feature for have is applied on the S-cycle, the requirement that the Direct Object-NP be filled will be met by virtue of the application of Object-Preposing on the matrix VP-cycle.

Finally, notice that there appears to be motivation for deriving the surface Subject of have in some cases from the Indirect Object position, rather than from the to-phrase, although the distinction is perhaps harder to make precise when there is a Predicate-VP than in other contexts that we have discussed. Thus (219) e., for example, seems to be a clear case where the Subject-NP derives from the deep Indirect Object position. Again, this result is predicted by the subcategorization feature (220).

5.3. Passives and Pseudo-Passives

We have just seen that our analysis of the Verbs be and have, combined with the proposal that certain complements which exhibit unusual properties in terms of the standard analysis of Verb complementation are to be derived from underlying VP's, leads immediately to an illuminating analysis of the relation between sentences with the so-called 'progressive' aspect and sentences which take 'progressive' complements. This result provides strong support for the theory of subcategorization we have been developing. We must now examine in more detail the VP-complements which take the -Ø and -EN endings, and in particular with the relationship between these two types of complements. It will be shown that one immediate result of our analysis is a more adequate account of the Passive construction in English, and one which also explains the relation between the Passive construction and various pseudo-Passives involving the Verbs have and get.

Let us begin by considering the following pairs of sentences:

(223) a. I saw the workmen demolish the building.

b. I saw the building demolished by the workmen.

(224) a. I heard Bill open the door.

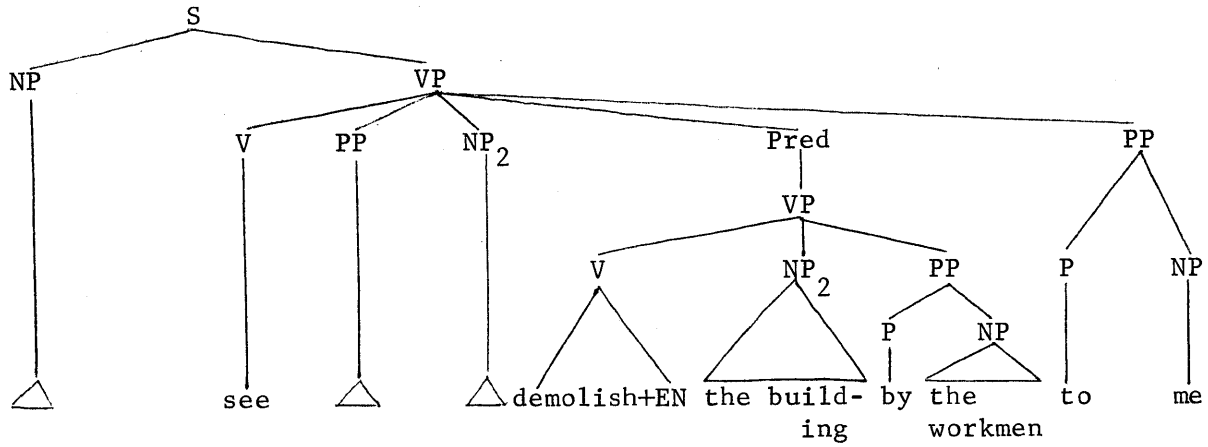
b. I heard the door opened by Bill.

(225) a. I had Bill steal the book for me.

b. I had the book stolen for me by Bill.

We observe at once that the VP's in the b.-sentences are, in the obvious sense, the "passive" forms of the VP's in the a.-sentences. This suggests that (223) a., for example, should be derived from the following sort of structure:

(226)

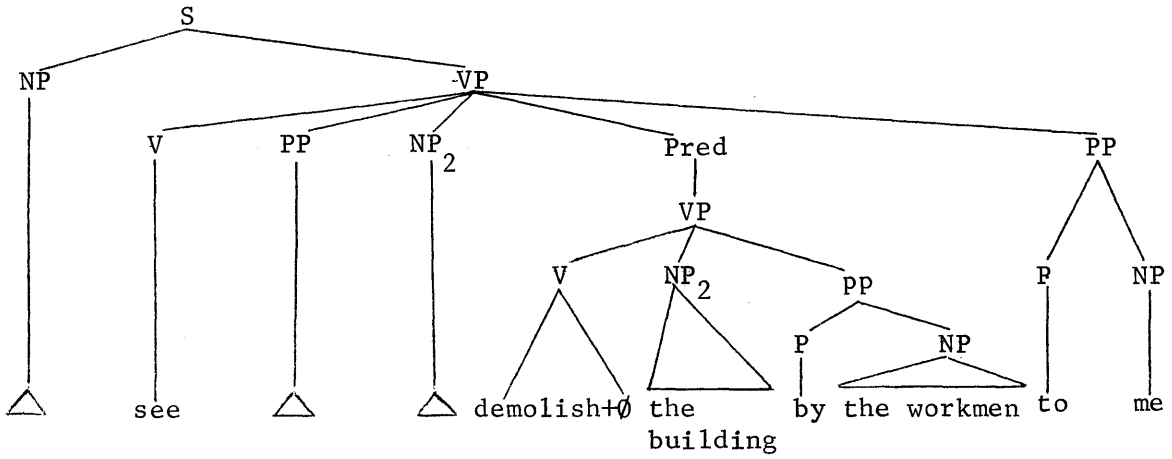


Now notice that in order to get the correct surface structure for sentence (223) b., it is only necessary to make the application of Object-Preposing dependent on the presence of the EN morpheme on the Verb of the Predicate-VP. Then we will have the following derivation: On the main VP-cycle, after checking the subcategorization conditions for the Verb

demolish, Object-Preposing will apply obligatorily, moving the NP the building into the empty NP_2 in the matrix VP. On the next cycle, which is the S-cycle, the usual rules of To-Dative and Object-Preposing will apply, moving the NP me into its surface position as the Subject of the Verb see.

Now consider the structure which must be assigned to sentence (223) a.:

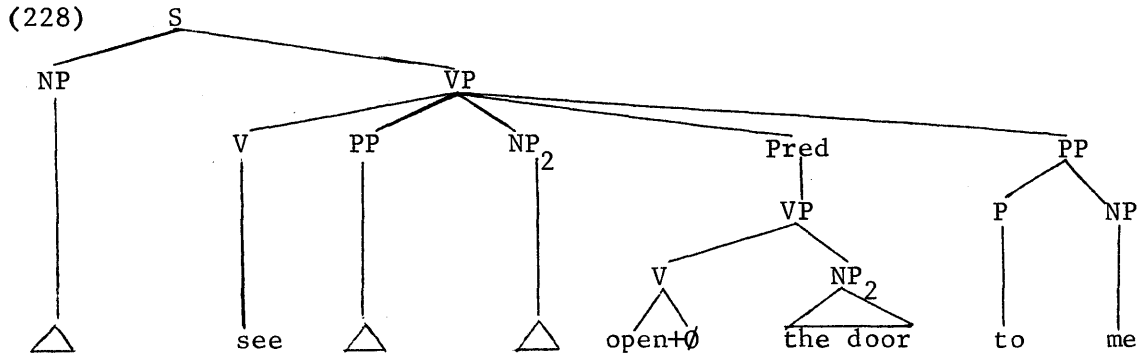
(227)



Comparing (227) with (226), we see that the grammatical relations in the two structures are identical. The only difference between the two structures is that the former has the Verbal affix -Ø, whereas the latter has the affix -EN. Furthermore, since the Verb in (227) does not have the marker -EN, Object-Preposing is inapplicable. Rather, Agent-Preposing must apply instead, on the matrix VP-cycle, followed by To-Dative and Object-Preposing on the S-cycle, resulting in the correct surface structure I saw the workmen demolish the building. Notice, incidentally, that this analysis also automatically accounts for the difference between

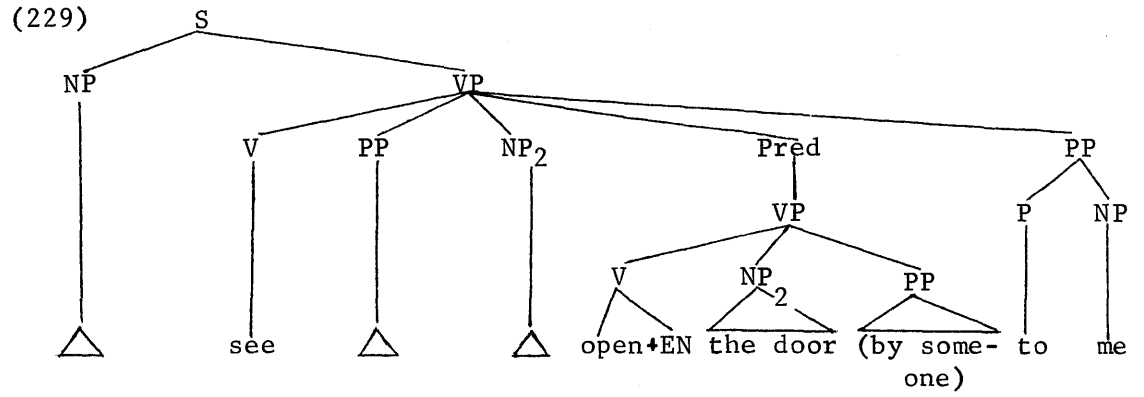
I saw the door open and I saw the door opened (by someone). The former would be derived from the following structure:

(228)



Here, on the matrix VP-cycle, Object-Preposing will automatically move the NP the door into the empty NP_2 in the matrix VP, followed as usual by To-Dative and Object-Preposing on the S-cycle. The latter sentence, on the other hand would be derived from a structure containing a VP-complement with the affix -EN:

(229)

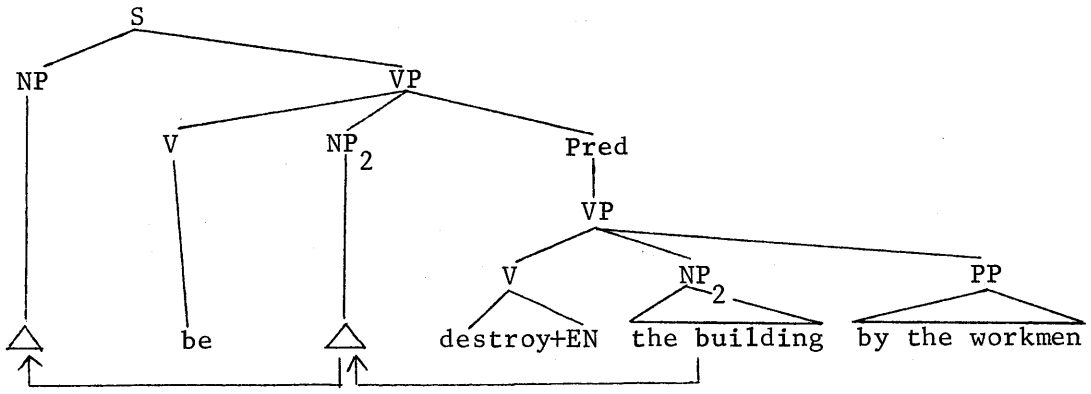


Notice that Object-Preposing is not applicable here, since it only applies when the Verb has the Ø affix. However, Object-Preposing, which, as was noted in Chapter II (cf. P.), applies either to NP_1 or NP_2, as long as the -EN affix is present, can apply, thus allowing us to derive the

correct surface form I saw the door opened (by someone).

The relevance of these observations to the so-called "passive" construction in English is obvious. We have already noted in our discussion of the progressive that the Verb be must be subcategorized to take Predicate-VP complements. If we make the further assumption that be takes -EN VP-complements, as well as -ing VP-complements, then this will immediately allow structures of the following sort to be generated in the base:

(230)



What transformations can apply to such a structure? Clearly, on the matrix VP-cycle, Object-Preposing can apply, moving the NP the building into the empty NP_1 in the matrix VP. Then, on the S-cycle, Object-Preposing will be applicable and will therefore move the building again, this time into the Subject position. The result of these operations is of course the "passive" sentence the building was destroyed by the workmen.

We see, then, that just as the so-called Progressive Aspect in English can be regarded, in our framework, as a special instance of a Predicate-VP complement construction with the verbal affix -ing, in which the main Verb happens to be be, so the passive forms of English can be

explained as special instances of the Predicate-VP -EN construction in which, likewise, the main Verb is be. Notice that we can now account for the relation between the Passive construction and various constructions, often referred to in the literature as "pseudo-Passives". Consider, for example, sentences such as the following, which contain the main Verb get:

(231) a. John got examined by the doctor.

b. The mail didn't get delivered today.

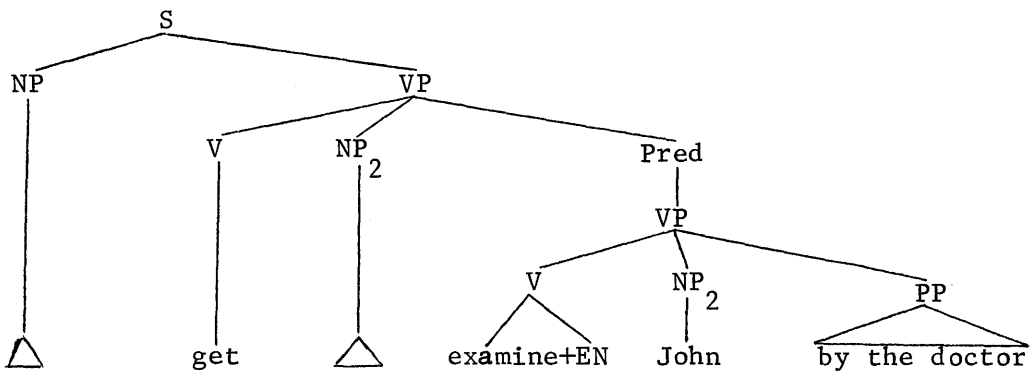
c. John got hit by a rock.

d. Bill got offered a job at IBM.

The intuitive similarity between sentences of this kind and the normal Passive construction with be has often been remarked upon by grammarians. The standard theory, of course, derives the two types of sentence from entirely different sources, in one case by means of the Passive auxiliary (be+EN), and in the other case from a sentential complement to the Verb get. Various attempts have been made to remedy the situation, the most common being to derive the Passive itself from a structure containing a sentential complement to the Verb be (see, for example, Hasegawa (1968)). None of these analyses, however, have been fully convincing, mainly because there are simply no surface forms to support such a derivation. The analysis proposed here, on the other hand, does not suffer from this defect, because it is not claimed that the Passive is similar in deep structure to sentential complements, but rather that its source is parallel to that which underlies other Predicate-VP constructions. In particular, notice that our analysis escapes Chomsky's (1970) objection to Hasegawa's (1968) analysis of the Passive. Chomsky observed that certain NP's which can only appear in the Object position in deep structure are nevertheless

subject to Passivization, e.g. It never occurred to me that offense would be taken to my remarks, unfair advantage was taken of John, recourse was taken to illegal methods, but *offense makes me mad, *unfair advantage is not good, *recourse was to illegal methods, etc. Since in Hasegawa's analysis the Subject of the Passive originates in a matrix sentence containing a sentential complement to the Verb be, there must be an ad-hoc statement to the effect that these Nouns may appear in Subject position just in case they appear in the Passive construction, but not otherwise. This is no problem in our analysis, however, since the Subject of be is an empty NP in deep structure, and is filled in by means of movement rules, in the manner described above. Thus a sentence such as (231) a. can be derived from the following sort of base structure:

(232)



Observe that (232) is identical to that which underlies the regular Passive construction (cf. (230)), the only difference being that the regular Passive has the main Verb be, whereas the "pseudo-Passive" has the main Verb get. The fact that our theory leads naturally to a convincing account of the Passive construction in English, and at the same time explains the syntactic relation between the Passive and the pseudo-Passive construction, provides strong support for the general theoretical

claims of this work.

It is interesting to note that get differs from be in that alongside of the pseudo-Passive forms such as those in (231), we also find transitive constructions such as the following:

(233) a. We got John examined by the doctor.

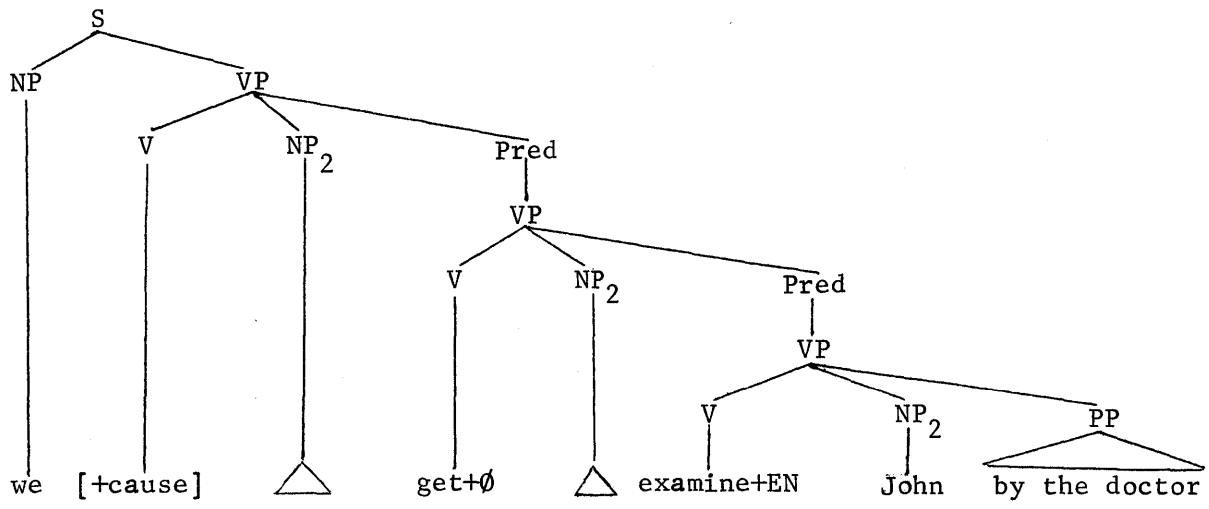
b. The postman didn't get the mail delivered today.

c. I got John hit by a rock.

d. His old employer got Bill offered a job by IBM.

This fact was noted briefly on p. III- , where it was pointed out that this fact fits in perfectly with the analysis of get in the preceeding chapter. In fact, the examples in (233) are clearly the causative forms of the pseudo-Passive sentences in (231), and are thus precisely parallel to pairs of sentences such as the metal got hot, John got the metal hot; the book got to Bill in time for the exam, John got the book to Bill in time for the exam; and so on. Example (233) a., then, would derive ultimately from a base structure of the following form:

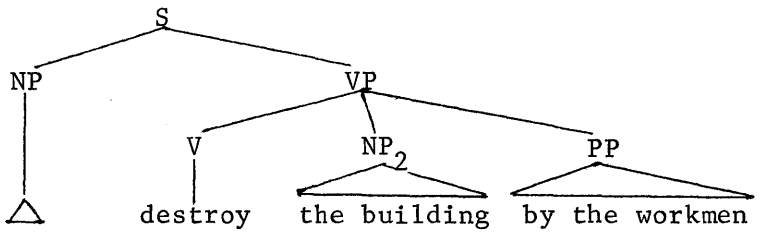
(234)



Notice that it is impossible to argue that these sentences are derived from underlying for-to complements by means of a rule optionally deleting the string to be, because the putative sources are quite different in meaning. Thus the sentence we got John to be examined by the doctor is quite different from (233) a., and likewise John got to be examined by the doctor is different in meaning from (231) a. (We shall return to these Infinitive constructions in the next Chapter.) Cf. also p. III-

I conclude, then, that there is strong support for the view that the Passive in English, rather than being derived transformationally from underlying Active forms by means of a rule which permutes Subject and Object and at the same time inserts the verbal auxiliary (be+EN), is instead to be derived from a base structure containing the main Verb be, plus a "passive" VP-complement. Notice, however, that our theory does not give up the claim that the underlying grammatical relations in Passives and Actives are the same. On the contrary, if we compare the structure (230) which underlies the Passive sentence the building was destroyed by the workmen with that which underlies the Active sentence the workmen destroyed the building:

(235)



we see that the grammatical relation of the NP's the building and the workmen to the Verb destroy is exactly the same in both cases, namely, Direct Object and Agent, respectively. Thus the same subcategorization

feature applies to the Verb destroy and its past participial form destroy+EN. Since it is the subcategorization features, in our theory, which are crucial in determining the underlying grammatical relations relevant to semantic interpretation, our analysis says, in effect, that even though Passives and Actives in English have rather different syntactic structures, nevertheless the "deep" relationship of the relevant NP's to the Verb is the same in both cases.

5.3.1. Sentences with Both Progressive and Passive VP-Complements

Since both the Passive and the Progressive, in our analysis, are derived from underlying VP-complements, we would naturally expect to find sentences containing both types of complement. This expectation is in fact born out by the facts. Consider, for example, sentences such as the following:

(236) a. I saw the building being demolished by the workmen.

b. I heard the door being opened by Bill.

c. They caught him being examined by the doctor.

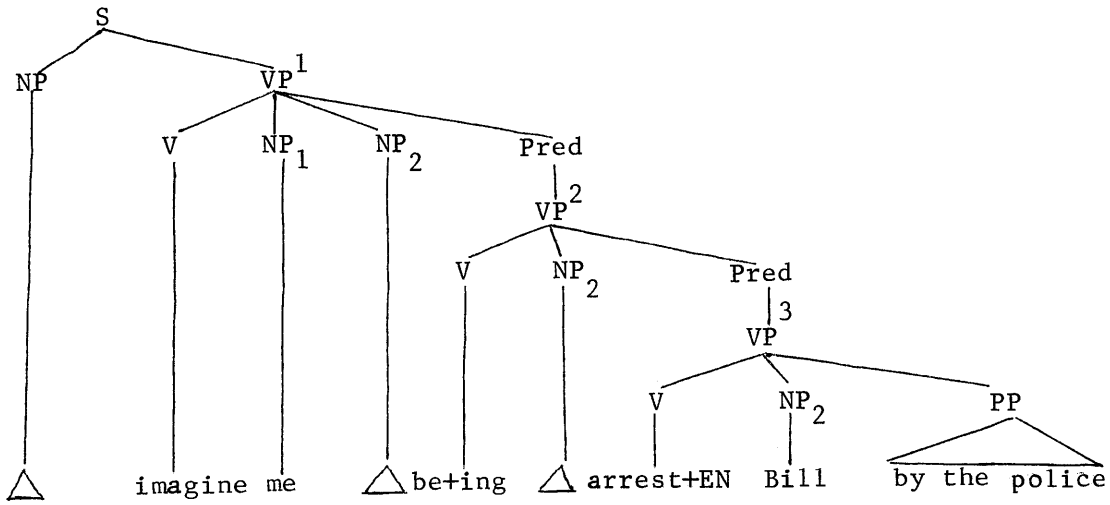
d. We watched the cyclotron being operated by the technicians.

e. I imagined Bill being arrested (by the police)

f. I remember the pigeons being fed by t e visitors.

Clearly, sentences of this sort must be derived from base structures such as the following:

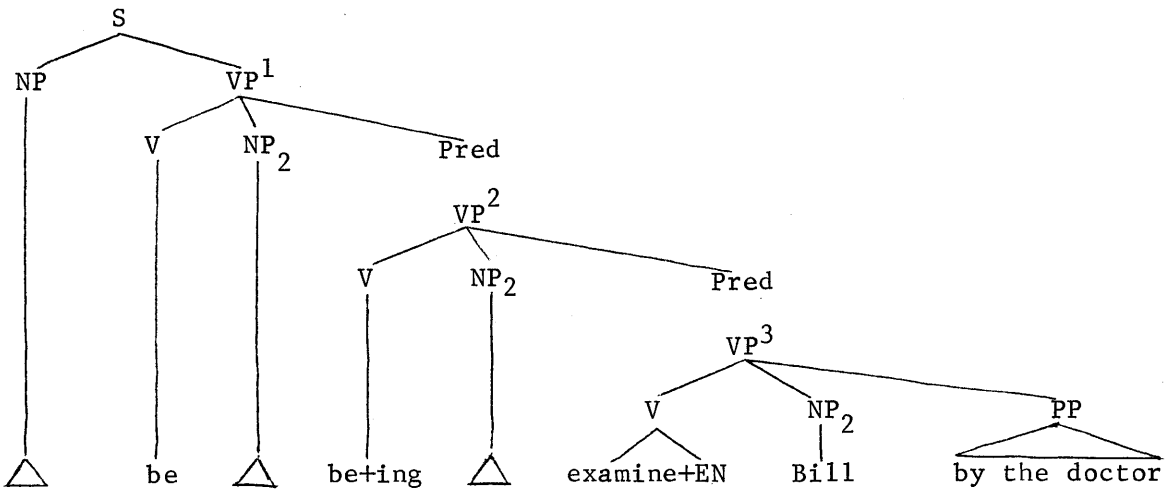
(237)



The derivation would proceed as follows: On the VP^2-cycle, after applying the subcategorization feature for the Verb arrest, Object-Preposing will apply, obligatorily, moving the NP Bill into the empty NP_1 position in VP^2. We then move up to t e VP^1-cycle, check the subcategorization condition for be, which is met, after which Object-Preposing will apply and move Bill again, this time into the empty NP_2 position in VP^1. Finally, on the last cycle, namely the S-cycle, after checking the subcategorization condition for the Verb imagine, Object Preposing will again apply, moving the NP me into the Subject position. The result is the correct surface structure I imagined Bill being arrested by the police.

Now consider a Passive Progressive sentence such as he is being examined by the doctor. Clearly, the base structure for such sentences must be exactly the same as (237), except that the main Verb in these cases is be rather than imagine, see, hear, etc. Thus we would have the following structure for the example just cited:

(238)



The derivation is straightforward: Object-Preposing on the VP^2-cycle, followed by Object-Preposing on the VP^1-cycle, and again on the S-cycle. Our analysis thus accounts for sentences with both the Passive and the Progressive constructions without the addition of any new rules or special assumptions. Notice, incidentally, that for Verbs which do not take -ing complements, we do not find any sentences of the type in (236). Thus the following are ungrammatical:

(239) a. *I got John being examined by the doctor.

b. *John got being examined by the doctor.

c. *We made John being examined by the doctor.

d. *They let the building being destroyed by the workmen.

In particular, the fact that get never takes an -ing complement explains the otherwise mysterious fact that corresponding to regular Passive Progressive constructions, we do not find a Progressive pseudo-Passive with get. On the other hand, pseudo-Passives with have, which we shall discuss in detail shortly, can in general take -ing complements, which

explains why we have both I had John stirring the soup and, corresponding to regular Passive Progressives, I had the soup being stirred by John.

There are, however, a number of obvious restrictions which must be explained. Why, for example, is it never possible to have a Progressive VP embedded beneath a Passive-VP? For Verbs which take -EN complements, e.g. get, see, have, and be, there would seem to be no obvious reason why we could not form sentences such as the following:

(240) a. *I got John been examining by the doctor.

b. *I saw the building been destroying by the workmen.

c. *I had the soup been stirring by John.

d. *The door is been opening by Bill.

Observe, however, that it is simply a fact about the Verb be that its Past participial form can never appear in an -EN complement. Thus VP's with Predicate-AP's, -NP's, or PP's can never appear in -EN complements:

(241) a. *I got the soup been hot.

b. *I saw John been in the store.

d. *I had Bill been quiet. (cf. I had Bill be quiet.)

*Bill was been an idiot.

Furthermore, there are other Verbs which are restricted in a similar manner. Thus Verbs such as weigh, cost, fit, have, seem, etc. may never appear in -EN complements:

(242) a. *10 lbs is weighed by the book.

b. *$10 got cost by the chair.

c. *I had John fitted by the suit.

d. *Fun was being had by the children. (cf. the children were having fun)

e. *We saw Mary married by John. (cf. We saw John marry Mary.)

f. *We have never had our soup tasted sour to a customer before. (cf. We have never had our soup taste sour to a customer before.)

Since this restriction must be stated in any case for Verbs of this class, we can simply include be in this category, from which it follows automatically that the sentences in (240) will be marked as ungrammatical, since all of them have the Verb be occurring in an -EN construction. At the same time, this restriction will prevent a Passive-VP from being embedded in another Passive-VP, thus excluding ungrammatical sentences such as the following:

(243) a. *I got John been examined by the doctor.

b. *I saw the building been destroyed by the workmen.

c. *I had the soup been stirred by John.

d. *The door is been opened by John.

Finally, we must explain why a Progressive-VP cannot be embedded beneath another Progressive-VP, as shown by the following examples:

(244) a. *I saw him being walking toward the door.

b. *We heard them being talking together.

c. *I imagined him being feeding the pigeons.

d. *John had Bill being stirring the soup.

e. *The doctor is being examining John.

Since each of the Verbs in (244) can take an -ing complement, and since there is no restriction on be occurring in -ing complements, and finally since be itself can take an -ing complement, it would appear as if there

was no way of preventing sentences such as the ones in (244). Once again, however, there appears to be a more general restriction which excludes these examples. Thus it has been noted by Emonds (1970) that there is a general prohibition against the occurrence of the sequence be+ing-V+ing in surface structure. Emonds cites the following examples:

(245) a. *John regretted being eating when Mary arrived.

b. *After being singing for so long, I'd like to eat.

c. *The people being telling the story are tired.

d. *John, being studying French, would be the person to ask.

The same point is also made in Chomsky (1970). I conclude, therefore, that each of these restrictions on the ordering of -ing and -EN complements can be explained in terms of restrictions which must be stated in the grammar in any case. Notice, incidentally, that we have as yet said nothing about the place of the Perfective marker (have+EN). Since there is strong evidence that the Progressive and Passive constructions are derived from underlying Verb+VP constructions, it would obviously be tempting to analyze the Perfective in the same way, as has been suggested, for example, by Emonds (1970). Observing that the perfective element have requires the main Verb to take the affix -EN, we might then argue that have is simply a main Verb which requires a Past participial VP-complement, similar to be, see, etc. Unfortunately, this proposal immediately runs into difficulties, for one thing, the -EN which occurs with Perfective have differs from all other -EN complements in that it does not trigger Object-Preposing, so that we have, e.g. John has punched Bill, but not *Bill has punched by John. Nevertheless such a

proposal would certainly be possible within our framework. However, I shall defer further discussion of Perfective marker have until after the discussion of There-Insertion, which, as it turns out, provides crucial evidence for deciding between the various analyses which are possible at this point.

5.3.1.1. Agent-Preposing and Subject-Postposing

We must now consider more carefully the manner in which the rule of Agent-Preposing and its inverse, Subject-Postposing, are to be stated. As has already been noted in the previous chapter (cf. footnote 12, Section 4.4.), it is necessary, given a subcategorization feature of the following form for a Verb such as hit:

(246) hit: NP ___ NP_2 by NP

to prevent, on the one hand, sentences of the form:

(247) *John hit by Bill.

and to prevent, on the other hand, sentences such as the following:

(248) *Bill was hit John.

Similarly, for Verbs which take deep Subject-NP's, we must prevent the grammar from generating ungrammatical sentences such as the following:

(249) a. *Bill hit by a rock.

b. *A rock was hit Bill.

In standard analyses, the Passive Auxiliary (be+EN) is inserted by the Passive rule itself. However, in our framework that solution cannot be made to work without imposing ad-hoc conditions on at least one of the component of the Passive. Suppose, for example, that the Auxiliary is inserted by Object-Preposing. Then, in order to explain why it is

absent in Intransitive sentences such as the ice melted (which are derived through the application of Object-Preposing), we must specify that it is only inserted if the sentence contains a by-phrase. Worse yet, we will be unable to explain at all the difference between Intransitive sentences such as the one above and "Stative Passive" forms such as the ice was melted (which have no by-phrase in deep structure), except by means of an ad-hoc feature.

Suppose, on the other hand, that we tried to insert the Passive Auxiliary along with the other component of the Passive. This solution would work all right in those cases where the Passive by-phrase derives from a deep Subject-NP by means of Subject-Postposing. But if the by-phrase derives from a deep Agent-phrase, then the only rule which applies in the derivation of a Passive sentence is Object-Preposing, and hence the Passive Auxiliary will never be inserted.

The existence of these difficulties strongly suggests that the Passive Auxiliary is not transformationally inserted, but is present in base forms, and in face, we have just seen in the preceeding sections that there is considerable motivation for deriving Passive sentences from base structures containing be, as a main Verb, plus a Predicate-VP complement whose head Verb is marked with the Past Participial morpheme -EN.

Furthermore, the assumption that the elements of the Passive Auxiliary are present in base forms immediately simplifies the problem of accounting for the ungrammaticality of strings such as those in (247)-(249). The facts are essentially as follows:

(250) A. If a base structure contains a by-phrase and there is no -EN marker on the Verb, then Agent-Preposing is obligatory.

B. If a base structure contains a Subject-NP and an empty by-phrase, and if the Verb has the marker -EN, then Subject-Postposing must apply obligatorily.

Note, furthermore, that Agent-Preposing cannot apply, if the Verb has the marker -EN, and that Subject-Postposing cannot apply unless the Verb has the marker -EN.

Suppose that we now introduce the following general convention governing the statement of "two-way" structure-preserving rules:

(251) Given a structure-preserving rule of the following form:

$X - \underline{A} - Y - c_1 - W - A - Z \Longleftrightarrow X - A - Y - c_2 - W - \underline{A} - Z$

where X, Y, W, and Z are variables; A is some constituent; and c_1 and c_2 are specified items, i.e. specified words or morphemes, this rule must be interpreted as an abbreviation for two rules of the following form:

a. $X - \underline{A} - Y - c_1 - W - A - Z \Longrightarrow X - A - Y - c_1 - W - \underline{A} - Z$

b. $X - A - Y - c_2 - W - \underline{A} - Z \Longrightarrow X - \underline{A} - Y - c_2 - W - A - Z$

This convention allows us, in effect, to collapse two rules which operate in different directions, even though their structural descriptions may differ slightly. In particular, they may be collapsed if their SD's contain different specified items.

Given this convention, we can now write the rule of Agent-Preposing, together with its inverse, Subject-Postposing, as a single "two-way" rule of the following form:

(252) Agent-Preposing/Subject-Postposing: (Obligatory)

$$X\text{-}\ \underline{NP}\ \text{-}\ \underline{V}\text{+EN}\ \text{-}\ Y\ \text{-}\ \text{by+NP}\ \text{-}\ Z \Longleftrightarrow X\ \text{-}\ NP\ \text{-}\ \underline{V}\text{+}\emptyset\ \text{-}\ Y\ \text{-}\ \text{by+}\underline{NP}\ \text{-}\ Z$$

Rule (252) incorporates into a single rule precisely the information contained in statements (250) A. and B. One half of the rule (Subject-Postposing) obligatorily moves the Subject-NP into an empty by-phrase in the presence of the Past Participial marker -EN, while the other half (Agent-Preposing) obligatorily moves the NP in an Agent-phrase into an empty Subject-NP, just in case there is no morphological marker on the Verb.

Let us see how Rule (252) operates to generate just the right surface forms for Active and Passive sentences in English. First of all, given a base form such as the following:

(253) NP - hit+$\emptyset$ - John - by+Bill

the ungrammatical sentence (247) is prevented, because Agent-Preposing is obligatory, when the Verb does not have the marker -EN. Hence, if Object-Preposing were to apply first to (253), the obligatory rule of Agent-Preposing would be unable to apply, and the derivation would block. If, on the other hand, Agent-Preposing applies first, then we will get the grammatical sentence Bill hit John. Consider next an underlying string of the following form:

(254) NP - be - NP - $[_{VP}\underline{V}\text{+EN}$ - John - by+Bill$]$

We see immediately that since Agent-Preposing can only apply when the Verb has no -EN marker, the only way to get the empty NP-nodes above the Predicate-VP filled in is by applying Object-Preposing. Thus we automatically generate the Passive sentence John was hit by Bill, and

exclude (248).

Suppose, next, that we have an underlying string such as the following:

(255) a rock - hit+Ø - Bill - (by+NP)

Subject-Postposing only applies in the presence of the marker -EN, Hence, if the empty by-phrase indicated in (255) is present, there will be no way for it to get filled, and the derivation will be reflected by the general convention on the occurrence of empty nodes. Thus it will be impossible to generate sentences such as (249) a. If, on the other hand, there is no empty by-phrase in (255), then no rules are applicable, and we will derive the grammatical sentence a rock hit Bill. Finally, consider a base string of the form:

(256) NP - be - a rock - $[_{VP}$hit+EN - Bill - by+NP]

Here, Subject-Postposing must apply obligatorily, in the presence of the -EN marker. This will be followed by Object-Preposing around the Predicate-Verb hit+EN, and by Object-Preposing around the matrix Verb be, yielding the surface form Bill was hit by a rock. At the same time strings of the form (249) b. are excluded, because of the obligatory application of Subject-Postposing.

Consider what would happen, however, if we had a base string such as the following:

(257) NP - be - a rock - $[_{VP}$hit+Ø - Bill]

or, alternatively:

(258) NP - be - NP - $[_{VP}$hit+Ø - Bill - by+John]

In the first case, we should be able to derive the (ungrammatical)

sentence a rock be hit Bill, while in the second, we should be able to get *John be hit Bill, through the obligatory application of Agent-Preposing out of the Predicate-VP, followed by Object-Preposing around be. However, we have already pointed out that which morphological marker the Verb in the Predicate-VP may take is determined by the Verb beneath which it is embedded. Furthermore, be happens to be a Verb which allows the markers -ing and -EN, but not the zero-morpheme -$\emptyset$. Hence, structures such as (257) and (258) are excluded. If, on the other hand, we take a Verb which does allow the Predicate-Verb to take the -$\emptyset$ affix, then Agent-Preposing will apply correctly in the Predicate-VP. Thus consider a base structure of the following form:

(259) NP - see - PP - NP_2 - $[_{VP}$hit+$\emptyset$ - Bill - by+John] - to me

Since the Predicate-Verb has the -$\emptyset$ affix, Agent-Preposing will apply obligatorily, and move the NP John into the empty NP_2-node to the right of the main Verb see. We next apply Dative Movement, Preposition Deletion, and Object-Preposing, and the result is the grammatical surface form I saw John hit Bill.

Likewise, suppose that we generate the following base form:

(260) NP - see - PP - NP_2 - [$_{VP}$hit+EN - Bill - by John] - to me

as is possible, since see allows -EN complements, as well as -$\emptyset$ complements. Here, Agent-Preposing is inapplicable, since the Predicate-Verb has the marker -EN. Hence, the only way to get the empty NP_2-node filled in is to apply Object-Preposing, which results eventually in the surface form I saw Bill hit by John. Finally, consider the base form:

(261) NP - be - PP - a rock - [$_{VP}$hit+EN - Bill - by NP] - to me

Here, Subject-Postposing must apply obligatorily, followed by Object-

Preposing, and other rules which are familiar, the result being the sentence I saw Bill hit by a rock.

We see, then, that the formulation of Agent-Preposing and its inverse proposed above gives exactly the right results, not only in the special case of "Active" and "Passive" sentences with be, but more generally in all cases involving Predicate-VP complementation. Furthermore, notice that there is now no need to place special conditions of any sort on the rule of Object-Preposing. Hence, it may apply freely, whenever its structural description is met, regardless of whether or not the Verb has the "Passive" marker -EN. In particular, of course, it will apply in the derivation of Intransitive sentences such as the ice melted, the crowd is now dispersed, and so on.

5.3.1.2. The Interpretation of the Empty-Node Notation

Before continuing with our discussion of the VP-complement system in English, it is necessary to further refine the interpretation which is to be given to the unfilled-node notation in the theory of grammar. Implicit in all of the analyses presented so far has been the assumption that the NP which serves as the 'Subject' of an embedded Predicate-VP is also subcategorized as obligatorily filled by the matrix Verb. Thus in our discussion of the Verb see in Section 5.2., it was assumed that see had the subcategorization feature:

(262) see: NP ___ PP NP_2 VP to NP

The feature (262) claims, in effect, according to the interpretation given to the filled node notation that was proposed earlier, that the first NP to fill the NP_2 position in the complement of see has the

grammatical relation 'Direct Object' to this Verb. However, for many of the Verbs which take Predicate-VP complements, it is clear that the NP which eventually comes to occupy the Direct or Indirect Object position in the matrix VP has no grammatical relation to the main Verb. Consider, for example, the following pair of sentences:

(263) a. We watched the workmen painting the house.

b. We watched the house being painted by the workmen.

Notice that (263) a. and b. are synonymous. In contrast, compare the following two sentences; which are clearly non-synonymous:

(264) a. I made the doctor examine John.

b. I made John be examined by the doctor.

This difference between watch and make can be explained under the assumption that there is a grammatical relation between make and its Object, but not between watch and its Object. The fact that make has a grammatical relation to its Object is already explainable under the conventions governing the application of filled nodes, as long as we assume the following subcategorization feature for make:

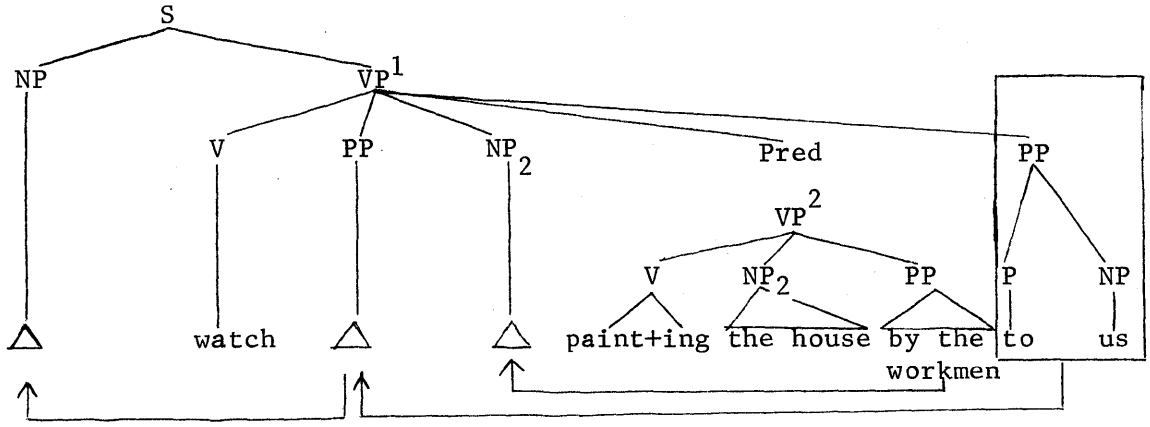
(265) make: NP ___ NP_2 VP by NP

However, what about watch? Obviously, we must assume that this Verb, and others like it, are subcategorized in the following manner:

(266) watch: NP ___ PP NP_2 VP to NP

Sentence (263) a. will then be derived from a base structure of roughly the following form:

(267)



Let us see how the derivation would proceed. On the VP^1-cycle, after checking the subcategorization conditions for paint, the rule of Agent-Preposing would apply, moving the NP the workmen into the empty NP_2 position in VP^1. We then move up to the S-cycle, at which point we must first check the subcategorization condition for the Verb watch. However, (266) requires that watch have an empty Direct Object-NP, and this condition is not met, since NP_2 has been filled in by Agent-Preposing on the previous VP-cycle. It would therefore appear as if the derivation should block, thus making it impossible to derive the sentence we watched the workmen painting the house.

The problem is that we have failed to re-interpret the meaning of the empty-node notation in such a way that it is consistent with the revised definition (214) of the filled-node notation that we proposed earlier. In fact, as was pointed out in Section 5.1., the meaning of the underlining of a constituent in a subcategorization feature is essentially as follows: Given a node X which has some grammatical

relation GR to the Verb by which it is subcategorized, such a node has the grammatical relation GR to that Verb just in case it is underlined. This immediately suggests that if a node is not underlined in a subcategorization feature, then we must interpret this notation as meaning that it does not have the grammatical relation in question to the Verb. Under this revised definition of the empty-node notation, it follows that whether or not the NP_2 node in (267) is filled makes no difference, when we check the subcategorization condition for watch. Rather, the subcategorization condition (266) simply says that the lexical material occupying the NP_2 node, if there is any, does not have the grammatical relation "Direct Object" to the Verb. The lexical material which comes to fill the NP_2 node in the case of a Verb such as make, on the other hand, does have the grammatical relation "Direct Object" to the Verb. Under this revised definition of the meaning of the underline notation, we immediately get the right results in the case of (267), since the subcategorization condition for watch no longer conflicts with the fact that NP_2 is filled at the point at which (266) is applied.

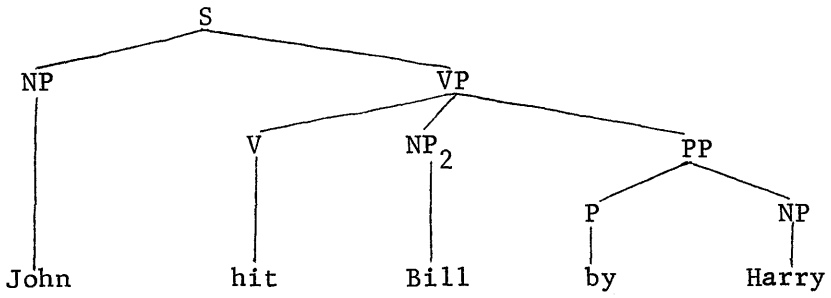
Notice, however, that this re-interpretation of the underline notation immediately raises another difficulty. For now that the notation no longer is interpreted as specifying whether or not a node is to be filled or unfilled, there is apparently nothing to prevent any of the empty nodes in (267), for example, from being filled, and thus preventing any of the rules of Agent-Preposing, To-Dative, and Object-Preposing from applying, as well as allowing such absurd sentences as *Bill watched John Harry painting the house by the workmen to us.

In order to clarify this last point, consider a sentence such as John hit Bill, which has the following subcategorization condition:

(268) hit: NP ___ NP_2 by NP

Originally, we interpreted (268) as meaning that the Verb hit could appear in a structure containing a Subject-NP, a Direct Object-NP, and an Agent-NP, and furthermore that the first of these had to be unfilled and the last two filled. Now, however, we have redefined the underline notation in such a way that it means simply that the lexical material in the Object and Agent positions, if there is any, must have the relevant grammatical relation to the Verb hit, while the lexical material in the Subject position, if there is any, does not have the Subject relation to the Verb. The question is, then, what is to prevent us, under this interpretation of the underline notation, from inserting hit in a base structure of the following kind:

(269)



Not only would Agent-Preposing be blocked in such a structure, but furthermore it would apparently allow the ungrammatical sentence *John hit Bill by Harry.

There is, however, a simple solution to this problem, once we observe the following fact, namely, that it is never necessary to block

an obligatory structure-preserving rule, in order to prevent an ungrammatical sentence, by having the position to which the rule should move some node filled prior to the application of the rule. In other words, imagine the following situation: We have a structure-preserving rule which moves some node X to a position Y of the same category. Now suppose that in order to prevent an ungrammatical sentence from being generated, we had to specify in the subcategorization frame for some Verb that the position Y was obligatorily filled, thus blocking the application of the rule in question. (I am assuming, of course, that we are operating with our original interpretation of the underline notation, not the revised one.) It is this sort of situation which, I claim, never arises. Given that it is never necessary to use filled nodes for the purpose of blocking the application of an obligatory structure-preserving rule, we are free to impose the following condition on the application of obligatory structure-preserving transformations:

(270) Obligatory structure-preserving movement rules are defined by the following condition: if the structural description of a rule is met, the rule must apply; if it cannot apply (because the node to which the rule moves some constituent is already filled), then the derivation blocks.

If condition (270) is correct, we can immediately deal with the apparent difficulties caused by our revised interpretation of the underline notation. Consider, for example, the possible base structure (269). Clearly, the structural description for Agent-Preposing is met by (269). However, the rule cannot apply, because the Subject-position is already filled. It

follows from condition (270) that the derivation must block. On the other hand, suppose that the Subject and indeed would have to apply, by condition (270), yielding the sentence Harry hit Bill.

Now let us reconsider the base structure (267) in the light of condition (270). We see immediately that if any of the empty NP-nodes in (267) happened to be filled, then some structure-preserving rule would be unable to apply, so that the derivation would block. Thus if the NP_2 node in VP^1 were filled, then the rule of Agent-Preposing, whose structural description is met on the VP^1-cycle, would be unable to apply, and therefore by condition (270) the derivation would block. If the empty PP-node were filled, on the other hand, then the rule of To-Dative Movement would be unable to apply, and again the derivation would block. Finally, suppose that the Subject-NP were filled. In that case, the rule of Object-Preposing, whose structural description is met on the S-cycle, would be unable to apply, again blocking the derivation by condition (270). Therefore, the only way that (267) can pass through the transformational component without blocking is for all three of the nodes just mentioned to be empty, in which case the rules that we have proposed will yield the (grammatical) sentence we watched the workmen painting the house. Furthermore, the subcategorization feature (266), which also serves as part of the input to the semantic component, will correctly specify the NP the workmen as having no grammatical relation to the Verb watch, while at the same time specifying that the NP us does have a grammatical relation to the Verb, namely, Object of the Preposition to.

There is another class of Verbs which take VP-complements, which is

is relevant to this discussion. Perlmutter (1970) has amassed a considerable amount of evidence showing that Verbs of temporal aspect, such as begin, start, continue, etc. are ambiguous, in that their surface Subjects may or may not have a deep structure grammatical relation to the Verb. Perlmutter's examples all involve Infinitival complements. e.g. John began to work. However, most of his arguments apply equally well to -ing complements. Furthermore, as we shall see in the next chapter, there is evidence that some Infinitives are derived from VP's, rather than from S's, so that ultimately the same arguments will apply to the Infinitival complements discussed by Perlmutter. At any rate, let us consider how the differences between 'transitive' and 'intransitive' begin can be accounted for in our framework.

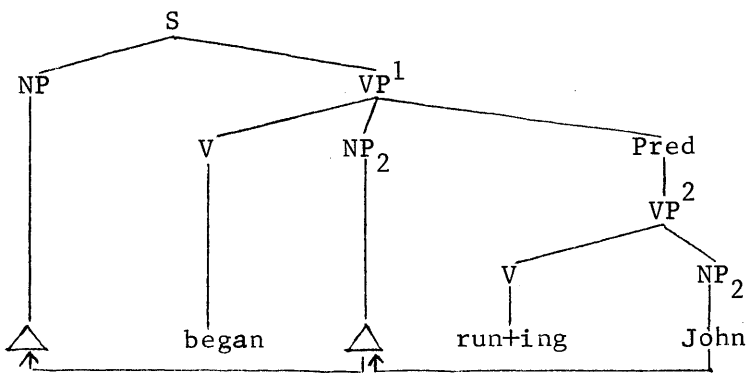
What I would like to claim is that Verbs such as begin, start, stop, etc. simply require Direct Object in deep structure, and that the difference noted by Perlmutter are to be accounted for by the fact that the Direct Object-NP can either be underlined or not in the subcategorization frame for these Verbs. Thus begin would have the following two subcategorization features:

(271) begin: (a) NP ___ $\underline{NP_2}$ VP

(b) NP ___ NP_2 VP

(271) (a) would then account for the case in which the surface Subject has a grammatical relation to the main Verb, while (271) (b) would account for the 'intransitive' begin, in which the derived Subject is not interpreted as having a grammatical relation to the Verb. Thus a sentence such as John began running, for example, would derive from a structure such as the following:

(272)



The derivation would proceed as follows: On the VP^1-cycle, Object-Preposing would apply, moving the NP John into the empty NP_2 in the matrix VP^1. We would then go on to the S-cycle, first applying the subcategorization feature (271) (a), for the Verb begin. The subcategorization feature specifies that the Direct Object-NP, which in this case is John, has the grammatical relation "Direct Object-of" to the Verb begin, as is required. We then apply the syntactic transformations, and since Object-Preposing is applicable, the NP John is moved into the correct surface position as Subject of begin. Consider next a sentence such as the machine began running, or it began raining, which are instances of the 'intransitive' begin. These would be derived from a base structure identical to (272), the only difference being that we apply the subcategorization feature (271) (b) on the S-cycle, thus insuring that the NP the machine (or it, in the second example) is not interpreting as having the Direct Object relation to the Verb begin.

There is some evidence that this is the correct analysis. Notice for one thing that several of these Verbs have Transitive/Intransitive pairs such as we have encountered before (cf. also p. , Section 5.1):

(273) a. They kept the men working until midnight.

b. The men kept working until midnight.

(274) a. We started him talking about Africa.

b. He started talking about Africa.

(275) a. We got the students talking about their courses.

b. The students got (to) talking about their courses.

As was noted earlier, the a.-sentences in (273)-(275) can be accounted for in terms of the causative analysis proposed in Chapter II, so that they kept the men working until midnight, for example, would derive from the structure: [they - [+cause] - Δ - keep - the men - working] . Furthermore, notice that whether or not the Direct Object-NP has a grammatical relation to the Verb of temporal aspect, it can be embedded in the causative construction. Thus we have examples of the following sort:

(276) a. It started raining.

b. We started it raining (by seeding the clouds).

(277) a. The engine kept running for 3 hours.

b. We kept the machine running for 3 hours.

(278) a. The machines finally got going at 8:00.

b. We finally got the machines going at 8:00.

Finally, notice that NP's may occur as the Subjects of these Verbs, without there being a VP-complement present, and in these cases we find the same transitive/intransitive pairs:

(279) a. The doling out of emergency rations began.

b. They began the doling out of emergency rations.

(280) a. The clearing up of the debris continued for 3 days.

b. They continued the clearing up of the debris for 3 days.

(281) a. The ceremony will start at 3:00.

b. We will start the ceremony at 3:00.

(282) a. The interview will start in a few minutes.

b. We'll start the interview in a few minutes.

In our framework, the relation between the pairs of sentences without VP-complements in (279)-(282) are the causative forms of the a.-sentences, so that (282) b., for example, would be derived from a base string of the following sort: We - [+cause] - $\triangle$ - [$_{VP}$start - the ceremony - at 3:00].

Notice, incidentally, that the two parts of a subcategorization feature such as (271) could be collapsed into a single feature, if we were to extend the parenthesis notation in such a way that the underline itself could be optional. Thus we could write the subcategorization feature for begin in the following manner:

(284) begin: NP ___ ($\underline{NP}_2$) VP

Then, combining this notation with the subcategorization feature (283), we can write the subcategorization feature for the Verb start in a single feature, as follows:

(285) start: NP ___ ($\underline{NP}_2$) (VP)

This notation is intended to abbreviate the following four subcategorization features:

(286) (a) NP ___ $\underline{NP}_2$ VP

(b) NP ___ $\underline{NP}_2$ VP

(c) NP ___ $\underline{NP}_2$

(d) NP ___ NP_2

Notice, however, that the expansion (286) (d), although it will allow structures to be generated of the form: ___ - start - the ceremony will never receive a semantic interpretation, since none of the NP's which are the 'arguments' of the Verb is interpreted as having a grammatical relation to it. Thus only the structures specified by (a), (b), and (c) will produce surface structures which are also semantically interpreted.

Whether or not the device of parenthesizing the underline in subcategorization features is a well-motivated addition to the theory of grammar is at this point an open question. Furthermore, there is a question as to whether this notation is empirically equivalent to another possible way of representing the features in (286), which makes use of the braces notation:

(287) start: NP ___ $\left\{ \begin{matrix} \underline{NP}_1 \\ NP_1 \end{matrix} \right\}$ (VP)

If the use of angled brackets to express discontinuous dependencies within a feature is permitted, then it is evident that the two notations are not equivalent. Thus if the presence of a certain element is dependent on the absence of an underline below some other element, then this fact can be expressed with the notation in (287), but not with the notation in (285). In fact, we have already made use of this sort of notation in writing the subcategorization feature for have, repeated below for convenience:

(288) have: $\left\{ \begin{matrix} \underline{NP}_1 \\ \langle \underline{NP}_1 \rangle \end{matrix} \right\} \underline{NP}_2 \quad \left\{ \begin{matrix} \underline{PP} \\ \underline{AP} \end{matrix} \right\} \langle \text{to } \underline{NP} \rangle$

On the other hand, the dependence of one element on the presence of an underline below some other element can be expressed without the brackets notation. Thus two hypothetical features such as the following:

(289) a. NP ___ NP PP PP

b. NP ___ NP PP

could be collapsed into the following single feature:

(290) NP ___ $\langle \underline{NP} \rangle$ PP $\langle \underline{PP} \rangle$

Notice, incidentally, that by combining the angled brackets notation with the curly braces notation, we can now abbreviate the Agentive and non-Agentive features of a Verb such as hit. The Verb hit requires two subcategorization features of the following form:

(291) a. NP ___ $\underline{NP}_2$ (by NP)

b. NP ___ $\underline{NP}_2$ by NP

Clearly, there is a dependency between the presence of the underline in the Subject-NP and the presence of an optional empty by-phrase in the VP. Hence, we may abbreviate these two features in the following manner:

(292) hit: $\langle \underline{NP} \rangle$ ___ $\underline{NP}_2 \quad \left\{ \begin{matrix} \langle (\text{by NP}) \rangle \\ \text{by } \underline{NP} \end{matrix} \right\}$

Convention (313) (cf. Chapter II, Section 4.5.), governing the expansion of expressions containing both angled brackets and curly braces will automatically ensure that the angled brackets and the curly braces are expanded simultaneously, so that (292) is, in fact, an abbreviation for just the two features in (291). Thus the evidence that we have, insofar as it is valid, would seem to indicate that the grammar must allow

subcategorization features to be abbreviated either in the manner shown in (285), or in the manner shown in (287), at least in cases where angled brackets are also necessary.

One further point should be made in connection with our proposed reinterpretation of the underline notation. It was mentioned earlier that the problem of "unspecified NP's", such as the unspecified Agent which occurs in the short form of the Passive, could be incorporated into the theory under the assumption that there are rules of semantic interpretation which in certain environments provide an unfilled NP with the interpretation "unspecified referent with the relevant grammatical relation GR to the Verb", where GR is the general requirement on empty nodes in such a way that a derivation is rejected just in case there is an unfilled node in surface structure which has never been filled in the course of the derivation or which has never been semantically interpreted, we could derive a Passive with an understood Agent, such as John was kicked, from a structure containing a by-phrase with an empty NP as its Object. Notice, however, that this proposal would not have been consistent with the old interpretation of the underline notation, under which an underlined node is one which actually dominates lexical material. In fact, the only way to incorporate this proposal would have been to use the device of parenthesizing the underline. Thus to account for unspecified Agents, we would have had to represent any by-phrase in any subcategorization feature as follows:

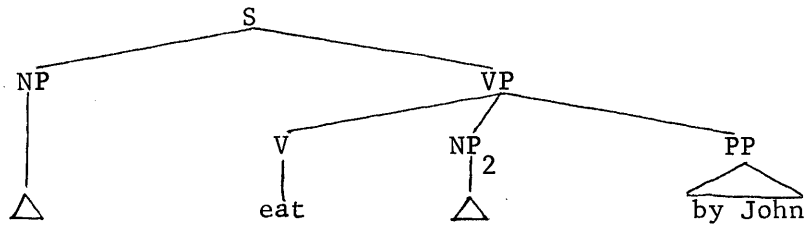
(293) NP ___ .... by(NP)

However, this is an extremely unsatisfactory device, since it requires that the general fact that any sentence containing a by-phrase can have an "unspecified-Agent" be represented in the lexical entry for every Verb which can take a by-phrase. Observe that under our new interpretation of the underline notation, this is no longer a problem. Since the underline now simply means that the NP in question has some grammatical relation to the Verb, and does not refer to the filled or unfilled state of that NP, any Verb which requires an Agent can simply have in its subcategorization feature the element [by NP]. If this NP happens to be filled at the time the subcategorization features are applied, then the lexical material dominated by the NP will be interpreted as having the Agent-relation to the Verb. On the other hand, if this NP happens to be unfilled, an interpretive rule will give it the interpretation "unspecified Agent", thus preventing the derivation from being blocked. Similarly, a Verb such as eat, which would be subcategorized as follows:

(294) eat: NP ___ NP_2 by NP

if it occurs in a base structure such as the following:

(295)



will not be rejected at the end of the derivation, even though there is no rule which can fill in the empty Object-NP, because there is a semantic rule which, for Verbs of this class, will interpret the empty NP_2 as the "unspecified Object" of the Verb. Obviously, such semantic rules only

apply to NP's which are underlined in a subcategorization feature. In fact, it is conceivable that any NP which is underlined, i.e. has a grammatical relation to the Verb, must be interpreted as "unspecified-NP", if it is empty at the time the subcategorization feature applies. If that were the case, then there would be no need for special projection rules at all, the interpretation "unspecified NP" simply being associated automatically with any underlined, unfilled node.

This last proposal does not seem at all implausible. Consider, for example, a sentence such as John hit Bill (where John here is derived from the by-phrase). Rather than saying that hit optionally allows an Instrumental-phrase, one might consider making it obligatory, and arguing that in the example just given there is an unspecified Instrument. Certainly, it is plausible to argue that semantically hit, in this sense, must have an Instrument. In contrast, consider a sentence such as John spoke. The Verb speak allows an optional to-phrase, as in John spoke to Mary. However, it does not appear to be the case that there must be an "unspecified Goal-phrase" in the sentence John spoke. In other words, while it is perfectly possible to speak without addressing someone, it does not seem to be the case that one can hit an object without using something to hit it with. For other Verbs, however, it seems that the to-phrase is obligatory. Consider, for example, the sentence Bill teaches French. Here there is a definite presupposition that Bill teaches French to someone. Otherwise the sentence seems rather senseless. This fact about teach, as opposed to speak, could be accounted for, under the proposal above, simply by making the to-phrase obligatory for teach. In some cases, this device would even allow us to distinguish between different

senses of the same lexical item. Consider, for example, the sense of pay which occurs in the sentence John paid for the book, as opposed to the sense of the Verb in a sentence such as John paid for his crimes. It seems reasonable to suppose that in the first example there must be an (1) an unspecified Object, i.e. the ammount of money that he paid, and (2) an unspecified to-phrase, whose Object represents the person to whom John made the payment. In the second example, on the other hand, there is clearly no "understood" Object or to-phrase. Rather, the sentence means something like "John suffered for his crimes". Evidence that this analysis is correct comes from the fact that one can say John paid Mary $10 for the book, but hardly *John paid Bill $10 for his crimes. Notice that these two senses of pay differ in still another respect, namely, that in the first case the surface Subject derives from the Agent-phrase, whereas in the second, it derives from the Indirect Object position. This would explain why we have pairs such as John will pay for insulting Mary's mother, Mary will pay John back for insulting her mother. These facts regarding the two senses of the Verb pay can be summarized in the following two subcategorization features:

(296) pay: (a) NP ___ (PP) (back) NP_2 to NP (for NP) by NP

(b) NP ___ NP_1 ⟨back⟩ for NP ⟨by NP⟩

Notice that in (a) the for-phrase is optional, expressing the fact that one can pay someone (money) without necessarily getting anything in exchange for it. In (b), however, it is obligatory, because sentences such as John will pay, in this sense, and Mary will pay John back,

necessarily presuppose that there is a reason for John to "pay", whether or not it is overtly expressed. Finally, notice that the presense of the particle back is dependent on the presence of an Agent-phrase. Thus one cannot say *John will pay back for insulting Mary's mother, nor, on the other hand, *Mary will pay John for insulting her mother, though the latter is possible, of course, in the contractual sense of pay represented by the feature (296) (a).

Unfortunately, space forbids further investigation along these lines. However, it seems likely that the general approach offers many interesting possibilities for increasing our understanding of lexical representation and its relationship to the different 'senses' that Verbs may have, semantically. For our purposes here, it is sufficient to note that the fact that our proposed reinterpretation of the underline notation leads to a more adequate treatment of unspecified NP's is further evidence in its favor.

Summarizing briefly, I have tried to show that the new interpretation of the underline notation proposed in Section 5.1., when taken in conjunction with the principle of cyclic application of subcategorization conditions, immediately allows us to account for the fact that Verbs which take VP-complements may or may not have a grammatical relation to their Objects, depending on whether or not the relevant NP is underlined in the subcategorization feature for the particular Verb. This in turn leads to the general condition (270) on the application of structure-preserving rules, which, it turns out, allows us to clear up a number of problems for which there was no satisfactory solution under our original interpretation of the underline notation. Notice that this reinterpreta-

tion of the underline notation makes quite clear the sense in which the theory proposed here can be said to have no "level" of deep structure, for it is now apparent that the subcategorization features for Verbs are essential in determining whether or not a particular Noun has, or has not, a given grammatical relation to the Verb. It is of course true in the standard theory also that subcategorization conditions play an essential role in determining the system of underlying grammatical relations. However, in that theory the subcategorization conditions are more restricted in scope, in that they merely specify which of the set of possible grammatical relations, defined at the level of deep structure, is to be assigned to each particular Verb. The claim of this work is that in order to capture certain syntactic generalizations, such as, for example, the relationship holding between Passive and "pseudo-Passive" constructions, and in order to capture certain relationships between lexical items, i.e. lexical redundancies, it is necessary to assume (1) that the class of syntactically motivated base structures in terms of which lexical items may be subcategorized is not necessarily co-extensive with the semantically significant grammatical relations which can be defined in terms of those base structures (though the latter obviously is a subclass of the former), and (2) that the relation between lexical insertion rules and base structures is somewhat more intricate than has been assumed in previous work, and in particular that this relation is such that a level of deep structure can no longer be defined for any arbitrary derivation. The justification for this apparent complication in the theory of grammar lies in the fact that it permits strong constraints to be placed both on

the class of possible transformational rules and on the class of possible lexical redundancy rules, thus reducing significantly the class of grammars which human beings are in principle capable of learning.

Before leaving this chapter, I shall attempt to show how the theory, as it has been developed thus far, can be used to shed considerable light on what is perhaps the most complex instance of VP-complementation that exists in English. Finally, I shall conclude with a discussion of the rule of There-Insertion, which provides crucial syntactic evidence in support of the main conclusions of this chapter.

5.3.2.0. The Have-Construction

There is one other "passive-like" construction that we have yet to discuss in detail, namely, that which is exemplified in examples (190) r.-u. Certain instances of this construction have also been noted briefly in Section 5.2. in connection with the Progressive construction. It was noted by Chomsky (1965) that a sentence such as the following is ambiguous in at least three ways:

(297) I had a book stolen.

The different interpretations which are associated with this sentence can be made clearer by a consideration of the following three possible elaborations (taken directly from Chomsky (1965): (1) "I had a book stolen from my car when I stupidly left the window open";[11] (2) "I had a book stolen from him by a professional thief who I hired to do the job"; and (3) "I almost had a book stolen, but they caught me leaving the library with it." Notice, first of all, that the first two interpretations are also found associated with sentences whose complement contains

a Verb with the -Ø affix, instead of the -EN affix which is present in (297), but that the third cannot. Thus a sentence such as the following:

(298) I had someone steal a book from me.

can mean either: (1) "Someone stole a book from me," or (2) "I hired someone to steal a book from me". (Note again that the sentence can be disambiguated in favor of the first interpretation by means of an on-phrase, i.e. I had someone steal a book on me.) We shall consider these two interpretations first, and then take up the third one.

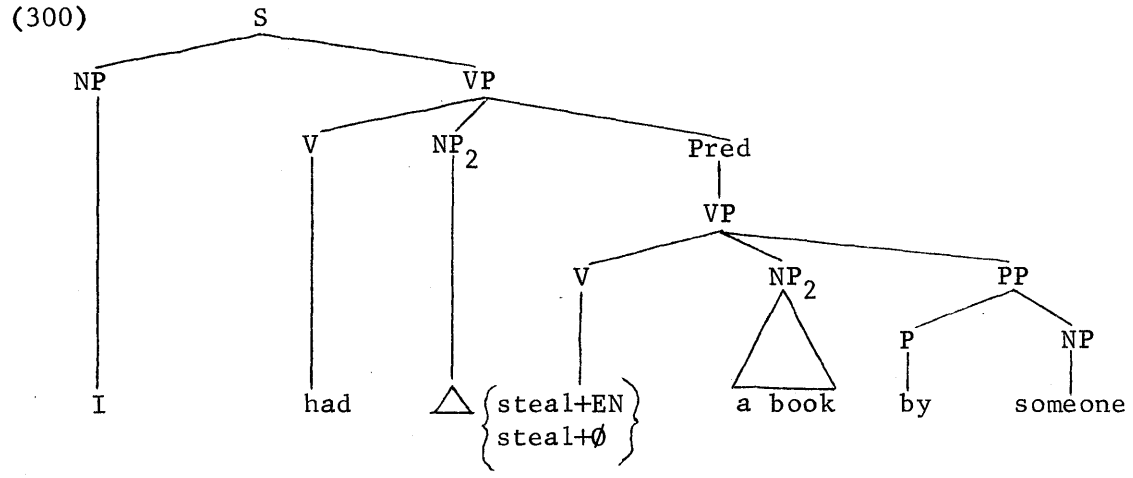
Recalling our discussion of pseudo-Passives with get in Section 5.3., it is easy to see that (297), with a "passive" VP-complement, can be accounted for, under either interpretation, in a manner exactly parallel to the way in which we accounted for sentences such as John got the parcel delivered to him. That is, we may assume that (297) derives from a structure containing a VP-complement, whose head Verb has the affix -EN. Furthermore, it is evident that (298) can be derived from a source which is identical, except that the Verb in the VP-complement must have the -Ø, or "active", suffix, instead of the "passive" -EN suffix. Thus the only difference between have and get, in this respect, is that have allows either an -EN complement or a -Ø complement, whereas get can only take an -EN complement. This explains why there are no sentences corresponding to (298) for the Verb get:

(299) a. John got the package delivered by someone.

b. *John got someone deliver the package.[12]

I propose, therefore, ignoring for the moment the source of the surface Subject of have, to derive pairs such as (297) and (298) from the virtually identical deep structures shown below:

(300)

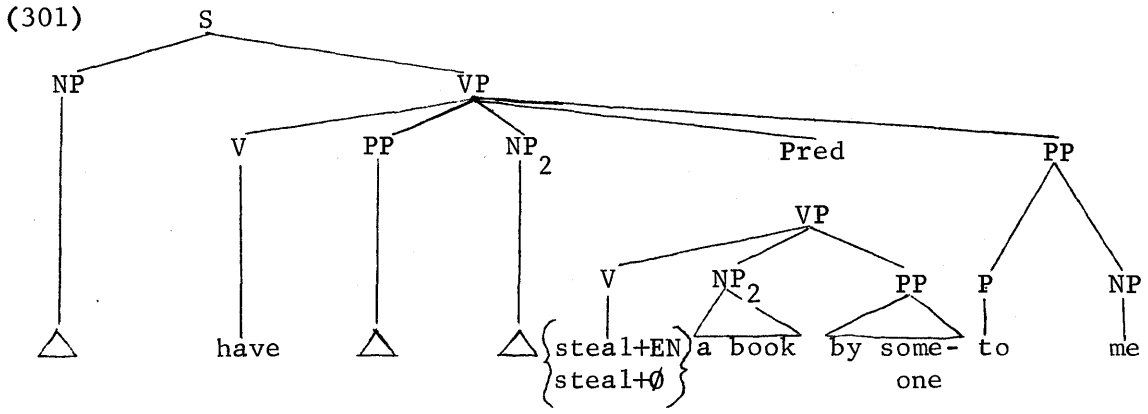


It is obvious that, depending on whether the Verb in the VP-complement has the -Ø or the -EN affix, the rules that we have available to us will produce either I had a book stolen by someone (by means of Object-Preposing) or I had someone steal a book (by means of Agent-Preposing). Notice that the underlying grammatical relations in the Predicate-VP are exactly the same in both cases. Thus the NP a book in both (297) and (298) is understood as the Direct Object of steal, and likewise the NP someone is understood as the Agent of steal in both. The source of the complement in these examples having been taken care of, we can now proceed to the more interesting question of how to account for the ambiguity observed above.

Let us consider again the relation between be and have. We have observed that these two Verbs in a wide range of cases occur in environments which are identical except that the former consistently requires an Indirect Object, while the latter requires a Direct Object, plus a to-phrase. In particular, both may occur with Predicate-phrases of various kinds. Thus it is entirely natural to suppose that have also

might occur with Predicate-VP's, as was just proposed in the preceeding paragraph. Now suppose that we assume that the other part of the subcategorization feature for have (see (288) in the preceeding section) is also correct. We would then be able to produce base structures of the following form:

(301)



Two points are immediately evident with regard to this hypothetical base structure: (1) It will automatically produce the correct surface forms for pairs such as (297) and (298), and (2) It is a natural source for the first interpretation mentioned above, i.e. the interpretation which is roughly equivalent to the paraphrase "Someone stole a book from me". In fact, we have already proposed just such a source for sentences such as those in (219), which are of exactly the same type, except that they have -ing complements, rather than -EN or -Ø complements.[13] Thus we have related triples such as the following:

(302) a. We had someone steal a lot of books from our house.

b. We had a lot of books stolen from our house by someone.

c. We had someone stealing books from our house.

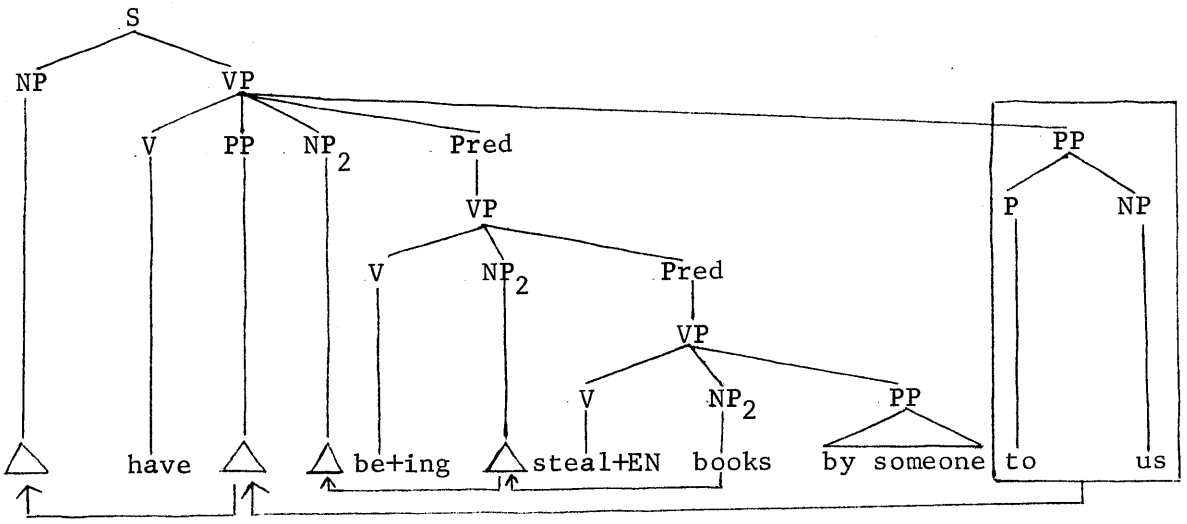
Furthermore, notice that since the Progressive VP-complement can itself be followed by a Passive complement, it is possible to get the "passive"

version of (302) c.:

(303) We had books being stolen from our house by someone.

which would be derived from a base form of the following sort:

(304)



The derivation, though somewhat complicated, is entirely straightforward, given the rules and conventions developed thus far. Notice particularly that the underlying grammatical relations in (304) are identical to those found in (301), even though the derivation involves two embedded Predicate-VP complements rather than one. This skewed distribution which we find in the "passive" forms of the Progressive and non-Progressive VP-complements for <u>have</u> is extremely interesting. Unlike any normal embedded clause, in which the Passive forms would in every case have one more Verbal auxiliary than the Active forms, what we find here is that Passive version of the non-Progressive complement has no extra Verbal auxiliary, whereas the Passive form of the Progressive complement does have the expected extra Auxiliary.[14] This peculiar distribution is

totally unexplainable in any non-ad-hoc way under the assumption that the complements of have originate in deep structure as full sentences. However, in our framework, this strange fact is an automatic consequence of a tightly-woven set of assumptions, each of which is itself independently motivated.

Having accounted for the first of the three possible interpretations[15] of sentence (297), we must now turn to the second one, represented by the elaboration "I had a book stolen from him by a professional thief who I hired to do the job". It is apparent, upon consideration, that the surface Subject of have must, in this case derive from the Agent-phrase. This is perhaps more evident if we consider the Active form of the complement, alongside of the Passive version:

(305) a. I had a thief steal a book from him.

b. I had a book stolen from him by a thief.

Notice that the presence of an Adverb of the class deliberately, intentionally, on purpose, etc. clearly disambiguates such sentences in favor of the second possible interpretation:

(306) a. I deliberately had the book stolen by a professional thief.

b. I purposely had a professional thief steal the book.

which shows that the Subject must originate in the by-phrase. Furthermore, notice that the presence of a Pronoun Object which is non-coreferential with the Subject of have also disambiguates such sentences in favor of the second (Agentive) interpretation. Thus the following are unambiguously Agentive:

(307) a. We had a book stolen from him.

b. They had Bill steal the book from me.

c. I had Bill steal a book from Mary.

d. John had Bill steal a book from us.

and, as we would expect, they may occur with Adverbs such as deliberately, etc.:

(308) a. We deliberately had a book stolen from him.

b. They had Bill steal the book from me, on purpose.

c. I intentionally had Bill steal the book from Mary.

d. John had Bill steal a book from us, with malice aforethought.

On the other hand, if the sentence contains an on-phrase, which, as noted above, disambiguates the sentence in favor of the non-Agentive reading, then Adverbs of this class are impossible:

(309) a. *I deliberately had someone steal a book on me.

b. *John intentionally had his car stolen on him.

c. *Harry had his best friend killed on him, on purpose.

d. *With malice aforethought, Mary had a thief rob her apartment on her.

These restrictions lead to some interesting consequences, semantically. Notice that if the from-phrase contains a NP denoting a place, and is modified by a pssessive Pronoun which is non-coreferential with the surface Subject of have, as in the following examples:

(310) a. I had someone steal a book.

b. We had some money taken from Mary's house.

c. He had a thief break into my house.

the sentence must be interpreted Agentively, unless it is presupposed that the individual referred to by the Subject-NP was actually in the house at the time of the event, was residing there, or the like. Thus with the appropriate continuations, it is possible to get the non-Agentive reading, as well as the Agentive one:

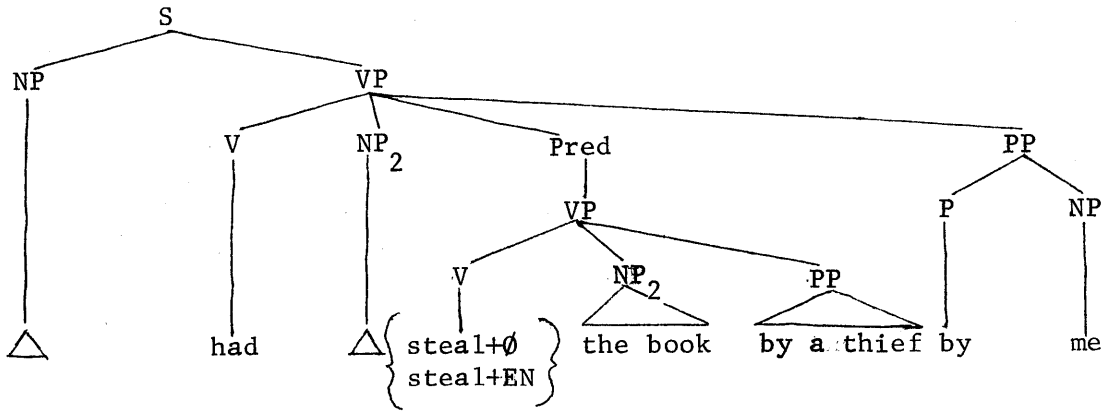
(311) a. I had someone steal a book from his house, while I was living there.

b. We had some money taken from Mary's house by a thief, last year, when she was away.

c. He had a thief break into my house, while he was looking after it for me.

Considerations of this sort make it clear, I think, that the second possible interpretation of (297) can only be accounted for by deriving the surface Subject of have from the by-phrase. Thus the pair of sentences I had a thief steal the book from him and I had the book stolen from him by a thief would be derived from the nearly identical base structures, shown below:

(312)



In order to account for this interpretation, then, we need only revise the

subcategorization feature for have, so as to allow either a to-phrase or a by-phrase. However, we shall not attempt to state formally the revised subcategorization feature for have until certain other facts have been dealt with.

We now turn to the third possible interpretation of example (297), represented by the elaboration "I almost had a book stolen, but they caught me leaving the library with it." As was noted earlier, there is no "active" form of the complement-VP corresponding to this interpretation, so that (298), for example, has no interpretation of this sort. The way to account for this interpretation becomes obvious as soon as we observe the interesting fact that for many Verbs there exists a non-Agentive Passive form, which I shall refer to as the "Stative Passive" form of the Verb. Consider, for example, the following sentences:

(313) a. The door is closed.

b. The job is almost done now.

c. The painting is practically finished.

d. That patch is obviously not painted.

e. The book should be stolen by now.

f. The city has been destroyed for a week, now.

g. The window should be fixed by now.

h. The last time I saw it, the vase was broken.

Notice that the meaning of such sentences is quite distinct from that of the corresponding Passives:

(314) a. The door is closed every day (by the janitor).

b. That job is done by the maid.

c. The painted that Bill started was finished by John

d. That patch has obviously never been painted by (anyone).

e. The book should be stolen by someone.

f. The city has been destroyed (by the enemy).

g. The window should be fixed (by someone).

h. As I watched, the vase was broken before my eyes.

The sentences in (313) describe completed states, whereas the normal Passive sentences describe actions. Furthermore, notice that Stative Passives never have a by-phrase:

(315) a. *The door is practically closed by Bill.

b. *The job is almost done now by the maid.

c. *The painting is practically finished by the artist.

d. *That patch is obviously not painted yet by anyone.

e. *The book should be stolen by now by the thief we hired.

f. *The city has been destroyed by the enemy for a week, now.

g. *The window should be fixed by the workmen by now.

h. *The last time I saw it, the vase was broken by Bill.

nor can they be interpreted as having an "unspecified Agent". Thus, if we can succeed in relating the third interpretation of the "Passive" have-sentences to these Stative Passive constructions, we will have automatically accounted for the fact that there are no "active" VP-complements with that interpretation, as well as for the fact that the have-construction can never have this third interpretation, when there is a by-phrase (overt or understood) present in the Predicate-phrase.

It is important to observe that Stative Passives are not AP's. In other words, they are not the same as "passive Adjectives" such as

amused, frightened, tired, upset, and so on. This is shown by the fact that the Stative Passives, unlike true Passive Adjectives, can never occur with the set of degree modifiers such as so...that, too, very, enough, Comparatives, Equatives, and so forth, which characteristically appear in the specifier of AP's. Thus the following are grammatical:

(316) a. Bill is very tired.

b. Mary was so upset that she couldn't speak.

c. I was more amused than Bill was.

d. John wasn't as frightened as I was.

e. He was too astonished to react.

whereas similar sentences containing Stative Passives are impossible:

(317) a. *The door is very closed.

b. *The job is more done than I thought it was.

c. *This painting isn't as finished as that one.

d. *That patch is obviously so painted that it's impossible to see a trace of the color underneath.

e. *The book will probably be too stolen to sell.

Another fact which shows that Stative Passives are not AP's is that they cannot appear after the Verb seem, which only takes Predicate-AP's.

(318) a. *The door seems closed. (Compare the door seems to be closed.)

b. *The job seems done.

c. *The painting seems finished.

d. *That patch doesn't seem painted.

e. *That book seems stolen.

f. *The city looks destroyed. (Compare: the city looks devestated)

g. *The window seems fixed.

h. *The vase seems broken.

whereas Passive Adjectives can appear in this position freely:

(319) a. Bill seems tired.

b. Mary seems upset.

c. The children seem amused with the puzzle.[16]

d. They seem frightened of us.

e. She seemed astonished at the news.

f. The place seems (very) run-down.

g. The style seems (very) out-moded.

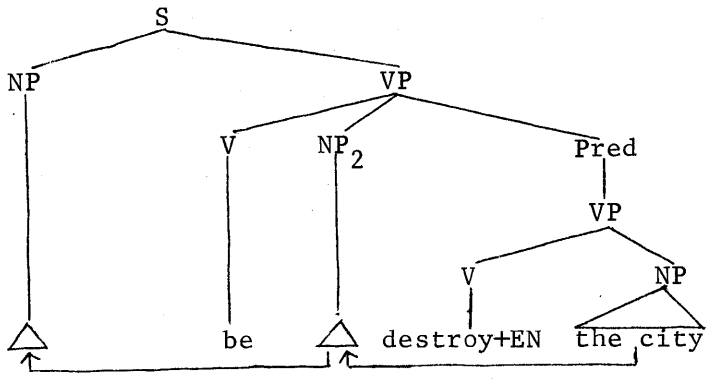
h. They seem interested in our plan.

Since Stative Passives cannot be AP's, the only possible conclusion is that they are Predicate-VP's which simply do not happen to have Agent-phrases. Notice that this conclusion argues against any treatment of the Passive which derives surface Passive forms from underlying Active sentences by means of a permutation rule, for there would be no way, in such an analysis, of accounting for the fact that Stative Passives have no Agent-phrase. One could, of course, derive Stative Passives from an underlying structure with an empty Subject-NP, but that would require an ad-hoc condition making the Passive rule obligatory, and would not, in any case, distinguish the Stative Passive from a normal Passive with an "unspecified Agent". In our framework, on the other hand, there is a simple and natural way of accounting for Stative Passives. The only thing that is necessary is that Verbs such as close, destroy, etc. be subcategorized with an optional Agent-phrase, viz.:

(320) destroy: NP ___ NP_2 (by NP)[17]

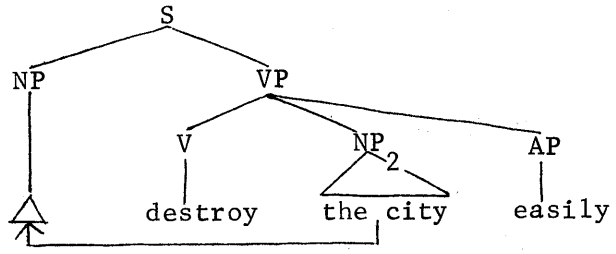
The Stative Passive sentence the city is destroyed would then be derived from the following base structure:

(321)



The regular rules will then automatically derive the correct surface form. Notice that if an Agentless Passive form is generated as a main (i.e. non-Predicate) VP, as, for example, in (322):

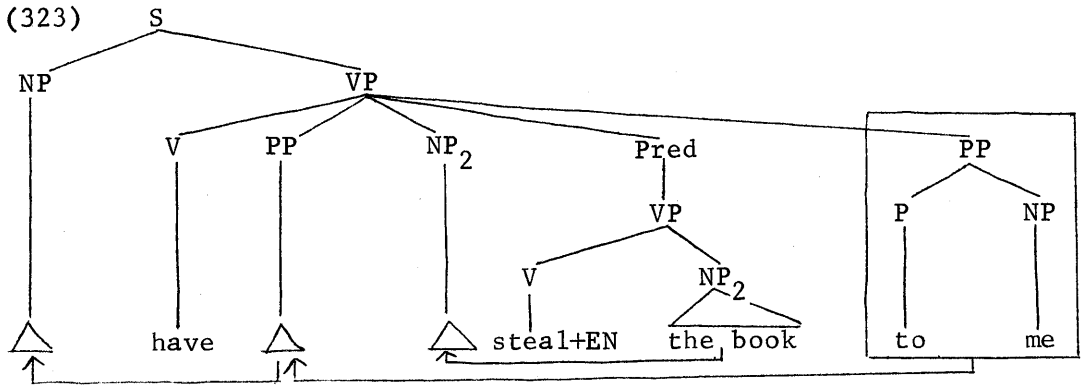
(322)



Object-Preposing will automatically apply, deriving the sentence the city destroyed easily.[18]

But now observe that, given the necessity for structures such as (321), i.e. for structures containing Agent-less, Predicate-VP complements with the -EN affix, we immediately have available to us a natural source for the third interpretation of sentence (297). In fact, the subcategorization feature that we have set up for have predicts that we would expect to find structures of the following sort, given that have must be able to take Predicate-VP's, as well as Predicate-AP's:

(323)



The derivation is completely straightforward, given the rules that we already have. We see, then, that the third interpretation of the "pseudo-Passive" have-construction is simply the "transitive" form of the Stative Passive construction with be. Not only does (323) correctly predict the lack of an Agent-phrase in the Predicate-VP, under the third interpretation, as well as the fact that the third interpretation has no corresponding form with an "active" VP-complement, but also it gives just the right semantic results. The sentence I have the book stolen describes a completed state, just as the Stative Passive sentence the book is stolen does. The only difference is that in the former the "possessor"-NP is specified, whereas in the latter it is not. Further evidence that this is in fact the correct analysis can be derived from the fact that various Adverbs such as now, practically, almost, for a week, by now, etc., which typically serve to disambiguate an Agent-less Passive in favor of the Stative interpretation (cf. examples (313)) also disambiguate an Agentless have-construction in favor of the non-Agentive, Stative interpretation:

(324) a. We have the door closed, finally.

b. We have the job almost done now.

c. The artist has the painting practically finished.

d. John obviously does not have that patch painted yet.

e. The thief we hired should have the book stolen by now.

f. He really should have the window fixed by now.

g. By 1965, the Americans already had most of the cities in N. Vietnam completely destroyed.

In contrast, consider the same sentences where the Predicate-VP has the non-Stative, Agentive interpretation:

(325) a. We had the door closed on us (by someone).

b. We had the job done by a professional.

c. The artist had the painting finished by a friend.

d. John obviously did not have that patch painted by anyone.

e. The thief we hired should have had the book stolen by someone more competent than himself.

f. He really should have had the window fixed by a carpenter.

g. In 1965, the N. Vietnamese had most of their cities completely destroyed by American bombers.

The examples in (325) differ among themselves in that in some cases the surface Subject of have is derived from the by-phrase, whereas in others it derives from the to-phrase, in accordance with the analysis proposed above. However, all of them differ from the examples in (324) in that the embedded Predicate-VP has a non-Stative interpretation, and it will be noted that in every case the Predicate-VP must have an Agent-phrase, either overt or understood. Thus it turns out that the first and second interpretations of the ambiguous sentence (297) with which we started out both differ from the third with respect to the structure of their respective

VP-complements. Furthermore, this difference corresponds precisely to the structural and semantic difference between the normal Passive, which has an Agent-phrase, and the Stative Passive, which does not.

The way in which all of the rules and subcategorization features established in the previous sections on independent grounds combine and interact to account for the multiple ambiguity of the have-construction, revealing at the same time the complex and intricate network of relationships between Passives and Pseudo-Passives, the Verbs have and be, etc., seem to me to constitute a particularly striking example of the explanatory power of the theory of syntax on which these results are based. Before going on to discuss in detail the subcategorization feature which must be assigned to the Verb have, however, I wish to discuss one more class of examples which lend further support to the analyses in this chapter.

5.3.2.1. Predicate-VP's Containing Locative-Phrases

Recall that in Section 4.2.1. of this chapter, we discussed pairs of sentences such as the following:

(326) a. Many toys are in the box.

b. The box has many toys in it.

(327) a. Ten books are on that shelf.

b. That shelf has 10 books on it.

and argued that the b.-sentences were to be derived from structures containing a Direct Object, a Predicate-PP, and a to-phrase. The derivation of these sentences is thus parallel to that of sentences such as the following:

(328) a. The children have many toys in the box.

b. I have ten books on that shelf.

the only difference being that in the b.-sentences of (326)-(327) the Object of to is coreferential with the pronominal Object of the Locative-phrase, whereas in (328) the two NP's are distinct.

Let us consider now sets of sentences such as the following.[19]

(329) a. Many toys are stored in that box.

b. That box has many toys stored in it.

c. The children have many toys stored in that box.

(330) a. Many people are living in our house.

b. Our house has many people living in it.

c. We have many people living in our house.

(331) a. A lot of windows are broken on that building.

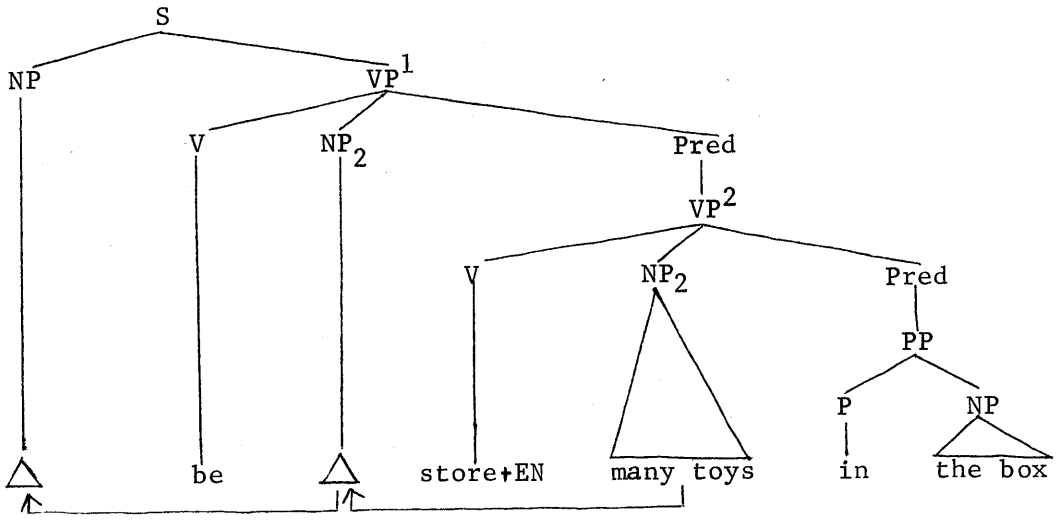
b. That building has a lot of windows broken on it.

c. The company that owns it has a lot of windows broken on their building.

It is surely obvious that sentences such as (329) a., b., and c. are related to one another in exactly the same way as sentences such as (326) a., b., and (328) a., the only difference being that the latter have Predicate-PP's, whereas the former contain Predicate-VP's. In fact, we are already in a position to account for examples of this sort.

Consider first (329) a. Clearly, this is simply the Stative Passive form of a sentence such as they store many toys in the box, and must therefore be derived from a base structure such as the following:

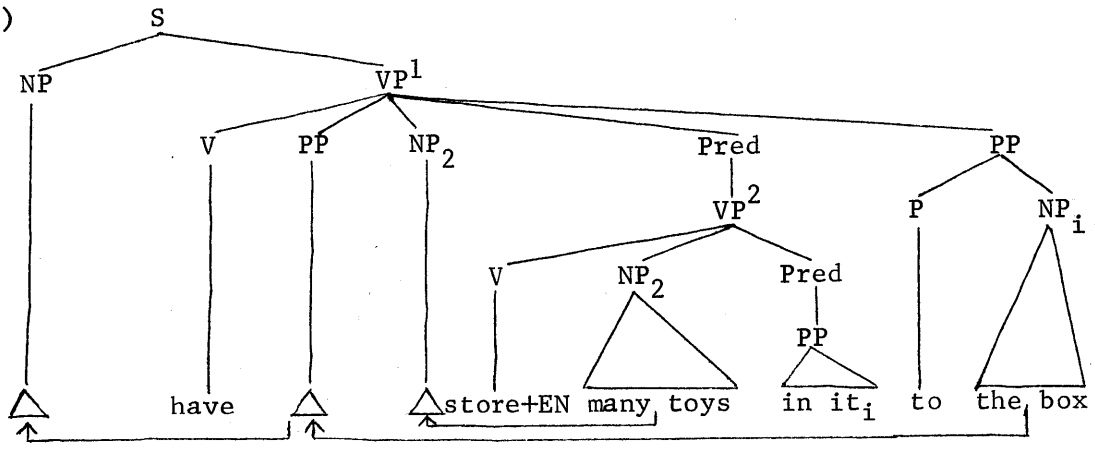
(322)



The derivation is straightforward: On the VP^2-cycle, Object-Preposing will apply, moving the NP many toys into the empty Object-NP in VP^1, followed by a second application of Object-Preposing on the S-cycle, resulting in the correct surface form many toys are in the box.

Consider next example (329) b. The Verb have, it will be recalled, requires a Direct Object, an empty Indirect Object-node, a to-phrase, and an optional Predicate. Hence we may assume a base structure such as the following:

(333)

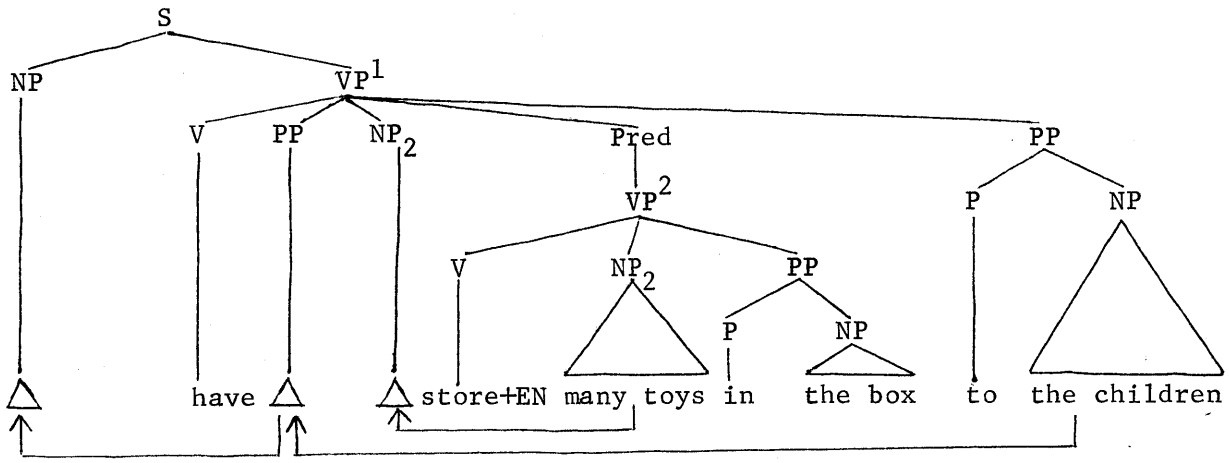


Again, the derivation is automatic, given the rules that we already have.

On the VP^1-cycle, the NP many toys will be moved into the empty NP_2 in the upper VP by Object-Preposing. On the S-cycle, Dative Movement, Preposition Deletion, and Object-Preposing will apply, yielding the correct surface sentence the box has many toys in it.

Finally, let us consider the base structure which must be assigned to a sentence such as (329) c. Obviously, it must be identical in structure to (333), except that the to-phrase will contain the NP the children, which is non-coreferential with the NP the box in the Predicate-Locative-phrase. Otherwise, the derivation will be identical to that of (329) b.:

(334)



5.3.2.2. The Subcategorization Feature for Have

So far, we have said nothing about whether or not the derived Direct Object in the constructions discussed in the previous section, has a grammatical relation to the main Verb have. However, in order to write the subcategorization feature for have properly, we must determine this for each of the possible base structures into which have may be inserted. It

will be seen that the facts, which look exceedingly complicated at first glance, turn out to be stateable in a very simple manner in the framework set up here.

The simplest case is the one in which the surface Subject of have derives from the to-phrase, i.e. the non-Agentive interpretation. It appears that in this construction the surface Object of have never has a grammatical relation to the main Verb. This is shown, for example, by the fact that the following pairs are synonymous:

(335) a. We had a thief steal our car (on us).

b. We had our car stolen (on us) by a thief.

(336) a. We had people breaking into our cottage every week-end.

b. We had our cottage being broken into every week-end.

Or, consider a case in which the Subject of the embedded VP is not a deep Agent, but a Subject-NP:

(337) a. I had a rock break my window yesterday.

b. I had my window broken by a rock yesterday.

(338) a. I had hailstones hitting my windows for an hour yesterday.

b. I had my window being hit by hailstones for an hour yesterday.

Again, if the surface Subject of have has the non-Agentive interpretation, these pairs are synonymous. These examples also reveal that there are no selectional restrictions governing the Object of have--another indication that the NP which fills this position is not grammatically related to the main Verb. As further support for this claim, consider the following examples:

(339) a. Bill had the water in his radiator freeze last night.

b. Harry had an idea revealed to him in a dream.

c. They have their plan coming up for consideration soon.

d. We had it pouring cats and dogs here, last night.

e. Governments should ideally have a great deal of attention paid to their dealings by citizens of the country.

The Objects of have in the above sentences are, respectively, Inanimate, Abstract, a nominalized Verb, expletive it, and abstract Object in the idiomatic expression pay attention to. All are acceptable, thus indicating that there are no selectional restrictions holding between have and its Object, when the Subject is not an Agent.

In contrast, consider the situation when have is used in the Agentive sense. At first glance, it would appear as if the derived Object again had no grammatical relation to the main Verb, because of the fact that "active" and "passive" pairs like (335)-(338) are both synonymous and also do not seem to exhibit any selectional restrictions. Thus consider the following examples, all of which are to be interpreted in the Agentive sense:

(340) a. We had the book stolen from John by a thief.

b. We had a thief steal the book from John.

(341) a. The F.B.I. has its agents tapping the phone.

b. The F.B.I. has the phone being tapped by its agents.

However, consider what happens when the embedded sentence contains an intransitive Verb whose surface Subject derives from the Indirect Object position:

(342) a. *I had the table move.

b. *I had the water freeze.

c. *John deliberately had the window break.

d. *The company had its product improve.

e. *Bill had his car change into a pumpkin.

Clearly, if the Agentive interpretation is intended, these sentences are impossible, indicating (1) that there is a grammatical relation obtaining between the Direct-Object-NP and the Verb have, and (2) that there is a selectional restriction involved, which requires the Object-NP to be animate. Further support for this claim comes from the fact that in sentences like (337) and (338), which contain a Verb which requires a deep Subject, rather than a deep Agent, the Agentive interpretation of have is again impossible:

(343) a. *I deliberately had a rock break his window yesterday.

b. *I had the arrow hit Bill, on purpose.

But now notice the strange fact that the "passive" complement forms, in such cases, are not ungrammatical, even if the derived Subject is inanimate:

(344) a. I had his window broken by a rock.

b. I had Bill hit by the arrow.

c. The Mafia had him run down by a truck.

d. We had the bomb detonated by a battery.

e. We had the ice melted by a sunlamp.

f. Bill's enemies had his house buried by a landslide.

Under the assumptions that we have been working with, this distribution of data is apparently totally inexplicable. For suppose that we underline the Object-NP in the subcategorization feature for have, just

in case it has an Agent-phrase. Now since the subcategorization feature for have is checked at the beginning of the S-cycle, after all the rules of Object-Preposing, Agent-Preposing, etc. have re-arranged the NP's in the Predicate-VP, it follows that all the examples with derived Object-NP's which are inanimate should be ungrammatical, while those with animate Objects should be grammatical. This works all right for the examples in (342) and (343), as well as for the a.-sentences in (340) and (341), but incorrectly predicts that the examples in (344) should be ungrammatical, and likewise the b.-examples in (340) and (341). On the other hand, if we do not underline the Object-NP, we will incorrectly predict all of the above examples to be grammatical.

Observe that these facts are equally difficult to explain under the standard analysis of Verb complementation. Suppose, for example, that we were to analyze have, in the Agentive sense, as containing a deep Object, which obligatorily deletes the Subject of an embedded complement sentence. This again would explain the ungrammaticality of examples (342) and (343), as well as the grammaticality of the a.-sentences in (340) and (341), but would fail to explain the grammaticality of either the examples in (344) or of the b.-sentences in (340) and (341). Similarly, if have is analyzed as an instance of "Intransitive Verb-phrase complementation" (in the sense of Rosenbaum (1967)), all of the above examples will incorrectly be predicted to be grammatical.

Matters are still worse, however, for notice that in addition to the "passive" VP-complement of the form I had the book stolen, it is also possible to have a Passive-type complement with the auxiliary be.

Consider, for example, the following sentences:[20]

(345) a. I had John be examined by the doctor.

b. I had Bill be hit by a rock.

c. They had Bill be nominated for the prize.

Oddly enough, this type of Passive VP-complement seems to obey the rule that any Animate Object-NP is grammatical, while any inanimate Object-NP is ungrammatical. Thus in contrast to (340) a., we have (346) below:

(346) *I had the book be stolen from John by a thief.

Likewise, corresponding to the grammatical (344) a., d., e., and f., we have ungrammatical Passives such as the following:

(347) a. *I had his window be broken by a rock.

b. *We had the bomb be detonated by a battery.

c. *We had the ice be melted by a sunlamp.

d. *Bill's enemies had his house be buried by a landslide.

On the other hand, examples corresponding to (344) b. and c. are also grammatical in this new Passive form, though different in meaning:

(348) a. The Mafia had him be run down by a truck.

b. I had Bill be hit by the arrow.

How can we explain this seemingly incoherent set of facts, concerning the various possible types of VP-complements to have in the Agentive sense? In fact, it turns out that there is a very simple generalization which accounts for all of these examples in a satisfactory manner. The generalization can be stated as follows:

(349) The derived Object of have, in the Agentive interpretation, has a grammatical relation to the Verb, just in case the Verb

in the Predicate-VP-complement has the -$\underline{\emptyset}$ affix. Otherwise, it does not.

Let us see how (349) can be applied to account for the examples just discussed. First of all, the a.-examples in (340) and (341) are grammatical, because the VP-complement has the $\underline{\emptyset}$-affix and because the Object-NP is animate. The b.-examples are grammatical, on the other hand, because the affix in this case is -EN, and hence there are no selectional restrictions governing the Object-NP. Consider next the examples in (342). Here the complement Verb has the -$\emptyset$ affix, and hence the Object has a grammatical relation to <u>have</u> and must meet the animacy condition. But since the Object-NP's in these examples are all inanimate, it follows immediately that they are ungrammatical, as is indeed the case. For exactly the same reasons, examples such as (343) are also ungrammatical, since the Verb in the Predicate-VP has the $\underline{\emptyset}$-affix and the Object-NP's are inanimate. The examples in (344), however, are grammatical, because the affix in this case is -<u>EN</u>, and hence the Object-NP has no grammatical relation to the Verb <u>have</u>.

Consider next the examples containing <u>be</u> plus a "passive" VP-complement. In all of these cases, the derived Object has a grammatical relation to the Verb, because the Verb in the Predicate-VP, namely <u>be</u>, always has the -$\underline{\emptyset}$ affix. It follows that such sentences will be grammatical, if the derived Object is animate, but ungrammatical, if it is inanimate. Thus the examples in (345) and (348) are all correctly predicted to be grammatical, while those in (346) and (347) are correctly marked as ungrammatical.

The point is that in every case it is the affix on the Verb in the Predicate-VP which is relevant in determining whether the Object has a grammatical relation to have, irrespective of what the particular Verb happens to be, i.e. irrespective of whether it is a Verb which cannot itself take VP-complements, or whether it happens to be a Verb such as be which can itself take -EN and -ING complements. Obviously, this generalization is extremely difficult to express adequately in a theory which does not countenance the existence of VP-complements, whereas in the theory presented here it is quite straightforward. Notice that as (349) is stated, it implies that -ing complements behave like -EN complements in that the Object never has a grammatical relation to the Verb. This seems to be correct. Thus all of the following examples, which are ungrammatical with the Agentive sense of have, when the complement Verb has the Ø affix, appear to be perfectly grammatical, since they have the -ing affix instead:

(350) a. I had the table moving at last.

b. I have the water freezing, (because we need ice for the drinks).

c. The company finally has its products improving in quality.

d. I had the arrows hitting Bill, on purpose, in order to hurt him.

e. I had his windows being broken by rocks every night for a week.

f. We have the ice being melted by a sunlamp.

g. I have the book being stolen from John by a thief.

This fact, then, provides further evidence in favor of our analysis, since the correct interpretation of -ing complements, as well, follows automatically from the rule, as stated in (349).

It only remains to combine these results with the results of the preceeding sections, and to attempt to write the final form of the subcategorization feature for have. I propose to incorporate the rule in (349) into the subcategorization feature in the following manner:

(351) have: NP ___ (NP)1 ⟨NP, a⟩2 [VP, V+ { ⟨b, ∅⟩ / EN / ing } ...] { c ⟨by NP / to NP⟩ }

Condition: a if and only if b and c

The condition on (351) ensures that the Direct Object will have a grammatical relation to the Verb have just in case there is both an Agent-phrase and the ∅-affix on the Verb in the embedded Predicate-VP.

5.4. THERE-Insertion

In the previous sections, we have argued for a variety of reasons that the surface Subject of the Verb be must originate in the Direct Object position in base structure. One particular consequence of this assumption is that the Progressive and Passive constructions in English must derive from underlying structures containing the main Verb be plus a Predicate-VP complement.

The evidence in favor of an analysis along these lines is, I believe, considerable. Not only does it allow us to explain the syntactic relation between Passive and pseudo-Passive constructions, as well as accounting for the close relationship between the Progressive aspect and the Progressive complements which occur with Verbs of temporal aspect and other Verbs which take -ing complements, but also it leads to an illuminat-

ing analysis of the complexities involved in the have-construction and at the same time makes even more apparent the deep lexical relation between the Verbs be and have, already noted in simpler cases in earlier sections of this chapter.

In spite of this evidence, one might imagine an objection to the proposed analysis of be, based on the observation that this hypothetical Object of be never occurs in surface structure in any place other than the Subject position. Unlike Verbs such as move, change, freeze, etc., as well as Verbs such as feel, touch, and smell, whose Direct Objects actually show up in both the Subject position and the Object position in surface structure, the Verb be has only a Subject-NP in surface structure, so that there is no direct evidence in favor of a Direct Object origin in this case. (The same is true, of course, in many other cases that we have discussed.)

However, it happens that there is totally independent evidence in support of the claim that be takes a Direct Object in deep structure, having to do with the existence of a rule in English which has generally been referred to in the literature as the rule of There-Insertion. This rule, while it has received considerable attention from generative grammarians and has figured prominently in innumerable syntactic arguments, is nevertheless extremely difficult to state in a satisfactory manner within the framework of transformational grammar. Consider the following pair of sentences, the second of which is generally assumed to be derived from the first:

(352) a. A mouse is in my room.

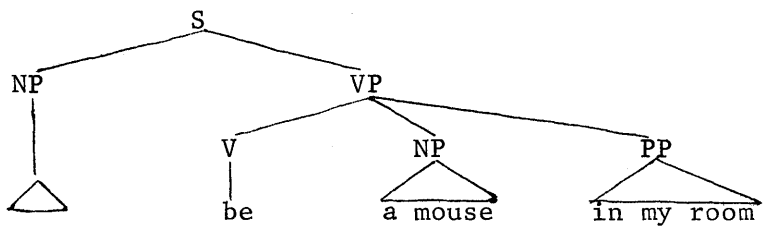
b. There is a mouse in my room.

On the face of it, there would appear to be two operations involved. First, the permutation of an Indefinite Subject-NP around the Verb be, plus any elements of the Auxiliary which happen to precede it (cf. there may be a mouse in my room, there may have been a mouse in my room, etc.), and second, the insertion of the element there to the left of be. The problem arises, as has been noted recently by Chomsky (1970), from the fact that the element there behaves in every respect like a NP, so that it can, for example, undergo the interrogative transformation, e.g. Is there a mouse in my room?; be passivized, when it occurs as the Object of Verbs such as believe, e.g. There is believed to be a mouse in my room from someone believes there to be amouse in my room; and so forth. However, within the framework of transformational grammar, Chomsky observes, "...an item (such as there) introduced by a transformation can be assigned phrase structure only when it replaces some string which already has this phrase structure; and it requires some artificiality to generate (44) [the example is: there is a man in the room] in this way."

Notice, however, that this difficulty would not arise at all in the structure-preserving framework, if it could be shown that the rule which moves the Indefinite Subject-NP out of the Subject position is structure-preserving. This point was first made by Emonds (1970), who argued convincingly that There-Insertion, if it is a transformational rule at all, must be structure-preserving. To see that this is so, let us assume, with Emonds, that there is a rule of "Indefinite Subject Movement", which moves the Subject-NP into a position to the right of the Verb be, and then

consider the structure which will result from the operation of this rule. Since the rule of Indefinite Subject Movement is structure-preserving, it will leave behind it an empty Subject-NP, giving us the following derived structure:

(353)



All that we need now is an operation which actually inserts the element <u>there</u> underneath the empty Subject node, and the result is a NP node which is subject to further operations.

It is immediately obvious, however, that if the surface Subject of <u>be</u> in examples such as (352) a. is as we have claimed, derived from the Direct Object position in deep structure, then examples such as (352) b. can be derived even more simply by means of a single rule which optionally fills in the empty Subject-NP with the element <u>there</u>. In other words, our analysis makes it possible to eliminate entirely the need for Emonds' rule of Indefinite Subject Movement, thus simplifying the grammar considerably. Instead, what we have is an optional rule inserting the element <u>there</u> in an empty Subject-NP, whenever the main Verb is <u>be</u>. If the rule applies, then we will get sentences such as (352) b. If, on the other hand, it does not apply, the independently motivated rule of Object-Preposing will apply instead, deriving sentences such as (352) a.

Given the fact that our analysis achieves a simplification of the grammar through the elimination of the rule of Indefinite Subject Move-

ment, it can now be seen that There-Insertion provides crucial evidence in favor of our claim that the surface Subject of be originates in the Object position, for in just those cases where There-Insertion is applicable, we find it emerging in surface structure in that position.

Furthermore, There-Insertion provides crucial evidence in favor of our analysis of the Progressive and Passive constructions. It is well known that the rule of There-Insertion affects not only the copula be, but also the be which occurs in the Progressive and Passive. Consider, for example, the following pairs of sentences:

(354) a. Somebody is sleeping in Goldilocks' bed.

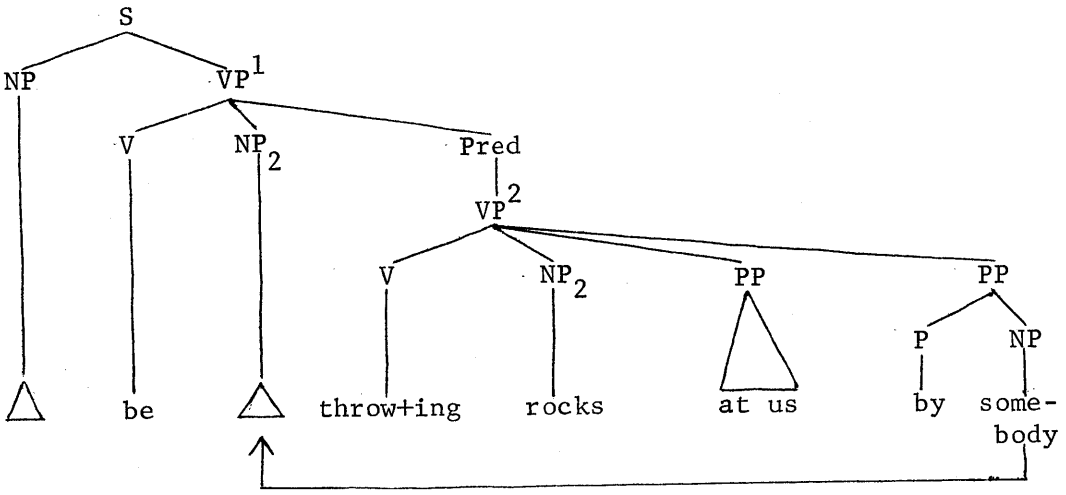
b. There is somebody sleeping in Goldilocks' bed.

(355) a. Somebody is throwing rocks at us.

b. There is somebody throwing rocks at us.

As was pointed out by Emonds (1970), such examples are superficially, at least, counterexamples to the structure-preserving hypothesis, since the rule which moves an Indefinite Subject must apparently place the Subject in a position in which the phrase-structure rules do not normally generate NP's. However, under our analysis of the Progressive construction, examples such as (354) b. and (355) b. are automatically accounted for. Thus example (355) can be derived from the following sort of base structure:

(356)



The derivation is straightforward. On the VP^1-cycle, Agent-Preposing will apply, moving the NP somebody into the Direct Object position. We then move up to the S-cycle. But now notice that the environment for There-Insertion is met. That is, we have an empty Subject-NP and the Verb be, followed by an Indefinite-NP. Thus the element there may optionally be inserted under the empty Subject node, giving us sentence (355) b. On the other hand, if There-Insertion does not apply, Object-Preposing will apply instead, giving us the normal Progressive sentence (355) a.

Consider next Passive sentences such as the following:

(357) a. Several paintings were exhibited on Friday.

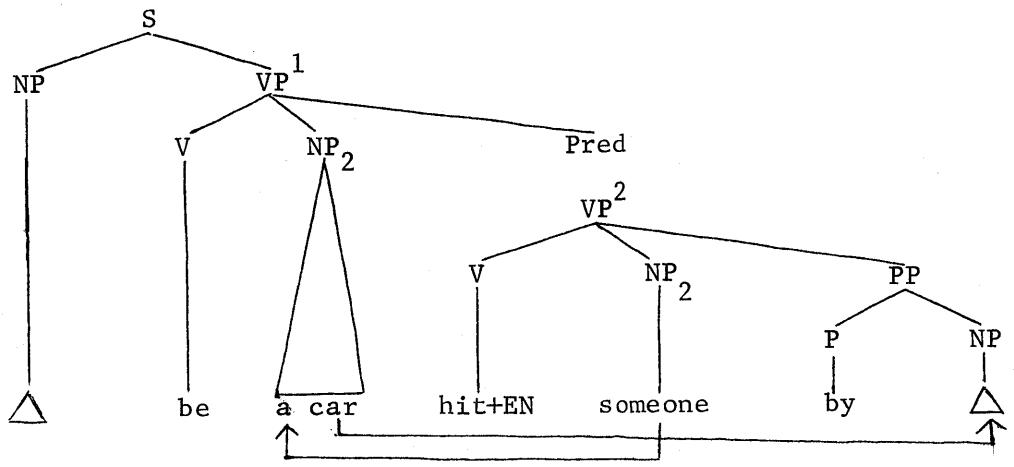
b. There were several paintings exhibited on Friday.

(358) a. Someone was hit by a car.

b. There was someone hit by a car.

In accordance with our analysis of the Passive construction, these pairs can be derived in an equally straightforward fashion from structures of the following sort:

(359)



On the VP^1-cycle, Subject-Postposing will apply obligatorily follwed by Object-Preposing, resulting in the intermediate string: ___ be - someone - hit+EN - by a car. We then move up to the S-cycle, and again it is evident that the environment for There-Insertion is met. If it applies, the result is the correct surface form of example (358) b. Otherwise, Object-Preposing will apply, moving the Indefinite-NP into the Subject position, yielding the normal Passive sentence (358) a.

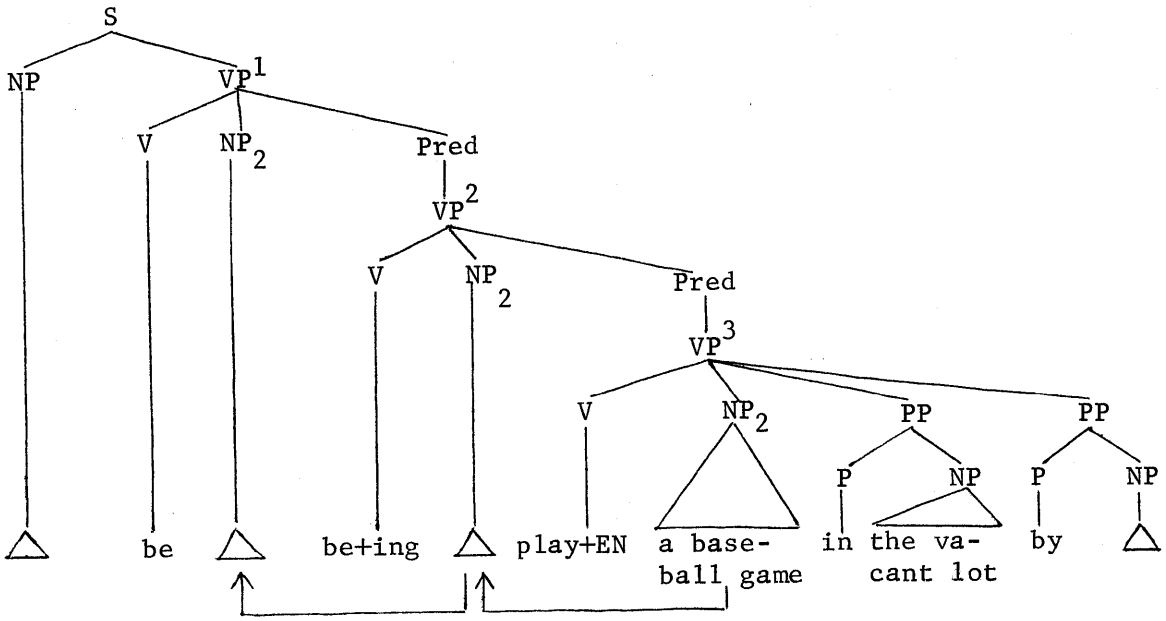
Finally, let us consider a sentence containing both a progressive and a Passive construction, for example, the following:

(360) a. A baseball game was being played in the vacant lot.

b. There was a baseball game being played in the vacant lot.

Evidently, both of the sentences in (360) can be derived from the following base structure:

(361)



On the VP^2-cycle, Object-Preposing will apply, moving the NP a baseball game into the empty Direct Object node in VP^2. On the VP^1-cycle, Object-Preposing will apply, moving the same NP into the NP_2-node in VP^1. Finally, on the S-cycle, we can either apply There-Insertion, producing sentence (360) b., or else we can apply Object-Preposing again, resulting in the Passive Progressive sentence (360) a.

Notice, however, that we must somehow account for the fact that the Indefinite Subject of a Passive Progressive sentence occurs in surface structure after the first be, rather than after the second. Thus sentences such as the following are impossible:

(362) *There was being a baseball game played in the vacant lot.

According to what we have said so far, there is no way of preventing such sentences, for observe that the environment for There-Insertion is met not only on the S-cycle in (367), but also on the VP^1-cycle. What, then, is

to prevent us from applying ThereInsertion on the VP^1-cycle, after which Object-Preposing would be able to apply on the S-cycle, moving there into the Subject position, and thus deriving the ungrammatical (362)? In order to account for this fact, it is necessary to add a condition to the rule of There-Insertion, specifying that be is not dominated by the node Pred. Alternatively, if it is correct to generate Tense and Modal, as well as the Complementizers for-to and S-ing, under the S-node, we can simply include these elements in the structural description of There-Insertion. Since VP-complements never have Tense or Modals, this will automatically ensure that There-Insertion applies only on the S-cycle in (361). We can then write the rule of There-Insertion in the following manner:

(363) $$NP \longrightarrow \text{there} \;/\; \_\_ \left\{ \begin{array}{c} \left\{ \begin{array}{c} (\text{for}) - \text{to} \\ \text{S-ing} \end{array} \right\} \\ \text{Tns } (\text{Modal}) \end{array} \right\} - \text{be} - \begin{array}{c} NP \\ [-\text{Def}] \end{array} - X$$

Conditions: (1) Obligatory if X is null

(2) X may not contain a Predicate-NP or AP

In fact, it is necessary to constrain There-Insertion in this way in any case, since there can never be inserted before Predicate-VP's. Thus all of the following examples are ungrammatical:

(364) a. *I saw there being the soup stirred.

b. *He made there be someone examined by the doctor.

c. *They had there being a baseball game played in the vacant lot.

d. *I tried to visualize there being a bank robbed.

e. *The F.B.I. has there being many phones tapped by its agents.

f. *I watched there being a building torn down.

although the same sentences without there are perfectly all right:

(365) a. I saw the soup being stirred.

b. He made someone be examined by the doctor.

c. They had a baseball game being played in the vacant lot.

d. I tried to visualize a bank being robbed.

e. The F.B.I. has many phones being tapped by its agents.

f. I watched a building being torn down.

On the other hand, VP's which are derived from embedded S's can undergo There-Insertion freely, as is well known:

(366) a. I saw that there was something rolling down the hill.

b. I believe there to be a mouse in my room.

c. We are counting on there being a lot of people at the demonstration.

The rule of There-Insertion thus provides further evidence in favor of deriving examples such as those in (365) from base VP's rather than from sentences, since there would be no way of explaining their inability to undergo this rule under the assumption that they are derived from sentences.

Let us now consider the possibility, mentioned earlier, of deriving the Perfective marker have and the Modals from underlying Predicate-VP constructions of the same sort that we have claimed underlie the Progressive and Passive constructions. If we consider sentences containing only a Modal or Perfect marker, or both, e.g.:

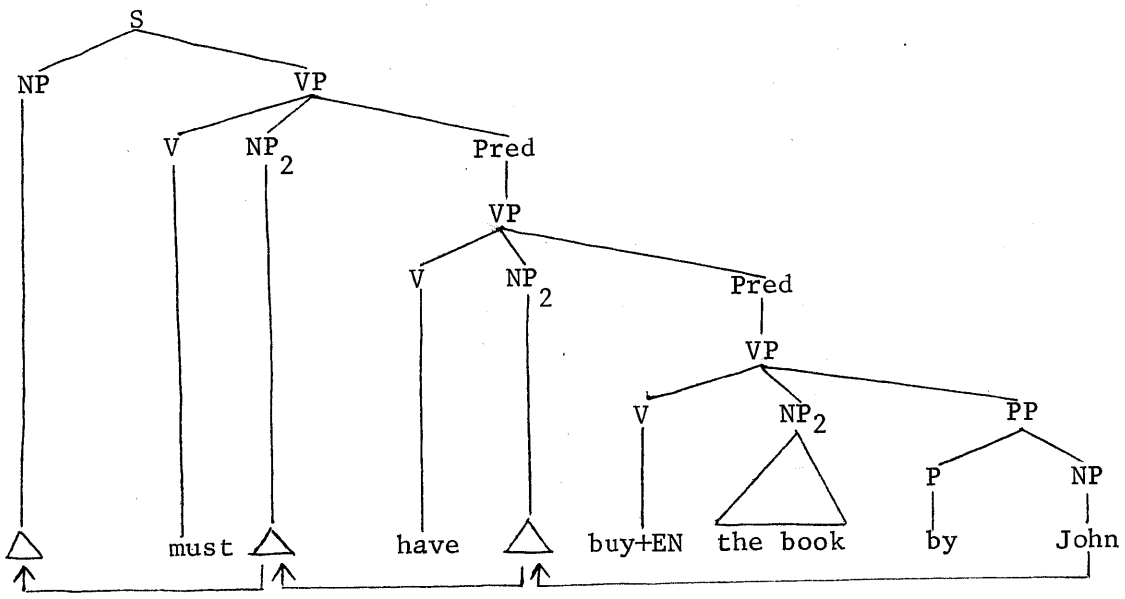
(367) a. John must buy the book.

b. John has bought the book.

c. John must have bought the book.

there would appear to be no reason not to derive these from sources similar to those which underlie the Passive and Progressive. Thus we might assume the following underlying structure for (367) c.:

(368)



By the rules that we already have, this structure would automatically be converted into the correct surface structure John must have bought the book. However, consider what happens when we have a Modal or Perfective plus be, as, for example, in the following sentences:

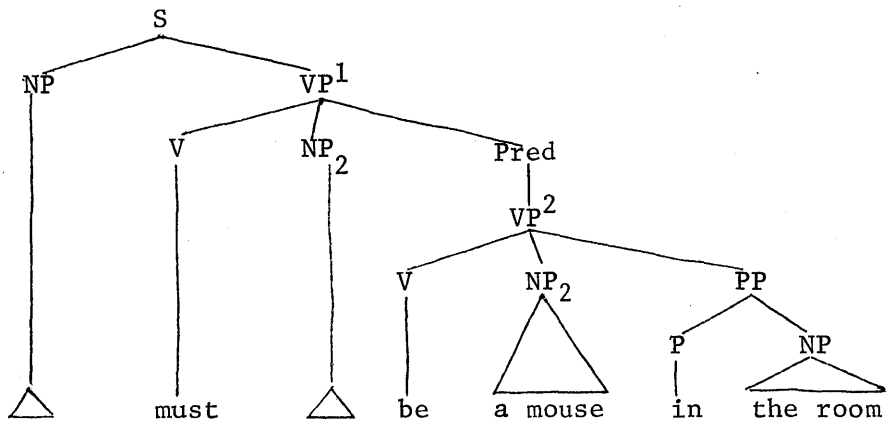
(369) a. A mouse must be in the room.

b. A mouse has been in the room.

c. A mouse must have been in the room.

Sentence (369) a. must be derived from the following sort of structure:

(370)



Notice, however, that it is impossible to derive the following sentence:

(371) There must be a mouse in the room.

from the base structure (370), without adding some sort of ad-hoc condition to the rule of There-Insertion. If we apply Object-Preposing on the VP^1-cycle, then the environment for There-Insertion will not be met on the S-cycle, because there is no be preceeding the Indefinite NP. On the other hand, if we apply There-Insertion on the VP^1-cycle, we will have to give up the generalization that There-Insertion applies only before non-Predicate-VP's. Even if we were to modify the rule so as to allow an optional Modal or have, or both, between the Subject-NP and the copula be, we would still get the wrong result, since there would be nothing to prevent Object-Preposing from applying on the VP^1-cycle, giving us the ungrammatical sentence:

(372) *There must a mouse be in the room.

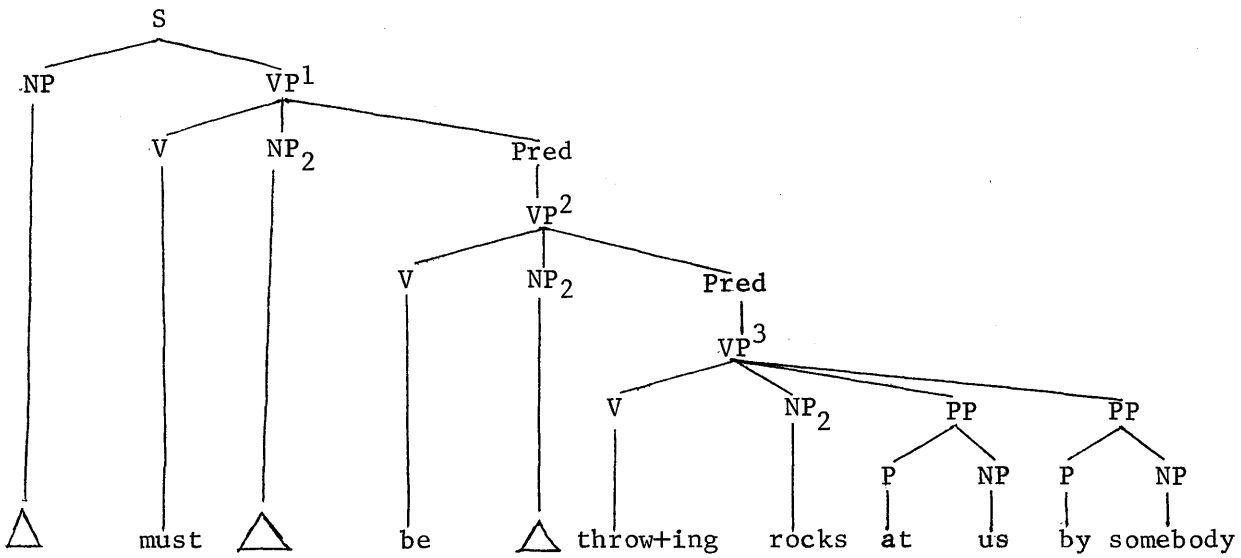
Obviously, the same argument will work for have, and for sentences containing both a Modal and have. Similarly, sentences containing the

Progressive or Passive be can be used to make exactly the same point. If, for example, we derive a sentence such as:

(373) Somebody must be throwing rocks at us.

from the following structure:

(374)



there will again be no way of deriving the sentence:

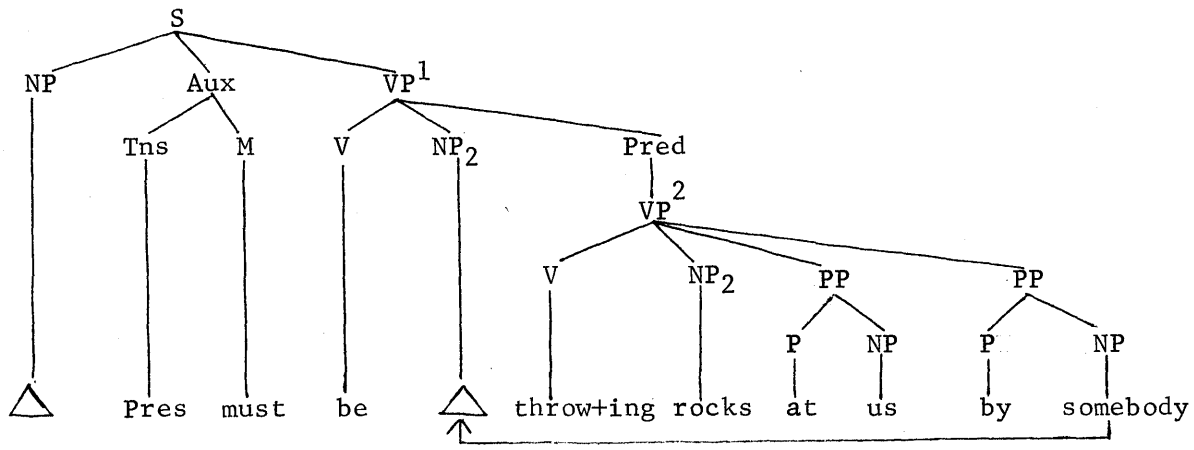
(375) There must be somebody throwing rocks at us.

There-Insertion cannot apply on the VP^1-cycle without giving up the generalization that it never applies before Predicate-VP's. Likewise, it cannot apply on the S-cycle, without deriving the ungrammatical sentence:

(376) *There must somebody be throwing rocks at us.

On the other hand, no such problems arise if we simply assume that the Modals and have are part of the Auxiliary. We can then derive (373) and (375), for instance, from a structure such as the following:

(377)



As long as we allow for the presence of the Aux node in the structural description of There-Insertion, as in fact we have done, the rule will apply optionally on the S-cycle, producing the correct form (375).

I conclude, then, that while There-Insertion provides crucial evidence in favor of deriving the Passive and Progressive constructions from underlying VP-complements, it also provides equally crucial evidence against deriving the Modals and Perfective have from a similar source. Notice that this result accords well with the fact that the elements Tense and Modal may never appear in for-to or POSS-ing complements, whereas the Progressive and Passive may appear in both. Thus there are no sentences of the following sort in English:

(378) a. *I told John to can close the door.

b. *I expect Mary to may be there.

c. *I expected Mary to was there.

(379) a. *I am counting on your can being there.

b. *I disapprove of John must driving the car.

c. *I disapprove of John drove(ing?) the car.

whereas the following are perfectly acceptable:

(380) a. I expect Mary to be closing the door.

b. I expect the door to be closed by Mary.

(381) a. We are counting on your being given a scholarship.

b. *I disapprove of John being driving the car.

Note that the unacceptability of the Progressive in POSS-ing complements is due to an independent constraint, blocking any surface structure sequence of two Verbs both of which have an -ing affix. (Cf. pp. Section 5.3.1.)

On the other hand, the Perfective element have is allowed to occur in for-to and POSS-ing complements, as is shown by the following examples:

(382) a. I disapprove of John's having wrecked the car.

b. We are counting on your having finished by the time we get back.

(383) a. I believe John to have left town already.

b. They expect Bill have to have arrived by now.

Thus the elements Tns (M), for-to, and POSS-ing are mutually exclusive, while the Perfective have can co-occur with any of them. These results can be expressed by the following phrase structure rules:

(384) 1. $S \longrightarrow NP \quad Aux \quad VP$[21]

2. $Aux \longrightarrow \left\{ \begin{matrix} Tns\ (M) \\ (for)\text{-}to \\ POSS\text{-}ing \end{matrix} \right\} \quad (have+EN)$

3. $VP \longrightarrow V \quad (PP) \quad (NP_2) \quad (Pred) \quad (PP)^*...$

4. $Pred \longrightarrow \left\{ \begin{matrix} NP \\ AP \\ VP \\ PP \end{matrix} \right\}$

Given Rule 2. for the expansion of the symbol Aux, we can now reformulate the rule of There-Insertion simply as follows:

(385) $NP \longrightarrow \underline{there} \;/\; \_\_\_\; Aux - \underline{be} - \begin{matrix} NP \\ [-Def] \end{matrix} - X$

which automatically accounts for the fact, noted earlier, that There-Insertion may apply in main clauses, that-clauses, for-to complements, and POSS-ing complements, but never before VP-complements containing the Verb be, since the latter by definition have no Aux associated with them.

Additions - Chapter III

[1]Notice that (25) explains why there is no intransitive form *I make angry, or *I make angry by him. The first example is impossible, because make must have an Agent-phrase. The second example is excluded, because Agent-Preposing is obligatory in this context. It can, however, undergo Object-Preposing, when the Passive Auxiliary is present, yielding the Passive sentence I was made angry by him.

[2]For our purposes here, it does not matter whether or not be is analyzed as a main Verb, or is assigned to the separate category "Copula", as in Chomsky (1965). If the latter is correct, then VP must have the expansion rule:

(a) VP ⟶ Copula NP_2 Predicate

in the base, and Object-Preposing will have to be generalized to apply over either the category Verb or the category Copula. Otherwise, the arguments are exactly the same.

[3]Note that I am not arguing against the need for an exception mechanism of the type discussed in Lakoff (1965) in the theory of grammar. It is clear that there are true exceptions to rules, which can only be handled by means of such a device. What I am arguing, rather, is that in this particular case the use of the exception mechanism is completely inappropriate, since it claims that there is no generality in the phenomena in question.

[4]Sentence (50) is, of course, grammatical, but not under the intended interpretation. It can only be interpreted as meaning "The soup tasted

in some way to me", in which case it must derive from a deep structure identical to (48), except that it must contain an unspecified AP.

[5]There are obviously other alternatives that might be explored. Thus, for example, one might consider deriving the 'Experiencer'-NP from the Subject-position, and assuming a rule which moves the Subject-NP into an empty to-phrase, just in case there is also an AP present. One might then go on to argue that this rule is generalizable with the rule which moves a Subject-NP into an empty by-phrase. If one also argued that the soup in I tasted the soup is in fact an Indirect Object, just as it is in the soup tasted good to me, then a subcategorization feature of the following sort would be possible:

(a) NP ___ NP_1 $\left\{ \begin{array}{l} (\text{by NP}) \\ \text{AP} \quad \text{to NP} \end{array} \right\}$

Still another possibility, which was considered in an earlier draft of this work, and which has been explored further in Selkirk (1971), would be to derive the 'Experiencer'-NP from the NP_1 position in both cases, and to allow the rule of To-Dative Movement to have an inverse operation, again just in case there is also an AP present. However, this would obviously entail giving up the distinction between Indirect Object Movement and Object-Preposing, a position which I argued against earlier. All of these alternatives are not without difficulties. The analysis adopted here is, as far as I have been able to determine, the one which fits in best with the independently motivated rules discussed in Chapter II, as well as being the one which seems to have the most semantic motivation.

[6]I am aware that some speakers may disagree with my judgements in many of these cases. This is not at all surprising, since a distinction

such as the alienable/inalienable one is bound to depend, to a certain extent, on the way speakers conceptualize various relations which obtain in the real world. Therefore, it is almost certain that one will find individual variation in people's judgements of acceptability of sentences such as those in (92). The fact that there are clear cases, however, is sufficient to establish my point, which is, that the alienable/inalienable distinction (wherever the line may be drawn for any given speaker) is reflected syntactically in the distinction between the to-phrase and the Indirect Object positions, respectively, in these constructions.

[7]The place of the Perfect, Progressive, and Passive markers will be discussed in due course.

[8]I am indebted to Noam Chomsky for suggesting to me that the lexical insertion rules might be cyclical.

[9]It is intriguing to note that Bresnan (1970) has recently come up with persuasive arguments which show that certain phonological rules also must apply in this manner, except that they obviously must follow all of the syntactic rules on each cycle, rather than preceeding them.

[10]Cf. Chomsky (1971), Jackendoff (1969), Jackendoff (to appear), Kraak (1967), Fischer (1968), and other recent papers.

[11]Note also that in some dialects this interpretation can be imposed by the addition of a PP whose head is on and whose Object must be coreferential with the Subject-NP, e.g. I had a book stolen on me.

[12]Note that we do have the sentence John got someone to deliver the package, and it might be argued that it is merely an idiosyncratic fact

about get that the embedded VP must occur with the Infinitive marker to, but is deleted (along with the be of the Passive) in (299) a. However, as was pointed out earlier, this account would fail to explain why (299) a. and the sentence just mentioned are non-synonymous. Furthermore, notice that *John got the package to be delivered by someone is only ungrammatical because it violates a selectional restriction, as is shown by the fact that John got Bill to be examined by the doctor is perfectly acceptable. On the other hand, pairs such as I had a book stolen from me by someone and I had someone steal a book from me are synonymous. The facts concerning get can only be made consistent under the assumption that get takes two types of complement, namely the -EN complements already discussed, as well as a for-to (Infinitival) complement. See Chapter IV for a discussion of the latter. Have, on the other hand, only takes an Infinitive complement in instances such as I have to go, which are clearly different from the examples in the text. Cf. again Chapter IV.

[13]Interestingly, have is the only Verb that I know of which may take any of the three VP-complements types -Ø, -ing, and -EN. All others are restricted to one, or at most two, of them.

[14]Note, however, that although we do not have the sentence *we had a lot of books be stolen from our house by someone, we do find sentences such as we had John be examined by the doctor, but notice also that they are different in meaning from the corresponding Passive without be, namely, we had John examined by the doctor. We shall return to these facts in Section 5.3.2.2.

[15]It was noted earlier (cf. p. , Section 5.2.) that there is also

motivation for deriving certain sentences of this type from base structures containing an Indirect Object, rather than a to-phrase, as is predicted by the subcategorization feature established for have earlier in this chapter.

[16]As was noted in Chapter II, many Verbs of the class tire, upset, amuse, frighten, etc. can be either Passive Adjectives or can occur in normal Passive constructions with a by-phrase. In the latter case, of course, they are ungrammatical after seem, e.g. *Bill seems tired by the journey, *the children seem amused by Bill, *They seemed frightened by us, etc. Obviously, it is also possible that some of the Verbs of this class could have Stative Passive forms, making a three-way distinction between Passive, Stative Passive, and Passive Adjective forms. However, judgements are rather uncertain in many cases, and I am not sure whether such a three-way contrast actually occurs.

[17]Note also that there are, as we might expect, Verbs which can appear only in the Passive and which may never have a by-phrase, e.g. be born, so that we have John was born on April 21, but *John was born by Mary. See Emonds (1970), p. 34, where he also points out that certain Verbs must have a deep Subject: *the dinner was preceded, *the speech was followed. Whether or not an Agent-phrase is always optional, or whether there are Verbs which require an Agent, I am not sure.

[18]Notice, incidentally, that it is necessary to impose a general constraint on derivations which rejects any surface structure containing a NP which has not been interpreted as having a grammatical relation to some Verb in the sentence. This is necessary, because under our new

definition of the underline notation, it would be possible, given the subcategorization feature (320) to generate the structure: the enemy - destroy - the city. Observe, however, that there is no way in which the Subject-NP, in this instance, could ever be interpreted as having a grammatical relation to destroy, which is the only Verb in the sentence, and hence the constraint just proposed would reject this derivation. This same constraint will also prevent a sentence such as the offer was rejected by John from being derived in two different ways, i.e. from either ___ - reject - the offer - by John, or from John - reject - the offer - by ___. The point is that the second structure could be generated, given our new interpretation of the underline notation. Furthermore, the structural description for Agent-Postposing and Object-Preposing would be met, thus apparently allowing a second source for the sentence in question. Notice, however, that the NP John would never be interpreted as having a grammatical relation to the Verb, and hence the derivation would be rejected by the proposed convention.

[19]Examples of this sort were first brought to my attention by J. R. Ross.

[20]Cf. footnote 14 on p. .

[21]I leave out of consideration here the possibility that the elements of the auxiliary are contained in the Specifier of VP, as suggested in Chomsky (1970). The phrase-structure expansion of Aux proposed in (384) follows that of Chomsky (1971) and Bresnan (1970).

CHAPTER IV

INFINITIVE COMPLEMENTS

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INFINITIVE COMPLEMENTS

1. . Introduction

In the preceding chapter we have seen that there is considerable motivation for deriving certain complement constructions from underlying VP's, rather than from Sentences. Furthermore, we have seen that for various reasons the complements discussed there must be regarded as instances of the Predicate construction. This immediately raises the possibility that other complement constructions which have generally been derived from underlying full sentences in the framework of generative grammar might not also be more appropriately derived from VP's. In particular, I would like to consider the possibility that certain complements which in traditional grammar are referred to as Infinitives and which generally appear with the element to, as, for example, in the following sentence:

(1) I want Bill to leave.

are derived from VP-complements, rather than from full sentences.

Notice that one immediate consequence of this proposal would be to extend the Predicate/non-Predicate distinction to all of the major phrase categories NP, AP, and VP. Thus, the very different properties of the second NP in the following two sentences:

(2) a. I consider Bill a fool.

b. I gave John the book.

can be accounted for by assuming that the former is dominated by Pred, and hence is related to a sentence such as Bill is a fool, unlike the

latter, which is not dominated by Pred and is not related to the sentence *John is the book. Similarly, it has been argued by Emonds (1970) that the difference between "Adjectives" and "Adverbs", again using the traditional terminology, can be explained as an automatic consequence of the fact that Adjectives are AP's dominated by Pred, whereas Adverbs are AP's which are not dominated by Pred. The following pair would then be parallel to (2):

(3) a. The ice looked cold.

b. John looked (at Bill) coldly.

If some Infinitives are derived from VP's, then the surface difference between the complements to Verbs such as see, hear, have, etc. and ordinary Infinitive complements can be seen as an automatic consequence of the fact that the VP in the former case is dominated by Pred, whereas in the latter case it is not. Thus the pair:

(4) a. John had Bill steal the book.

b. John forced Bill to steal the book.

would again be structurally parallel to the pairs in (2) and (3).

There are, however, more compelling reasons for supposing that some Infinitive constructions might derive from non-sentential sources. Taking Rosenbaum's (1967) analysis as representative, note that in standard analyses of the complement system there is only one source for a surface Infinitive, namely, an underlying "for-to" complement--that is, a sentence with the special "complementizer" for-to. Infinitives thus differ from that-clauses and Gerundive complements only in the relatively superficial matter of having a different "clause introducer". It follows

from this that any Infinitive which does not have an overt Subject-NP in surface structure must be derived by means of a deletion rule. This rule, which was called the "Identity Erasure Transformation" by Rosenbaum, but which is more commonly referred to in the literature as "Equi-NP-Deletion", has the effect of erasing the Subject-NP of an embedded sentence under identity with some NP in the matrix clause. In the light of recent evidence (cf. Postal (1971)), it seems likely that Equi-NP-Deletion must be regarded as consisting of two parts, one being the regular rule of Pronominalization, the other being a rule which deletes a pronominal Subject of an embedded clause which is anaphoric with some other NP in the matrix S. In any case, however the process which effects the deletion of Complement Subjects is to be formulated, it is evident that in the standard theory of Infinitive complementation, Verbs must be specially marked in such a way as to indicate that the deletion is obligatory, optional, or obligatorily non-applicable. For Verbs such as force, for example, Equi-NP must be obligatory, since we have sentences such as:

(5) John forced Bill to leave.

but none of the form:

(6) *John forced Bill for Mary to leave.

On the other hand, Equi-NP is apparently optional for a Verb such as prefer, since we find both of the following types of sentence:

(7) a. I prefer for Bill to stay at home.

b. I prefer to stay at home.

Finally, a Verb such as shout seems never to be able to undergo Equi-NP, since we have (8) a., but not (8) b.:

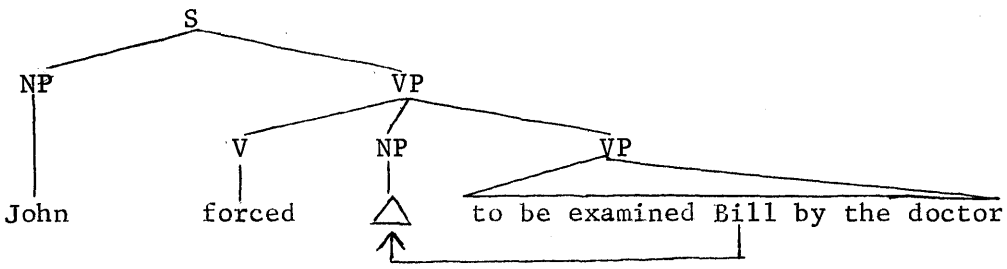
(8) a. I shouted for Harry to leave.

b. *I shouted to leave.

Under the assumption, then, that the source of all Infinitives is a full sentence, there is no principled way of deciding whether a Verb can, must, or may not delete the Subject of its complement. It is simply an idiosyncratic fact which must be marked ad-hoc for each Verb in the language.

In certain cases, namely, where the deletion is optional, this approach seems reasonable. However, what motivation is there for assuming that the Infinitive in (5) is derived from an underlying "for-to" complement, whose Subject is obligatorily deleted? This question becomes especially crucial in view of the fact that within our framework there is an alternative to the standard theory. Suppose, for example, that we were to derive the sentence John forced Bill to be examined by the doctor from an underlying structure, such as the following:

(9)



If we make the further assumption that force is subcategorized in the following manner:

(10) force: NP ___ NP VP by NP

then it is evident that under the conventions proposed in Chapter III, we can account for both the interpretation and surface form of this sentence. Thus the Object of examine--in this case, the NP Bill-- will

be moved into the empty Object position in the matrix S, and, since the Object of force is underlined, it will be correctly interpreted as having the grammatical relation Object-of to the Verb. Notice that under this analysis, there is no longer any need to mark the Verb force as obligatorily undergoing the rule of Equi-NP. The fact that the Object of force is simultaneously the Subject of be examined (ultimately the Object of examine) follows automatically from the base structure (9), plus the subcategorization feature (10).

Furthermore, there are facts which cannot be examined adequately under the assumption that all Infinitives derive from full sentences. Consider, for example, the following pair of sentences:

(11) a. Bill wants John to be examined by the doctor.

b. Bill wants to be examined by the doctor.

Notice that for want, in contrast to, say, prefer, there are no sentences in which the for of the for-to complementizer actually shows up in surface structure:

(12) a. *Bill wants for John to be examined by the doctor.

b. *Bill wants for to be examined by the doctor.

Unless we are willing to make the assumption, with Rosenbaum, that the rule of Complementizer Deletion, which is normally optional, simply happens to be obligatory for want, there would appear to be no strong motivation for deriving (11) a. from a structure which is in any way different from that in (9). However, even accepting this complication, the pair of sentences in (11) leads to difficulties in the standard theory of Infinitives. These sentences must be derived from the structures in (13) a. and b., respectively:

(13) a. $[_S$Bill - wants $[_S$John - to be examined by the doctor]

b. $[_S$Bill - wants $[_S$Bill - to be examined by the doctor]

The standard analysis thus supposes that (11) a. and (11) b. derive from exactly the same type of structure, the only difference between them being that in the latter the Subject of the complement sentence is obligatorily deleted. There is, however, some evidence that this assumption is incorrect. Consider, for example, the following pair of sentences:

(14) a. I want to examine John.

b. I want John to be examined by me.

According to Rosenbaum's analysis, these two sentences derive from the same source, and should therefore be synonymous. However, it appears that they are in fact subtly different in meaning. Thus (14) a. seems to refer to a desire on my part to carry out a specific action, namely, examining John. (14) b., on the other hand, refers to a desire on my part for a certain event to come about, viz. my examining John, but does not seem to imply that the act of examining John is one that I personally want to perform. This difference in meaning is quite consistent. Consider, for example, the following pair:

(15) a. Mary wants John to give her a present.

b. Mary wants to be given a present by John.

In (15) a., Mary's desire for a present is directed toward John, i.e. she wants something <u>of</u> John--in this case, that he give her a present. (15) b., however, does not imply that Mary wants anything <u>of</u> John. Rather, she simply wishes that it would come about that he would give her a present.

The point seems to be that wanting to do something is <u>not</u> parallel

to wanting someone else to do that thing. The standard analysis implies that the only difference between wanting to do something and wanting someone else to do something is that in the first case the performer of the action just happens to be identical to the one who is doing the wanting, but that otherwise the relationship between the Subject of want and the hypothetical event described in the complement sentence is exactly the same. One might ask whether the difference in meaning is not due simply to the surface structure difference between Active and Passive sentences. This would imply the existence of a similar meaning difference between the pair of sentences:

(16) a. I want John to be examined by the doctor.

b. I want the doctor to examine John.

and indeed there does seem to be at least one interpretation under which they differ in meaning. Thus it seems possible to interpret (16) a. as meaning that I want something of John, in contrast to (16) b. which means that I want something of the doctor. However, this difference is not the same as the difference between the pairs in (14) and (15). Sentence (14) a., for example certainly does not mean that I want something of myself, nor does (15) b. mean that Mary wants something of herself. Hence, the difference between (16) a. and (16) b., however it is to be accounted for, cannot be used to explain the difference between the pairs in (14) and (15).

Another way to explain the difference between these pairs might be the following: Assume that there are two different Verbs want. The first, $want_1$, has the structure (13) b., but requires that the Subject of the matrix sentence and the Subject of the complement be identical.

The second, $\underline{want}_2$, is similar to force, and has a structure of the following sort:

(17) Bill - wants - John [John - to be examined - by the doctor]

Furthermore, it requires that the Subject of the complement sentence be identical with the Object of want. Aside from the fact that this solution gives up any hope of relating pairs of sentences such as (11), (14), and (15)--a thoroughly counterintuitive conclusion--it would incorrectly predict sentences such as the following to be grammatical:

(18) a. *I want myself to be examined by the doctor.

b. *Mary wants herself to be given a present by John.

Worse yet, there is simply no evidence that the Subject of the complement of want is the grammatical Object of want. There are, for example, no selectional restrictions between want and its surface Object, as the acceptability of the following sentences shows:

(19) a. I want there to be an explosion.

b. We want attention to be paid to this problem.

c. She wants the garbage to be taken out by someone.

d. Bill wants these new ideas to be discussed.

etc.

The conclusion I draw from these facts is that there is no motivation for supposing that a sentence such as (11) b. is derived from an underlying full sentence by means of a Complement Subject Deletion rule. I shall propose a more satisfactory solution later on.

Still another case in which a Rosenbaum-type of analysis of Infinitives leads to unsatisfactory results is the following. Consider

pairs of sentences such as (20) and (21), below:

(20) a. I dared Bill to jump the stream.

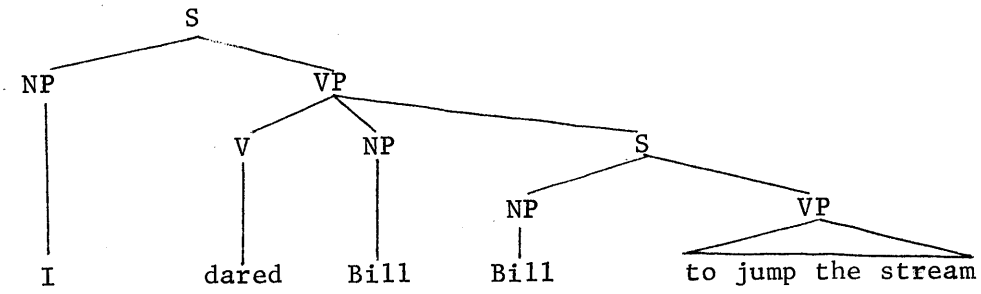
b. Bill dared to jump the stream.

(21) a. I got Bill to take out the garbage.

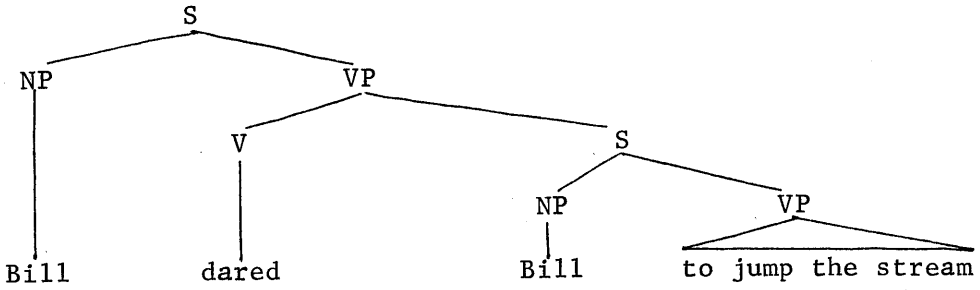
b. Bill got to take out the garbage.

It seems clear that there is a syntactic relation between these pairs of sentences. However, in standard analyses, they would have to be derived from entirely different underlying structures. Thus (20) a. and b., for example, would have roughly the following sources:

(22)



(23)



Notice that for these Verbs not only is there obligatory identity of the Subject of the Complement sentence with some NP in the matrix, as is shown by the fact that we get neither:

(24) *I dared Bill for Harry to jump the stream.

nor:

(25) *Bill dared for Harry to jump the stream.

but worse yet, the 'transitive' dare, which occurs in (22), requires identity with the Object of the matrix S, whereas the 'intransitive' dare in (23), requires identity with the Subject of the matrix S. Yet it is surely obvious that these two constraints are the same constraint. Thus, in this case, the standard analysis not only requires ad-hoc deep structure constraints (or rule-features), but furthermore there must be different constraints for two different 'senses' of the same Verb.--surely an unacceptable conclusion.

To take only one further example of the inadequacy of the standard analysis of Infinitive complements, let us consider briefly Rosenbaum's treatment of Verbs of the believe-class. As Rosenbaum noted, these Verbs have the property that a sentence containing an Active complement sentence is synonymous with one which contains the corresponding Passive. Thus the following are synonymous:

(26) a. John believes Bill to have kissed Mary.

b. John believes Mary to have been kissed by Bill.

indicating that the surface Object of believe does not originate in the matrix sentence. Yet in other respects, such complements behave exactly like Rosenbaum's "VP-Complements", i.e. like Verbs of the force-class. For example, the whole clause cannot be passivized:

(27) *(For) Bill to have kissed Mary is believed by John.

in contrast to sentences with a that-complement, which can be passivized:

(28) That the earth is round is believed by everybody.

Furthermore, the derived Objects in (26) are subject to Passivization:

(29) a. Bill is believed to have kissed Mary.

b. Mary is believed to have been kissed by Bill.

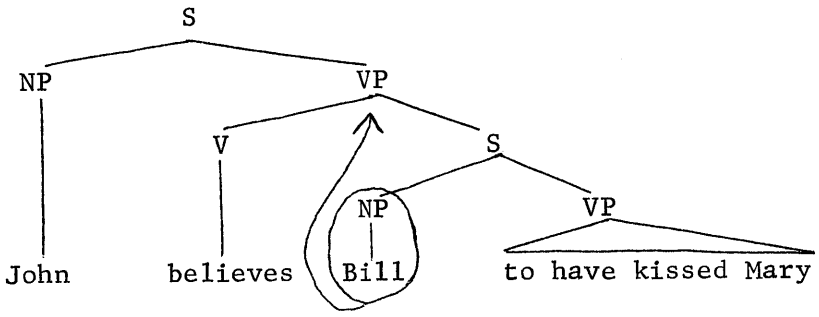
and in this respect are just like the Objects of force:

(30) a. The doctor was forced to examine John.

b. John was forced to be examined by the doctor.

In order to explain these facts, Rosenbaum was forced to assume the existence of a rule, known variously in the literature as "Raising", "Raising into Object Position," "It-Replacement", etc., which took the Subject-NP out of the complement of believe, and created a derived Object in the matrix S:[1]

(31)

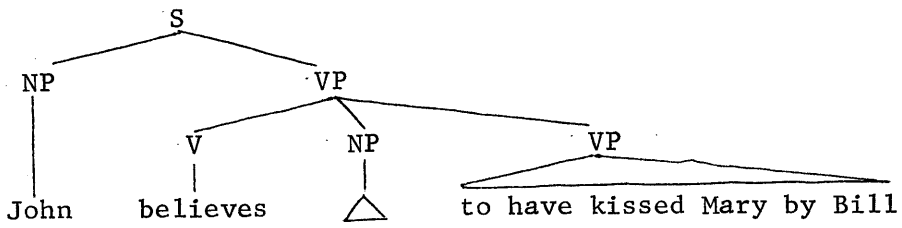


However, as has been argued recently by Chomsky (1971), this rule is not only unmotivated, but is also the only known example of a syntactic rule whose sole effect is to alter the derived constituent structure of a sentence. Under the reasonable hypothesis that all such rules should be restricted to the readjustment rule component of the grammar, which converts surface structures into a form which is appropriate for phonological interpretation (cf. Chomsky and Halle (1968)), this rule immediately becomes suspect.[2]

In our framework, however, all of these problems can be avoided, if we analyze the complements of Verbs of the believe-class as VP's, rather

than as S's. Thus we could derive (26) a., for example, from a structure of roughly the following form:

(32)



Notice that (32) is exactly the same in structure as the proposed source (9) for sentences containing the Verb force. The difference lies in the subcategorization features which are assigned to force and believe, respectively. Thus the latter would have a non-underlined Object-NP:

(33) believe: NP ___ NP VP

in contrast to the former (cf. example (10)), which must have an underlined Object-NP. Under the conventions proposed in the preceeding chapter, then, the surface Object of believe will not be interpreted as its logical Object, and hence (26) a. and b. will be interpreted as synonymous, whereas the surface Object of force will be interpreted as its logical Object, thus accounting for the non-synonymity of (30) a. and b.

In the following sections I shall discuss in detail the classification of Verbs which is imposed by this approachto Infinitival complements, comparing my analysis at the relevant places with the standard treatment, as exemplified in Rosenbaum (1967). I shall then conclude this chapter with a general discussion of certain theoretical issues which are raised by the approach to Infinitive complementation advocated here.

2.0. Verbs with Indirect Objects Only, With or Without Agents

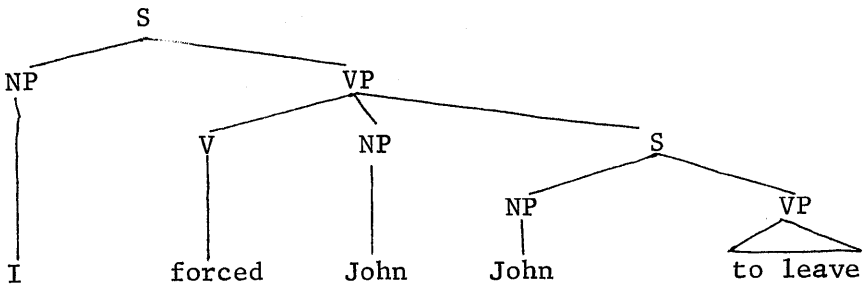
Let us begin by considering the class of Verbs to which force and

persuade belong. Rosenbaum classifies the complements of these Verbs as instances of Transitive VP-complementation. Thus he would assign to the sentence:

(34) I forced John to leave.

a structure of roughly the following sort:

(35)



We have already noted the fact that this analysis fails to explain adequately (1) why there are no sentences of the form:

(36) *I forced John for Bill to leave.

i.e. why the deleted Subject of the VP-complement must be coreferential with the Object of force; and (2) why the Subject of the complement sentence is coreferential with the Object of force, rather than with the Subject. On the other hand, both of these constraints are an automatic consequence of an analysis which derives the complement in such examples from a base VP.

There is, however, other facts which this analysis fails to account for. Consider the following examples:

(37) a. We persuaded Bill to buy the book.

b. They forced the doctor to examine John.

c. They invited me to go to the party.

d. Mary encouraged Bill to bathe regularly.

e. He reminded me to keep my appointment with the dentist.

f. We implored Bill to give up his evil habits.

g. I told Harry to remove his hat.

h. They hired him to play the saxophone.

i. We obliged Bill to put his shoes back on.

j. I permitted the child to take another cookie.

k. Bill tempted Mary to accept the offer.

l. He allowed us to go to the movie.

m. They teach the recruits to kill.

n. I trained the dog to sit up and beg.

The Verbs belonging to this class are quite numerous and include, besides those in (37), Verbs such as provoke, prompt, engage, enjoin, beseech, entreat, exhort, appoint, impel, stimulate, enable, inspire, appoint, choose, urge, defy, induce, direct, empower, instruct, etc. A striking fact about these Verbs is that all of them without exception, require an Animate Object-NP. Thus we do not find sentences of the following kind:

(38) a. *We persuaded the book to be bought by Bill.

b. *I convinced the party to be held on Friday by Mary.

c. *They encourage the roads to be kept clear.

d. *They reminded the appointment to be kept by John.

e. *We implored drinking to be given up by Bill.

f. *They hired the piano to be played by John.

g. *He obliges shoes to be kept on in his house.

h. *I forced there to be an explosion.

etc.

Even more striking is the fact that in a great many instances the Objects of these Verbs show up in adjectival or nominal forms with the Preposition to, as in the following examples:

(39) a. His argument wasn't very persuasive to me.

b. The argument wasn't convincing to me.

c. Their invitation to me to come to the party was kindly meant.

d. This will serve as a reminder to you not to forget important appointments.

e. My entreaties to John to reform himself were of no avail.

f. It is stimulating to me to work with him.

g. Our exhortations to the crowd had no effect.

h. It is inspiring to me to read work of this quality.

i. It was tempting to me to ignore the matter entirely.

j. Bill's comments were encouraging to Mary.

k. It was instructive to me to see how they had dealt with the problem.

This naturally suggests that the surface Objects of the Verbs of this class are derived from the Indirect Object position, rather than from the Direct Object position. Further support for this view can be derived from the fact that in a number of cases the Verb appears with both a Direct and an Indirect Object (cf. Section 3.1., Chapter II):

(40) a. I permitted the children one cookie each.

b. They allowed us one hour of recreation.

c. He taught his son the value of hard work.

d. The bad weather brought us good luck.

e. They lead us a merry chase.

Furthermore, notice that the Verbs of this class which Rosenbaum classifies as instances of Transitive Oblique NP-Complementation are in fact more appropriately analyzed as consisting of an Indirect Object with a Prepositional-Phrase Direct Object:

(41) a. I advised John of his rights.

b. We coaxed Bill into making a decision.

c. Mary convinced Bill of the truth of her theory.

d. We notified Bill of our decision.

e. I reminded Bill of his appointment.

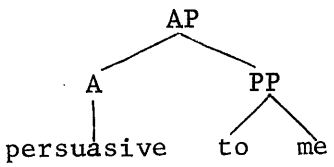
f. I warned Harry of the consequences.

g. He persuaded us of his sincerity.

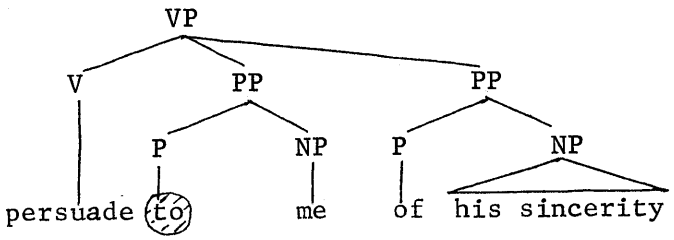
h. They forced John into resigning his post.

If this analysis is correct, then the lexical item <u>persuade</u>, for example, will be allowed to be inserted in the following contexts:

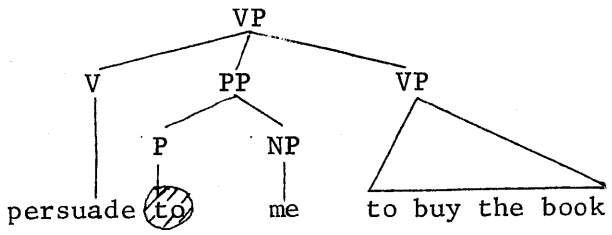
(42)



(43)



(44)

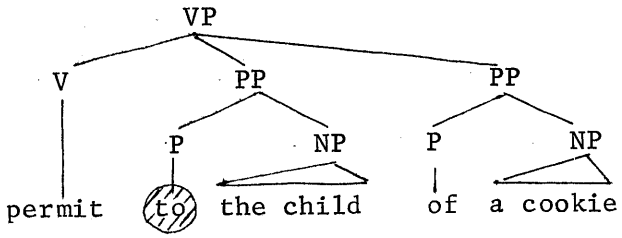


In (42) the Preposition to is kept, since persuasive is an Adjective. However, in both (43) and (44) it will be dropped by the Preposition Deletion rule. The subcategorization feature for persuade can then be written as follows:

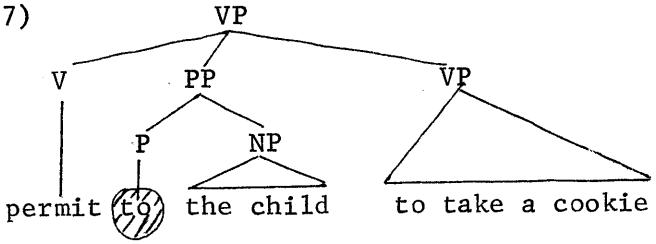
(45) persuade: NP ___ to NP $\left\{ \begin{matrix} \text{VP} \\ \text{of NP} \end{matrix} \right\}$

A Verb such as permit will be subcategorized in exactly the same way, the only difference being that permit, in addition to deleting to, also requires that the Preposition of be deleted, as is in fact regularly the case with the of which appears with the Direct Object:

(46)



(47)



Finally, notice that several of the Verbs of this class, although they do not have appropriate adjectival or nominal forms, can nevertheless appear in a have-construction with an Indirect Object which corresponds to the Object of the Verb:

(48) a. He had a lot of provocation to act as he did.

b. Bill has an engagement at a night-club.

c. I had an inspiration.

d. He has an appointment at L.S.U.

e. Bill has an obligation to put his shoes back on.

Recalling the discussion in Section 4.1.4. of Chapter III, it is evident that such examples support the claim that the Objects of provoke, engage, inspire, appoint, and oblige derive from the Indirect Object position in deep structure, and are therefore properly included in the same class as persuade, permit, etc.

Consider next the nature of the NP which appears as the surface Subject of sentences such as those in (37). We note immediately that all of them may appear with Adverbs such as deliberately, intentionally, on purpose, and so on:

(49) a. We deliberately persuaded Bill to buy the book.

b. They intentionally forced the doctor to examine John.

c. They invited me to go to the party on purpose.

d. Mary intentionally encouraged Bill to bathe regularly.

e. Bill deliberately tempted Mary to accept the offer.

f. He allowed us to go to the movie on purpose.

etc.

This naturally suggests that the surface Subjects of these Verbs derive

from the Agent-phrase in deep structure. Furthermore, observe that a great many of these Verbs may have Inanimate, as well as Animate, Subjects. Thus we have pairs such as the following:

(50) a. John encouraged Bill to keep working on the topic.

b. The discovery encouraged Bill to keep working on the topic.

(51) a. Bill prompted John to write to his congressman.

b. The incident prompted John to write to his congressman.

(52) a. We obliged Bill to leave.

b. Our abominable behavior obliged Bill to leave.

(53) a. Bill's rich father permits him to live in luxury.

b. The money he stole permits Bill to live in luxury.

The relationship between these pairs is easily accounted for in our framework by permitting such Verbs to take either a deep Agent-phrase (as in the a.-sentences) or a deep Subject-NP (as in the b.-sentences). Notice that many of the Verbs in this class may have an Agent, but not a Subject:

(54) a. Bill exhorted John to try harder.

b. *The incident exhorted John to try harder.

(55) a. We enjoined Bill to write his congressman.

b. *The political situation enjoined Bill to write to his congressman.

These Verbs thus correspond to Verbs such as punch, kick, bite, etc., which take only Agents, while Verbs such as encourage, prompt, oblige, and so on, are precisely parallel to Verbs such as hit, scratch, strike, etc., which allow either an Agent or a Subject-NP. A Verb such as prompt, therefore, may have either of the following subcategorization features:[3]

(56) prompt: { NP ___ to NP VP by NP / NP ___ to NP VP (by NP) }

while exhort, for example, has only the first:

(57) exhort: NP ___ to NP VP by NP

Notice, incidentally, that Verbs such as exhort and enjoin demonstrate quite clearly that the notions of 'agency' and 'intentionality' are distinct. Thus the Verbs exhort, enjoin, invite, implore, tell, and a number of others, presuppose intentionality on the part of the Agent, as is shown by the fact that they cannot occur with the Adverb unintentionally:

(58) a. *Bill unintentionally exhorted Bill to try harder.

b. *We unintentionally enjoined Bill to write his congressman.

c. *We unintentionally implored Bill to give up his evil habits.

d. *I unintentionally told Harry to remove his hat.

On the other hand, encourage, oblige, permit, allow, and so on, in spite of the fact that they do not presuppose intentionality, are nevertheless clearly agentive:

(59) a. John unintentionally encouraged Bill to keep working on the topic.

b. We unintentionally obliged Bill to leave.

c. They unintentionally permitted the prisoners to escape.

d. I unintentionally allowed him to get away with it.

There does, however, appear to be an interesting generalization, namely, that just those Verbs that require an animate Agent, and do not allow an inanimate Subject, are the ones which presuppose intentionality. This naturally suggests that intentionality is a feature that is restricted to

Agent-NP's, animate Subject-NP's being marked redundantly [-intentional] . Thus a sentence such as John hit the wall is potentially ambiguous in three ways. In the sense in which it means "John was thrown against the wall", it is just like the rock hit the wall, and the surface Subject derives from the deep Subject position. In the sense in which it means "John went over and deliberately struck the wall", the surface Subject derives from the Agent-phrase, and has, in addition, the feature of intentionality. Finally, there is a third sense in which John was the agent of the action, but his action was unintentional, i.e. "John unintentionally hit the wall with his fist--he meant just to touch it." A Verb such as punch, which requires an Agent, has interpretations of the second and third type, e.g. "John deliberately punched Bill" and "John unintentionally punched Bill--he meant just to tap him", but does not have one of the first type.

2.1. Verbs Without Agents

We must next consider a class of Verbs which Rosenbaum analyzes as instances of Intransitive VP-complementation. Actually, as we shall see, this class of Rosenbaum's includes a number of different types of Verbs, each of which has its own special properties. There is at least one subclass, however, whose members, I shall argue, are like the Verbs of the preceeding section in that they require Indirect Objects, but which differ in that they cannot take an Agent-phrase. Consider, then, the following examples:

(60) a. Bill condescended to come with us.

b. We deserve to be let in free.

c. Bill learned to appreciate Mary's good qualities.

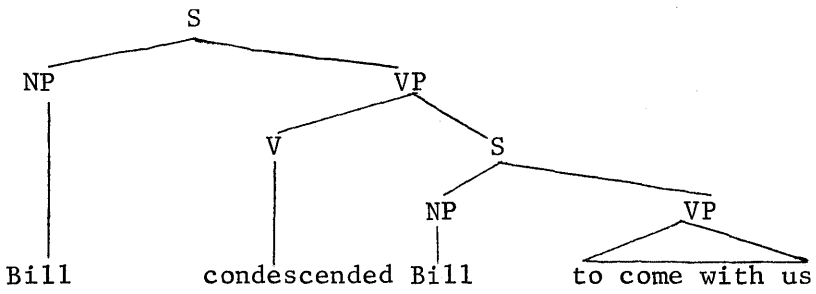
d. John got to take out the garbage.

e. You need to have your head examined.

f. Bill intends to leave next week.

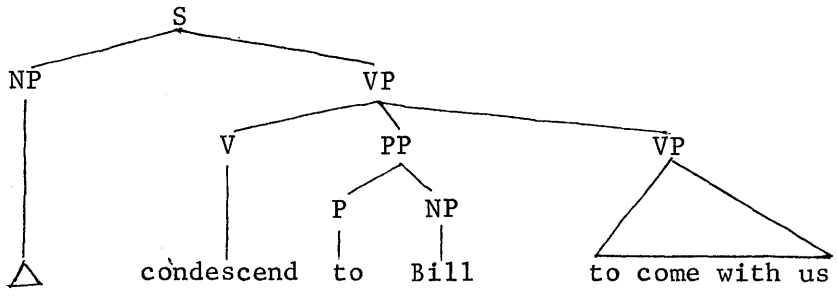
In standard analyses, such sentences are derived from a source of the following sort:

(61)



As we have already noted, this fails to explain the fact that there are no sentences of the form *Bill condescended (for) John to come, *We deserve (for) Bill to be let in free, etc. Suppose, however, that we assume that the surface Subject of condescend is derived from the Indirect Object position in deep structure. We can then derive these sentences from a structure such as the following:

(62)



Some support for this view can be derived from the fact that these Verbs may only have animate Subjects:

(63) a. *The weather condescended to turn cool.

b. *The road deserves to be repaved.

c. *The ball learned to roll down the hill.

d. *The garbage got to be taken out by John.

e. *The car intends to leave next week.

This analysis is particularly plausible in view of the fact that the surface Subjects of these Verbs cannot be derived from either the Agent-phrase or the Subject position. They cannot be derived from the Agent-phrase, because they cannot occur with Adverbs such as deliberately, intentionally, etc.:

(64) a. *Bill intentionally condescended to come with us.

b. *We deliberately deserve to be let in free.

c. *Bill intentionally learned to appreciate Mary's good qualities.

d. *John deliberately got to take out the garbage.

e. *You deliberately need to have your head examined.

f. *Bill intentionally intends to leave next week.

On the other hand, they cannot be derived from the Subject position, because they cannot occur with the Adverb unintentionally:

(65) a. *Bill unintentionally condescended to come with us.

b. *We unintentionally deserve to be let in free.

c. *Bill unintentionally learned to appreciate Mary's good qualities.

d. *John unintentionally got to take out the garbage.

e. *You unintentionally need to have your head examined.

f. *Bill unintentionally intends to leave next week.

As was noted in the previous section, animate Subjects in deep structure are always redundantly specified as [-intentional], and therefore we would expect these Verbs to be able to take the Adverb unintentionally, if their surface Subjects were in fact derived from the deep Subject position. On the other hand, it is a characteristic of "psychological" predicates which have an Indirect Object, but not an Agent- or Subject-NP, that they can occur neither with Adverbs of the deliberately class, nor with the Adverb unintentionally. Consider, for example, Verbs such as admire, love, believe, feel, understand, doubt, and so forth, which, we argued in Section 4.1.4. of Chapter III, must have deep Indirect Objects:

(66) a. *John intentionally (unintentionally) admires sincerity.

b. *Bill deliberately (unintentionally) loves music.

c. *I deliberately feel that he will succeed. (*I don't intentionally feel that he will succeed.)

d. *Bill intentionally (unintentionally) understood the Theory of Relativity.

e. *Scientists deliberately (unintentionally) believe that the Earth is round.

f. *I intentionally (unintentionally) doubt that the war will go on.

In order to use these Adverbs with Verbs of this type, it is necessary in English to embed them beneath an appropriate Agentive Verb, e.g.:

(67) a. John deliberately makes himself admire sincerity.

b. Bill intentionally forced himself to love music.

c. I am deliberately forcing myself to feel that we will succeed.

d. Bill deliberately tried to understand the Theory of Relativity.

e. For a time, scientists had to deliberately make themselves believe that the Earth was round.

f. I am deliberately forcing myself to doubt that the war will go on.

Similarly, it is more natural to resort to paraphrase in order to use the Adverb unintentionally with Verbs of this kind:

(68) a. John unintentionally came to admire sincerity.

b. Bill unintentionally brought it about that he loved music.

c. I was unintentionally forcing myself to feel that we would succeed.

d. Bill didn't intentionally try to understand the Theory of Relativity.

e. Scientists are unintentionally leading themselves to believe that the Earth is round.

f. I unintentionally found myself doubting that the war would go on, under the influence of the Administration's rhetoric.

Facts of this sort point quite clearly to the conclusion that the surface Subjects of the Verbs condescend, deserve, get, etc., are to be derived from the Indirect Object position in deep structure, and are thus similar to transitive Verbs such as love, admire, feel, and so forth.

As a final bit of support for this analysis, observe that a number

of the Verbs in question may appear in their nominal forms in the have-construction:

(69) a. Bill had the condescension to sign our proposal.

b. I have the intention of leaving next week.

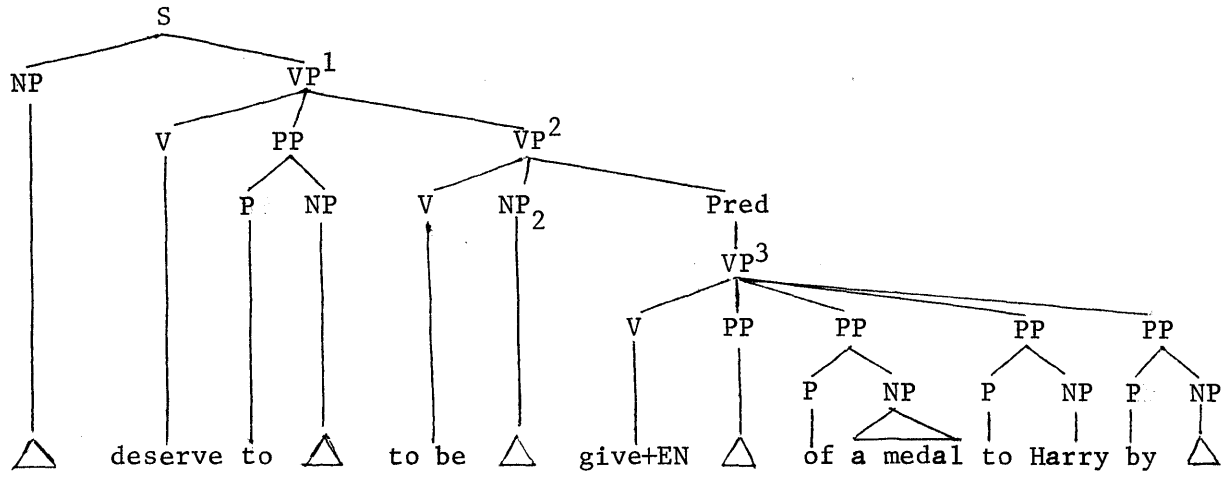
c. You have a need to be examined by a doctor.

d. I doubt that he has the learning to appreicate this paper.

In this respect, too, the Verbs of this class pattern in a manner parallel to the psychological predicates discussed in the previous chapter.

Given that this analysis is correct, we can now proceed to derive the Infinitive complements of these Verbs from underlying VP structures. Thus a sentence such as Harry deserves to be given a medal would be derived from the following base form:

(70)



As indicated in the diagram, the NP Harry will be raised, by means of the regular rules, into VP^2, into VP^1, and finally into its surface position

as Subject of the top S. The Verb deserve would then be subcategorized as follows:

(71) deserve: NP ___ to NP VP

Comparing (71) with the subcategorization feature for exhort, persuade, etc., we see that the only difference between them is that the latter require Agents, as well as an Indirect Object. Interesting confirmation for the correctness of this analysis comes from the fact that there are a few Verbs for which there exists both a 'transitive' and an 'intransitive' form:

(72) a. John got Bill to be examined by the doctor.

b. Bill got to be examined by the doctor.

(73) a. Bill dared John to jump over the stream.

b. John dared to jump over the stream.

Clearly, these Verbs must be subcategorized as follows:

(74) get: NP ___ to NP VP (by NP)

As was noted in Section 1.p., it is difficult to see how the lexical relation between these two different 'senses' of the Verb get can be adequately described in a framework such as Rosenbaum's. Finally, notice that a number of pairs of Verbs which stand in the 'converse' relation to one another (cf. Chapter II, Section 4.4.) also appear with Infinitive complements. Thus we have the following pairs of sentences:

(75) a. He taught them to be polite.

b. They learned to be polite.

(76) a. Mary brought Bill to realize the error of his ways.

b. Bill came to realize the error of his ways.

It is obviously not an accident that the surface Subjects of learn and come have the same grammatical relation to the Verb as the Objects of teach and bring, respectively. Furthermore, this fact is related to the fact that it is the Objects of teach and bring which are the understood Subjects of the Infinitive, whereas it is the Subjects of learn and come which are the understood Subjects of the Infinitive. If the proposal made here is correct, the Verbs teach and learn are related in much the same way as the Agentive and non-Agentive senses of get, or, more generally, in the same way as the two classes of psychological predicates just discussed, of which persuade and as deserve are representative. Thus the syntactic distribution of these Verbs can be seen to be directly related to the fact that they are lexically related to one another in the manner suggested.[4]

2.2. Verbs With Agents only

For certain of the intransitive Verbs which Rosenbaum classifies as requiring VP-complements, the analysis just proposed appears to be correct. However, there are others for which it cannot be maintained. Consider, for example, the following sentences:

(77) a. John tried to leave.

b. Bill refused to go.

c. Harry undertook to find Mary.

d. They are proposing to take us to a party.

e. Bill attempted to escape from jail.

f. He has declined to take part in the program.

g. Mary neglected to do the dishes.

h. John decided not to leave until tomorrow.

We observe immediately that although the Subjects of these sentences are restricted to animate NP's, they are not, unlike the examples considered in the previous section, prohibited from occurring with Adverbs such as deliberately, intentionally, etc.:

(78) a. John deliberately tried to kill Bill.

b. Bill intentionally refused to go.

c. Harry deliberately undertook to find Mary.

d. They proposed to take us to the party on purpose.

e. Bill deliberately attempted to escape from jail.

f. He has declined to take part in the program intentionally.

g. Mary deliberately neglected to do the dishes.

h. John intentionally decided not to leave until tomorrow.

In fact, with only the exception, perhaps, of neglect, the Verbs in these sentences are not only clearly Agentive, but in addition presuppose intentionality on the part of the Agent, as is shown by the fact that they cannot occur with the Adverb unintentionally:

(79) a. *John unintentionally tried to kill Bill.

b. *Bill unintentionally refused to go.

c. *Bill unintentionally attempted to escape from jail.

d. *He has unintentionally declined to take part in the program.

etc.

(But cf. Mary unintentionally neglected to do the dishes.) This naturally suggests that the surface Subjects of such Verbs must be derived from the Agent-phrase in deep structure. In fact, given the assumptions under which we have been working, it seems that they must be derived from the

Agent-phrase. They cannot be Indirect Objects, because Indirect Objects generally do not allow Adverbs such as deliberately. Nor can they be Subjects in deep structure, for the same reason. Also, of course, the fact that they cannot be the animate argues against their being derived from the Subject position.

At the same time, notice that the Verbs in these sentences are exactly like the ones discussed in the preceeding section, in that they require that the Subject of the matrix S be coreferential with the Subject of the Infinitive. Thus there are no sentences of the following form:

(80) a. *John tried for Harry to kill Bill.

b. *Bill refused (for) Mary to go.

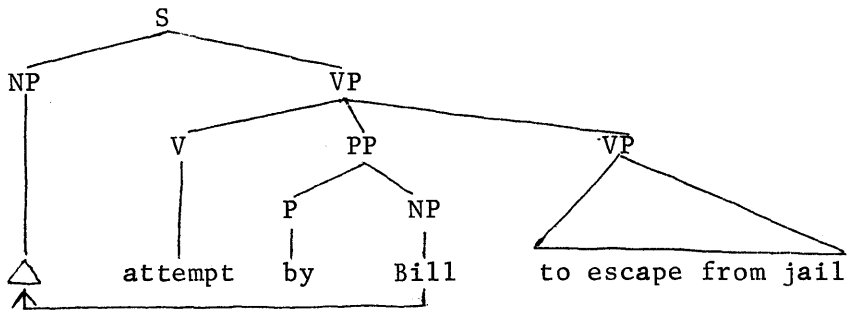
c. *Harry undertook (for) Bill to find Mary.

d. *Bill attempted (for) us to escape from jail.

e. *Mary neglected (for) Bill to do the dishes.

In order to account for these facts, then, I propose to derive sentences of this type from base structures of the following sort:

(81)



The subcategorization feature for attempt would thus have the following form:

(82) attempt: NP ___ by NP VP

Is there any support for this proposal? I believe that there is. Observe, first of all, that in the nominal forms, the Subjects of many of these Verbs may optionally appear in the by-phrase, in spite of the fact that there is no Direct Object. (Cf. also Chapter II, Section 3.1.1.2.) Thus we have pairs of the following kind:

(83) a. Bill's refusal to leave.

b. The refusal by Bill to leave.

(84) a. Their proposal to set up a free clinic.

b. The proposal by them to set up a free clinic.

(85) a. The prisoners' attempt to escape from jail.

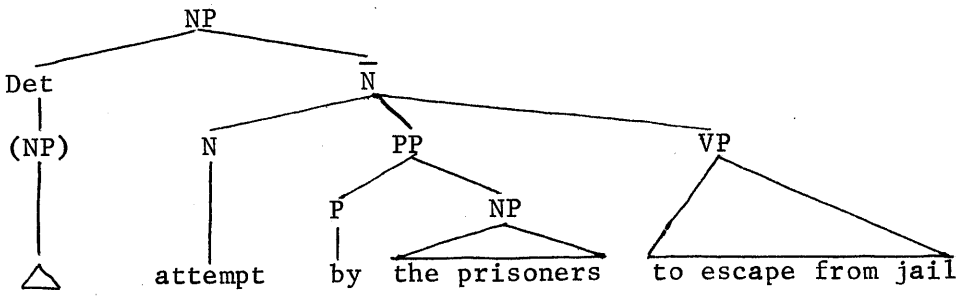
b. The attempt by the prisoners to escape from jail.

(86) a. John's decision not to leave until tomorrow.

b. The decision by John not to leave until tomorrow.

Under the Lexicalist Hypothesis, this is of course exactly what we would expect to find, assuming that these Verbs are subcategorized as shown in (82). Thus (85) b., for example, would derive from the following base structure:

(87)



The fact that the Agent-NP can appear in either the by-phrase or the Subject position follows automatically from the fact that the Subject node

is optional in NP's, while the fact that it may never appear in the Subject position in sentences is due to the obligatory nature of the surface Subject in sentences. Furthermore, notice that these observations would not be predicted correctly, if we tried to derive the Subjects of these Verbs from the deep Subject position. Thus if we assumed the subcategorization feature (88): NP ___ (by NP) VP
we would correctly account for the existence of two nominal forms, but would incorrectly predict the possibility of sentences such as *attempt by the prisoners to escape from jail. On the other hand, if we set up the subcategorization feature as in (89):

(89) NP ___ VP

we would be unable to explain the existence of the b.-examples in (83)-(86). The nominal forms thus provide strong evidence for the correctness of our analysis.

Notice, however, that this proposal also raises certain questions. Up to this point, it has always been the case that an Agent-phrase in a subcategorization feature has appeared to the right of a VP-complement of any kind. (Cf. the Predicate-VP's discussed in Chapter III, as well as the discussion of Verbs of the persuade-class, earlier.) However, the existence of a subcategorization feature such as (82) necessarily implies that VP's must be generable in at least two places under the VP-node. Let us assume that this is correct, and, more concretely, that a VP may be generated in the same position as a Predicate-VP (i.e. after the Direct Object) and also in the same position as a full S (namely, at the end of the VP). We would then have roughly the following PS rule for the expansion of VP:

(90) VP ⟶ V (to NP) (of NP) ($\left\{\begin{matrix}\text{Pred}\\ \text{VP}\end{matrix}\right\}$) (PP)* ($\left\{\begin{matrix}\text{S}\\ \text{VP}\end{matrix}\right\}$)

Assuming that the by-phrase is among the various PP's that may occur to the right of the Predicate-node, (90) will then account for the subcategorization feature for persuade, as well as for (82).

Is there any independent evidence that (90) is correct: In fact, it seems that there is striking evidence of a variety of different kinds that VP's are generable in both the positions suggested by (90). Consider first the interesting fact that a number of the Verbs in (77) may appear in their nominal forms as the Object of the Verb make:

(91) a. The prisoners made requent attempts to escape.

b. The generals are making preparations to take over the government.

c. They made plans to leave the next day.

d. John has made a proposal to change the schedule.

e. The committee made a decision to restrict the use of library cards.

In Chapter III, we discussed at some length the fact that Verbs which take Indirect Objects characteristically appear in the Indirect Object position (or in the to-phrase) in pseudo-Transitive constructions with the Verb have. It seems natural to suppose that constructions such as those in (91), with the Verb make, are similarly the "pseudo-Transitive" forms of Verbs which require Agents in deep structure. Furthermore, observe the significant fact that the Infinitive in these constructions is not part of the nominal Object of make. This is demonstrated by the fact that the nominal alone, not the nominal plus Infinitive, may be passivized. Thus the following are grammatical:

(92) a. Frequent attempts were made by the prisoners to escape.

b. Preparations are being made by the generals to take over the government.

c. Plans were made by them to leave the next day.

d. A proposal was made by John to change the schedule.

e. A decision was made by the committee to restrict the use of library cards.

whereas forms such as the following are not:

(93) a. *Frequent attempts to escape were made by the prisoners.

b. *Preparations to take over the government are being made by the generals.

c. *Plans to leave the next day were made by them.

d. *A proposal to change the schedule was made by John.

e. *A decision to restrict the use of library cards was made by the committee.[5]

Furthermore, notice that the by-phrase in the Passives in (92) cannot naturally appear after the Infinitive:

(94) a. ?Frequent attempts were made to escape by the prisoners.

b. ?Preparations are being made to take over the government by the generals.

c. ?Plans were made to leave the next day by them.

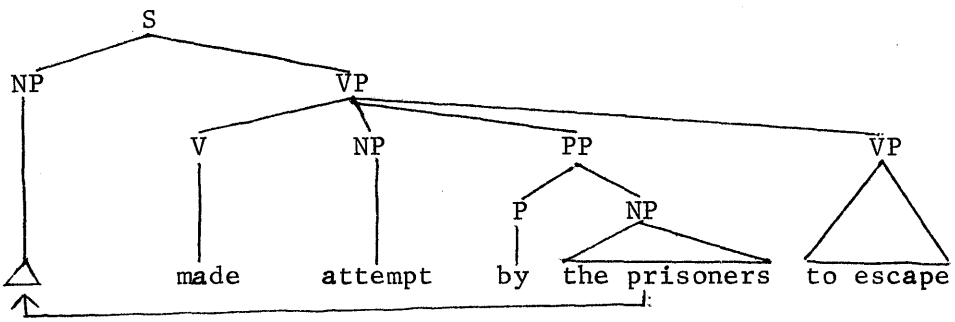
d. ?A proposal was made to change the schedule by John.

e. ?A decision was made to restrict the use of library cards by the committee.

Obviously, it is impossible to account adequately for these facts under

assumption that VP's are only generable after the Direct Object. On the other hand, if we derive sentences such as (91) and (92) from structures of the following sort:

(95)



not only is the position of the by-phrase as well as the fact that only the nominal may be preposed, automatically accounted for, but also we can assign the Verb attempt and the "pseudo-transitive" construction make attempts exactly the same subcategorization feature, namely, (82) (repeated below):

(96) NP ___ by NP VP

Observe next that under the structure-preserving hypothesis, the claim that VP's can occur at the end of the VP, as well as after the Direct Object, automatically explains why certain Infinitives can occur either before or after the by-phrase:

(97) a. John was persuaded by Bill to leave at 10:00.

b. John was persuaded to leave at 10:00 by Bill.

(98) a. We were forced by the weather to go back home.

b. We were forced to go back home by the weather.

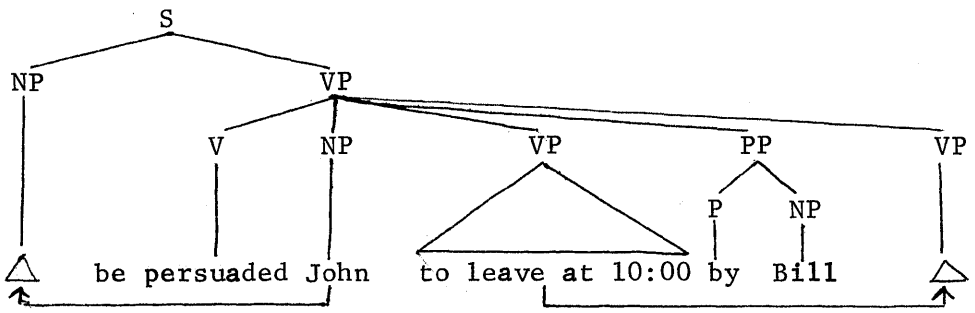
(99) a. John is believed by everyone to have left.

b. John is believed to have left by everyone.

Thus the a.-sentences can be derived from the more basic b.-sentences by

means of the structure-preserving rule shown below:

(99)



Notice that Predicate-VP's may also be moved to the end of the clause:

(100) a. John was seen running down the street by Bill.

b. John was seen by Bill running down the street.

(101) a. Mary was found studying in the library by Bill.

b. Mary was found by Bill studying in the library.

thus providing independent support for the existence of a VP-Movement rule of this sort. It is interesting to note that in Rosenbaum's framework there is no obvious explanation for variants such as (97)-(99), since his rule of Extra-position applies only to NP-complements, and not to "VP-complements", of which (97) and (98) would be instances.

Still further motivation for a separate VP position at the end of the Verb-Phrase can be derived from a class of sentences discussed by Chomsky (1970) in connection with a paper of Lakoff's (1968). Chomsky showed that there was motivation for a rule deleting the Object of certain Prepositional-Phrases under identity with the Object of the Verb use. Consider, for example, the following sentences:

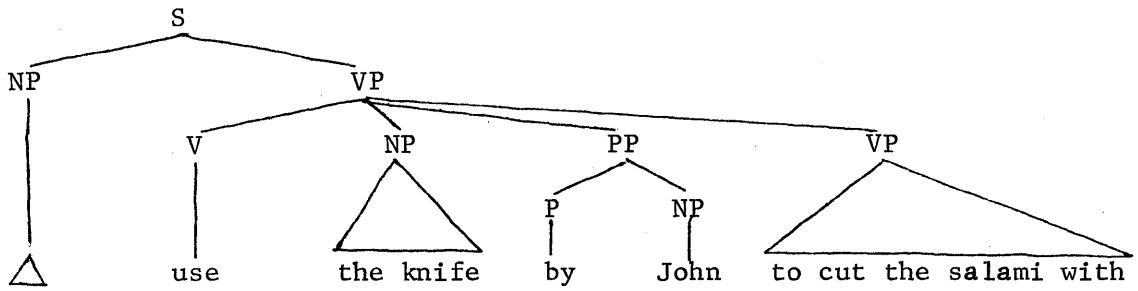
(102) a. John used the knife to cut the salami with.

b. Bill used the chair to lean the door against.

c. Harry used the chair to put his books on.

It is interesting to observe that the surface Subject of use must derive from the Agent-phrase, as is shown by the fact that it can occur with Adverbs of the deliberately-class and may not occur with the Adverb unintentionally:

(104)



Transitive Verbs like use are thus similar to intransitive Verbs such as attempt, and must be subcategorized as follows:

(105) use: NP ___ of NP by NP VP

Again, it is difficult to see how sentences of this kind could naturally be accounted for, if it were not the case that VP's could be generated at the end of the VP, as well as after the Direct Object. Note also that the VP can optionally be moved into the latter position, as is predicted by the structure-preserving hypothesis:

(106) a. The knife was used by John to cut the salami (with).

b. The knife was used to cut the salami (with) by John.

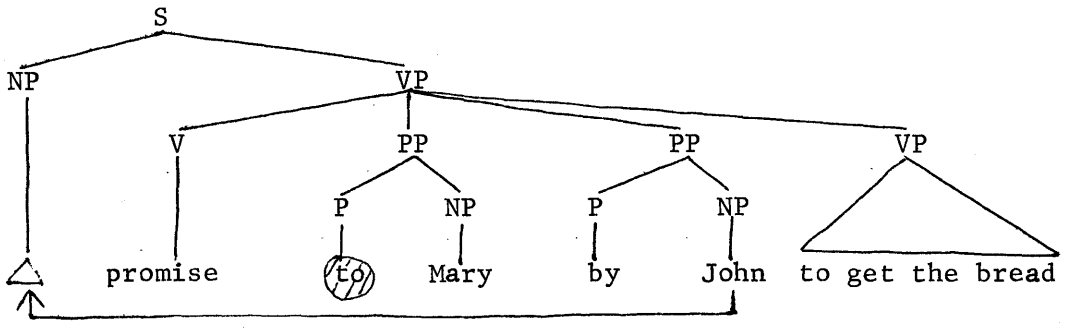
The last argument in favor of the PS rule (90) is, in many respects, the most striking of all. Recall that Rosenbaum tried to solve the "control problem", as Postal has termed it, by means of his "distance principle", which stated essentially that the NP which was "nearest" to the Subject of the complement S, measured in terms of the number of nodes along the

minimal path between the two NP's, was the NP which controlled the complement Subject. There are, however, a number of well known exceptions to Rosenbaum's distance principle, one of them being the Verb promise. In a sentence such as the following:

(107) John promised Mary to get the bread.

the distance principle would predict Mary to be the "controller"-NP. But that prediction is in fact wrong, since the understood Subject of the Infinitive in this case is John. Observe, now, that if the only position in which VP-complements could occur was the position immediately after the Direct Object, then the interpretation of a Verb such as promise could not be accounted for in our framework either, since the understood Subject of the Infinitve would have to be the Direct Object-NP. However, if there is a VP position at the end of the Verb-Phrase, as it seems there must be, then the Verb promise is easily taken care of. We need only assume that the surface Subject of promise derives from the by-phrase, and that the Infinitive arises, in this case, from the VP position at the end of the Verb-Phrase. We can then derive example (107) from the following sort of structure:

(108)



That assumption that the surface Subject of promise derives from the

by-phrase is correct is demonstrated by the fact that this Verb may occur with deliberately, but not with unintentionally:

(109) a. John deliberately promised Mary to get the bread.

b. *John unintentionally promised Mary to get the bread.

Is there any independent motivation for this analysis? Consider, first, nominal forms such as the following:

(110) a. John's promise to Mary to get the bread.

b. The promise to Mary by John to get the bread.

Once again, we find the correct base form (108) directly reflected in the nominal forms, by virtue of the fact that the Subject-NP is not obligatory in nominals, as it is in sentences. Notice, incidentally, that the nominal forms also provide support for deriving the Object-NP, Mary, from a to-phrase, rather than from the Direct Object position, a conclusion which is further reinforced by the existence of sentences such as the following:

(111) a. John promised a cookie to Mary.

b. John promised Mary a cookie.

Furthermore, observe that this also explains why promise cannot be passivized:

(112) *Mary was promised by John to get the bread.

The Preposition to must be deleted by the special, post-cyclic rule of optional to-Deletion (cf. Chapter II, Section 4.4. that accounts for variants such as a book was given to Mary and a book was given Mary. Strikingly, to-Deletion may also apply to the Passive of (111) a., yielding the variants:

(113) a. A cookie was promised to Mary by John.

b. A cookie was promised Mary by John.

The fact that To-Deletion applies after the cyclic rule of Object-Preposing thus explains the lack of a grammatical Passive, just when promise occurs with an Infinitive complement.

Summarizing, notice that we now have the following two subcategorization features for promise:

(114) a. NP ___ (PP) of NP to NP by NP

b. NP ___ to NP by NP VP

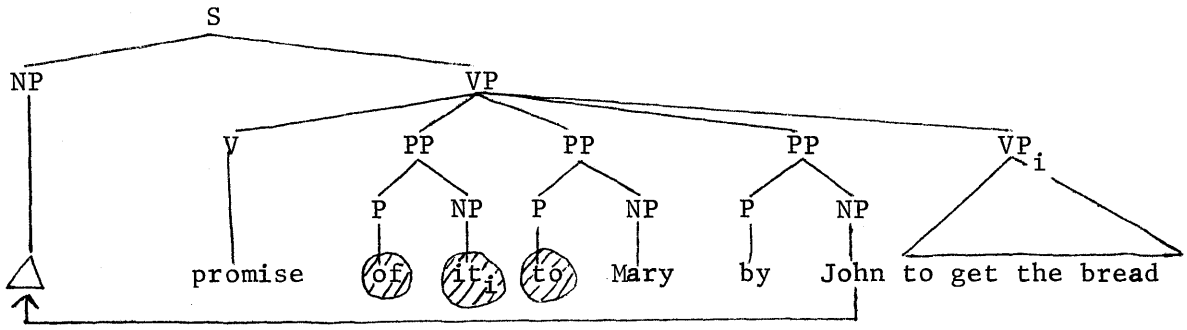
(114) a. accounts for the sentences in (111) and (113), while (114) b. accounts for (107), as well as for nominals of the form (110). Notice, however, that these two features cannot be collapsed by means of parentheses and braces, which suggests that there is an inadequacy in our analysis. At this point it is relevant to consider certain sentences which Rosenbaum used to motivate his rule of Extraposition--for example, the following:

(115) John promised it to Mary to go out and get the bread as soon as he could.

Rosenbaum used the existence of sentences of this sort to justify the extension of his rule of Extraposition to applying in Object position as well as in Subject position. There is, however, as Emonds (1970) has pointed out, a natural analogue, in the structure-preserving framework to Rosenbaum's rules of Extraposition and it-Deletion. All that we need is a semantic rule which requires that the pronominal Object in (115) be anaphoric with the clause at the end of the VP. It-Deletion can then

be made contingent on the Pronoun's being anaphoric with that clause. Although Emonds was primarily concerned with cases in which there is a full S involved, it is clearly a trivial matter to extend his proposal to VP's as well. This naturally suggests that we assign to sentences such as (107) an underlying structure analagous to that which underlies (115), e.g.:

(116)



The correct surface form (107) can now be derived by means of the following sequence of rules: Preposition-Deletion; It-Deletion; Agent-Preposing; To-Deletion. Now, however, notice that the two subcategorization features for promise can be collapsed. The only difference between them is that in one case there is a VP at the end of the clause, whereas in the other case there is not. Thus we can write the subcategorization feature for promise as follows:

(117) promise: NP ___ (PP) of NP to NP by NP (VP)

It might be thought that the optional empty PP next to the Verb would raise a problem, since (117) would allow this PP to be generated in (116), thus allowing To-Dative to apply, which would in turn allow the ungrammatical Passive sentence (112) to apply. However, that is not the case, for

notice that To-Dative is prohibited in any case, when the Direct Object is pronominal:

(118) a. I promised it to John.

b. *I promised John it.

One final point is in order here. Notice that it is possible to have sentences such as the following, which have no overt Object:

(119) John promised to get the bread.

Observe, however, that such sentences must be interpreted as having an unspecified Object. Recalling that in Chapter III, we proposed that an empty, underlined NP was to be automatically given the interpretation "unspecified NP", it can be seen that (117 makes just the right prediction concerning the interpretation of sentences such as (119), thus lending further support to that proposal.

Returning, now, to the main topic--the justification of a VP position at the end of the Verb-Phrase--notice that we have not yet exhausted the evidence provided by Verbs of the promise-class. Strikingly, it turns out that not only do these Verbs have nominal forms which justify our analysis, but also nearly every member of this class can occur in a "pseudo-transitive" construction with make. Thus corresponding to sentences such as the following:

(120) a. Mary vowed (to Bill to seek revenge.

b. The company agreed (with us) to share the cost of the purchase

c. John guaranteed (us) to find the books we needed.

d. Mary pledged (?to us) to contribute some money.

we find constructions of the following kind:

(121) a. Mary made a vow (to Bill) to seek revenge.

b. The company made an agreement (with us) to share the cost of the purchase.

c. John made (gave) a guarantee (to us) to find the books we needed.

d. Mary made a pledge (to us) to contribute some money.

Just as we would expect, the Passive forms of these sentences reveal that the Infinitive must be derived from the end of the VP:

(122) a. A vow was made (to Bill) by Mary to seek revenge.

b. An agreement was made (with us) by the company to share the cost of the purchase.

c. A guarantee was made (was given) (to us) by John to find the books we needed.

d. A pledge was made (to us) by Mary to contribute some money.

Summarizing briefly, we have presented evidence that (1) there is motivation for deriving the surface Subjects of certain Intransitive Verbs from underlying Agent-phrases; (2) there is motivation for deriving the Infinitive complements of such Verbs from a VP at the end of the matrix Verb-Phrase. One unexpected consequence of these proposals is that we are immediately able to explain why the surface Subject of Verbs of the promise-class is the understood Subject of the Infinitive, rather than the Object, a fact for which there is no principled explanation in standard theories of Infinitive complementation. Furthermore, it turns out that the Verbs of this class behave exactly like other Verbs which have Agent-phrases in deep structure, in that they can occur in pseudo-transitive

constructions with make, take Adverbs of the deliberately-class, and so on, thus lending further support to our proposals.

3.0. Verbs With Both Indirect and Direct Objects

We turn now to the important class of Verbs that Rosenbaum classifies as instances of Object-NP-Complementation, namely, Verbs of the believe-class. Examples of such Verbs are contained in the following sentences:

(123) a. I believe Bill to have been arrested by the police.

b. I suspect him to have stolen the cookies.

c. I fancy him to have been a sailor once.

d. They consider Bill to be unreliable.

e. Mary can't imagine Bill to have done something so rude.

f. I judge him to be a little over six feet tall.

g. I assume your statement to be true.

h. The company admitted its product to be inferior.

As was mentioned in the Introduction, the Verbs of this class have a number of curious properties. The essential facts, noticed by Rosenbaum (1967), are these: while on the one hand a Verb such as believe behaves syntactically exactly like a Verb such as force, which requires a transitive "VP-complement". On the other hand the interpretation of sentences such as (123) is apparently similar to ones in which there is no deep Object in the matrix sentence. This is shown by the fact that pairs such as the following are synonymous:

(124) a. I believe Bill to have been arrested by the police.

b. I believe the police to have arrested Bill.

whereas similar pairs containing the Verb force, for example, are clearly non-synonymous:

(125) a. I forced Bill to be arrested by the police.

b. I forced the police to arrest Bill.

The ways in which force and believe are similar syntactically are the following:

(1) Neither can occur with the complementizer for:

(126) a. *I forced for Bill to be arrested by the police.

b. *I believe for Bill to have been arrested by the police.

(2) Neither may have an Object which is distinct from the surface Subject of the Infinitive complement:

(127) a. *I forced Bill for John to be arrested by the police.

b. *I believe Bill for John to have been arrested by the police.

(3) In neither case is the whole Infinitive Complement subject to Passivization:

(128) a. *(For) Bill to have been arrested by the police was forced by me.

b. *(For) Bill to have been arrested by the police is believed by me.

(4) In both cases, however, the surface Object may appear as the Subject of a Passive:

(129) a. The police were forced to arrest Bill.

b. The police are believed to have arrested Bill.

(5) In neither case may the whole Infinitive complement appear in focus position in a Pseudo-cleft construction:

(130) a. *What I forced was for Bill to be arrested by the police.

b. *What I believe is (for) Bill to have been arrested by the police.

although (6) In both cases the Infinitive-VP may appear in focus position in sentences such as the following:

(131) a. What I forced the police to do was to arrest Bill.

b. What I believe the police to have done is to have arrested Bill.

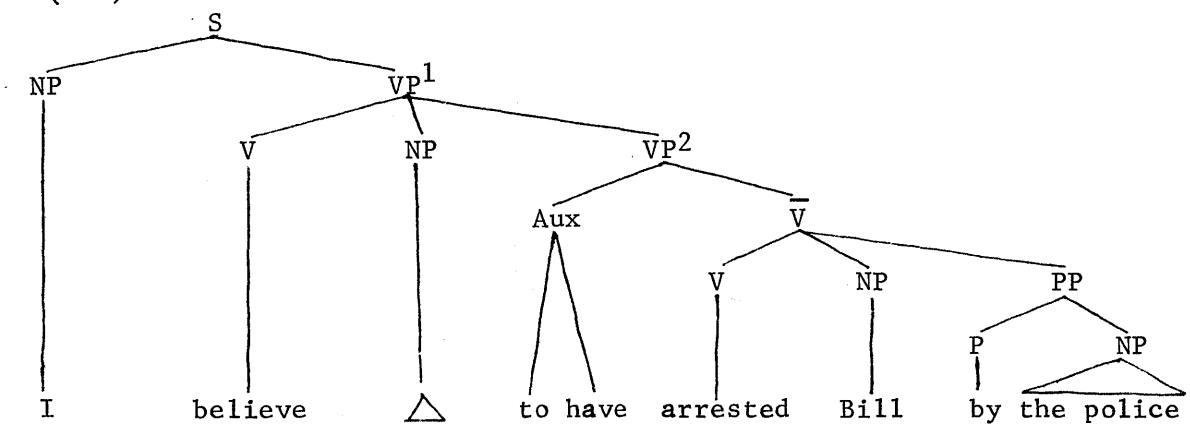
Finally, (7) Both Verbs allow a Reflexive Object:

(132) a. The police forced themselves to arrest Bill.

b. The police believe themselves to have arrested Bill.

There is thus an apparent contradiction between the syntactic evidence and the semantic evidence, regarding the correct deep structure for the complements of Verbs of the believe-class. As was noted earlier, this conflict can only be resolved in the standard theory by assuming an underlying structure in which believe does not have a Direct Object, and then adding to the grammar an unmotivated rule of Raising to convert this structure into one resembling that of a Transitive VP-complement. Observe, however, that if the theory developed in the preceding chapters is correct, such an unmotivated complication of the grammar is unnecessary. In our theory, both the complement of believe and the complement of force can be derived from the same V-NP-VP structure. Thus the sentence I believe the police to have arrested Bill would derive from a structure of the following sort:

(133)



The derivation is straightforward: On the VP^1-cycle the Agent-phrase the police will simply be moved by Agent-Preposing into its surface position as the Object of believe. If the VP-complement contains a Passive construction, then of course Object-Preposing will be applicable, and the NP Bill will be moved into VP^1, thus deriving the sentence I believe Bill to have been arrested by the police.

In its essentials this derivation is identical to that which we have proposed for Verbs such as force. The difference between force and believe lies in the subcategorization features which must be assigned to them. Thus believe, in contrast to force, will be subcategorized with a non-underlined Object-NP, as follows:

(134) believe: NP ___ NP_2 VP

By the conventions proposed in Chapter III, this will automatically ensure that a pair of sentences such as (29) is interpreted as synonymous, since (134) specifies that the derived Object of believe has no grammatical relation to the Verb.

Let us consider next the NP which appears as the surface Subject of

these Verbs. We note first of all that it must in every case be an Animate NP; thus sentences such as the following are deviant:

(135) a. *The rock believes Bill to have been arrested by the police.

b. *The sofa suspects him to have stolen the cookies.

c. *My idea fancies him to have been a sailor once.

d. *Their emotions consider Bill to be unreliable.

etc.

Furthermore, Verbs of this class cannot naturally occur with volitional Adverbs such as deliberately, intentionally, and so forth:

(136) a. ?I deliberately believe Bill to have been arrested by the police.

b. ?I intentionally suspect him to have stolen the cookies.

c. ?I fancied him to have been a sailor once, on purpose.

d. ?They deliberately consider Bill to be unreliable.

nor can they occur with Adverbs such as unintentionally:

(137) a. ?I unintentionally believed Bill to have been arrested by the police.

b. ?I unintentionally suspected him to have stolen the cookies.

c. ?I unintentionally fancied him to have been a sailor once.

These facts indicate that the surface Subjects of believe, consider, etc. cannot derive either from the Agent-phrase or from the Subject position, which means they can only be Indirect Objects in the base structure. I propose, therefore, to revise the subcategorization feature (134) as follows:

(138) believe: NP ___ to NP of NP VP

The deep Indirect Object will of course be moved into its surface position as Subject of the sentence by means of the regular rules of Preposition-Deletion and Object-Preposing.

3.1. Verbs With Optional Direct Object

Recall that in Section 2.1. we argued that a number of intransitive Verbs such as condescend, deserve, get, etc. were to be derived from structures containing an Indirect Object plus an Infinitive complement. Verbs such as believe, on the other hand, require both an Indirect Object and a Direct Object. If these proposals are correct, then we might well expect to find Verbs with a subcategorization feature such as the following:

(139) NP ___ to NP (of NP) VP

In fact, there is just such a class of Verbs, namely those Verbs which Rosenbaum analyzes as taking Object-NP Complements and for which Extraposition, in his framework, is optional. Thus consider pairs of sentences such as the following:

(140) a. I expect Bill to arrive at 9:00.

b. I expect to arrive at 9:00.

(141) a. He wants us to leave at once.

b. He wants to leave at once.

(142) a. I would like you to be examined by the doctor.

b. I would like to be examined by the doctor.

(143) a. I wish you to buy that book.

b. I wish to buy that book.

(144) a. I would prefer John to go.

b. I would prefer to go myself.

(145) a. I intend you to be examined by the doctor.

b. I intend to be examined by the doctor.

That the subcategorization feature (139) represents the correct analysis of these pairs can be seen from the following considerations: (1) The a.-sentences behave exactly like sentences containing Verbs of the believe-class in that passivization of the complement Infinitive does not change the truth-value of the sentence; thus the following pairs are synonymous:

(146) a. I expect Bill to be examined by the doctor.

b. I expect the doctor to examine Bill.

(147) a. I want Bill to be examined by the doctor.

b. I want the doctor to examine Bill.

(2) On the other hand, the Intransitive b.-sentences do not have the same meaning when the complement Infinitive is Passive, and are, in this respect, exactly like Verbs of the condescend-class. Consider, for example, the following pairs, which are, as (139) predicts, non-synonymous:

(148) a. I want to be examined by the doctor.

b. The doctor wants to examine me.

(149) a. I expect to be examined by the doctor.

b. The doctor expects to examine me.

(3) The surface Subjects of both the a.- and the b.-sentences in (140)-(145) are restricted to Animate NP's, as is shown by the ungrammaticality of examples such as the following:

(150) a. *The rock expects (Bill) to arrive at 9:00.

b. *The idea wants (us) to leave at once.

c. *The sofa would like (you) to be examined by the doctor.

d. *My emotions prefer (you) to buy the green hat.

(4) Both the Transitive and the Intransitive forms of these Verbs exclude Adverbs of the deliberately-class, as well as ones such as unintentionally:

(151) a. ?I deliberately (unintentionally) expected (Bill) to arrive at 9:00.

b. ?He purposely (unintentionally) wanted (us) to leave at once.

(1) shows that the Transitive a.-senteces are like believe in having a non-underlined Direct Object-NP; (2) shows that the Intransitive b.-sentences are like condescend, and must have an underlined Indirect Object-NP; (3) and (4) together demonstrate that the surface of both the Transitive a.-sentences and the Intransitive b.-sentences must derive from the Indirect Object position. All of this information is contained in the subcategorization feature (139), which states simply that Verbs such as want, expect, etc. require an underlined Indirect Object and allow an optional non-underlined Direct Object.

The existence of Verbs such as expect, want, etc. thus constitutes strong evidence in favor of deriving Infinitives from VP's, as well as providing support for the particular analysis of believe and condescend proposed here, since it would otherwise be impossible to collapse the Transitive and the Intransitive 'senses' of these Verbs into the single subcategorization feature (139) by means of the parenthesis notation.

One incidental by-product of this analysis is that it allows us to deal with certain difficulties regarding the interpretation of the Intransitive and Transitive sentences containing want that were mentioned briefly in Section 1.0. It was pointed out there that there seems to be

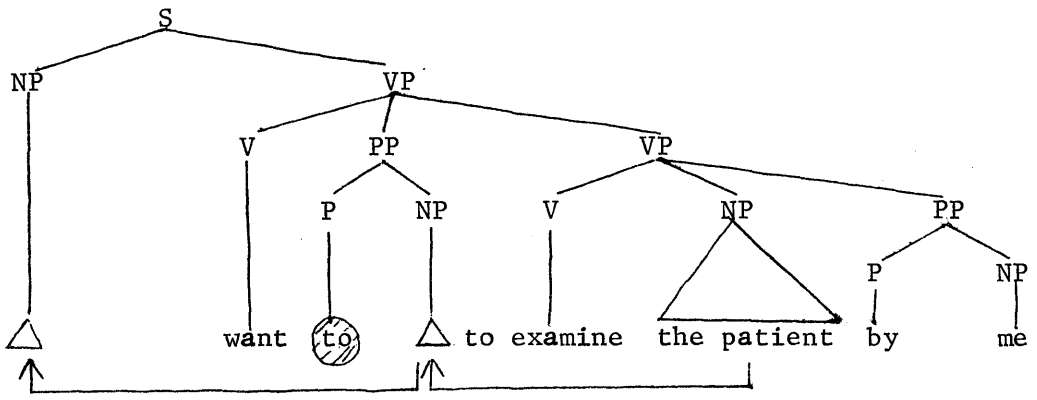
a subtle difference in meaning between a pair of sentences such as the following:

(152) a. I want to examine the patient.

b. I want the patient to be examined by me.

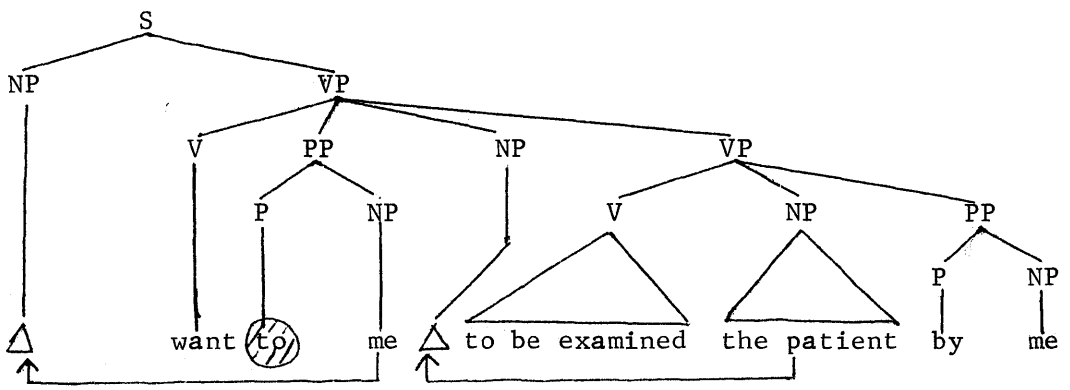
Sentence (152) a. seems to refer to a desire on the part of the Subject-NP to carry out a certain action, namely, examining the patient, while (152) a., in contrast, states that the Subject-NP wishes it to come about that the patient is examined by him, without necessarily implying that the Subject-NP personally desires to carry out the action that is necessary to achieve this result. This difference in meaning cannot be explained in the standard theory of Infinitive complementation, because the two sentences in (152) are derived from identical underlying structures. In our theory, however, these sentences have different sources. Thus (152) a. would be derived from a structure such as the following:

(153)



whereas (152) b. comes from the following base structure:

(154)



The point is that (152) a. derives from a structure in which there is only one occurrence of the NP me. However, because of the way the rules work, this single NP can come to have a grammatical relation both to the Verb want. Sentence (152) b., in contrast, derives from a structure containing two occurrences of the NP me. These two NP's are of course coreferential. Nevertheless, it is, I claim, the fact that (154) contains two different NP's, one of which bears a grammatical relation to the complement Verb, the other of which bears a grammatical relation to the main Verb want, which allows a slightly different interpretation to be given to (152) b., even though the two NP's are coreferential.

This account of the difference between pairs of sentences such as (152) a. and b. may in turn allow us to shed some light on the status of sentences like (152) b. which have a Reflexive Object, for example, the following:

(155) ?I want myself to examine the patient.

Judgements of acceptability seem to vary considerably for sentences of this kind. However, whether it is fully grammatical or not, it is at least clear that it must be interpreted in the same way as (152) b. and

that it is different in meaning from (152) a. This fact follows automatically from our analysis of the Verb want, since (155) would have a source identical to (154), except that the complement Infinitive would be Active rather than Passive.

Similar problems arise in connection with the Verb expect. For many people, both of the sentences below are acceptable:

(156) a. I expect to be on time.

b. I expect myself to be on time.

Furthermore, they differ in meaning. Thus (156) a. means "I expect that I will be on time", whereas (156) b. means "I expect it of myself to be on time". The situation is complicated, however, by the fact that a non-reflexive sentence such as the following:

(157) I expect Bill to be on time.

is ambiguous between the two interpretations "I expect that Bill will be on time" and "I expect it of Bill to be on time". This suggests that non-reflexive sentences with the Verb want might also be subtly ambiguous, and in fact it appears that a sentence such as (158):

(158) I want Bill to be on time.

does have two interpretations, one under which I merely wish it to come about that Bill is on time, another under which I want something of Bill, namely, that he be on time.

The problem, then, is to account for the fact that reflexive sentences such as (155) and (156) b. unambiguously have the second interpretation, whereas the sentences in which the Infinitive has no overt Subject-NP unambiguously have the first interpretation. Notice that the essential

feature involved in the second interpretation, i.e. "I (want, expect) something of someone", is a semantic one. In order to get a reading of this kind, it must be presupposed that the Object-NP is in a position to bring about the event designated by the Infinitive complement, and furthermore that he has the ability to choose whether to do so, or not. Thus the second reading of (158) presupposes that Bill has some control over whether he will be on time or not, and hence it is possible for me to expect it of him that he will choose to be on time. If, on the other hand, the presupposition is that Bill has no power to control his being on time or not, then this reading is impossible, and the sentence can only be interpreted as meaning "I expect that Bill will be on time." It follows that any sentence containing an Inanimate Object-NP should have only the first interpretation, since presumably only Animate beings are capable of making choices, and in fact that seems to be the case. Thus a sentence such as:

(159) I expect the ball to roll down the hill.

can only mean "I expect that the ball will roll down the hill", and not "I expect it of the ball to roll down the hill", which is semantically anomolous. Likewise, we would expect a Reflexive sentence in which the event described by the Infinitive complement is one over which the Object-NP has no control to be anomolous, whereas the same sentence with no overt Object-NP should be all right. This prediction also is borne out by the facts. Consider pairs of the following sort:

(160) a. I expect to receive a package tomorrow.

b. ?I expect myself to receive a package tomorrow

(161) a. Mary wants to be given a present by Bill.

b. ?Mary wants herself to be given a present by Bill.

Under the assumption that receiving something and being given something by someone are not events over which one has any control, it seems clear that the b.-sentences in (160)-(161) are anomolous, whereas the a.-sentences are perfectly acceptable.

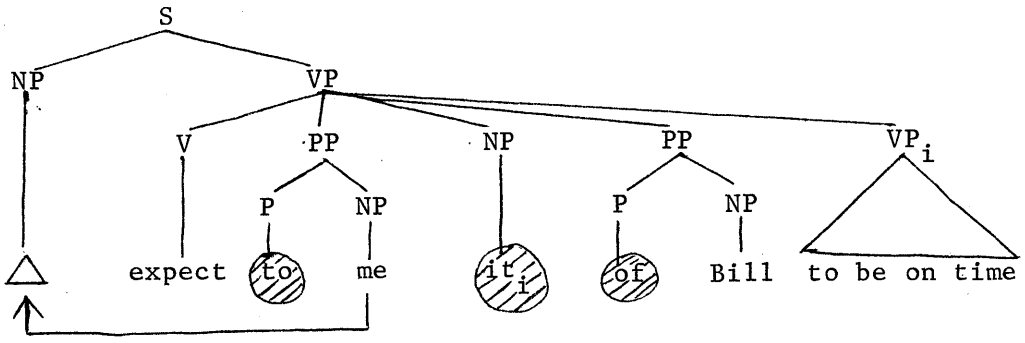
How can we explain these facts? Recall that we started out with the assumption that the Direct Object of want and expect in an Infinitive construction was non-underlined, which means, according to the conventions proposed in Chapter III, that it has no grammatical relation to the Verb. However, the facts discussed above cast serious doubt on this assumption, at least for the cases in which expect (and likewsie want) has the sense of "expect something of someone." These facts were noticed by Rosenbaum (1967), who also observed that this sense of expect is found in constructions of the following sort:

(162) a. I expect it of myself to be on time.

b. I expect it of Bill to be on time.

Rosenbaum concluded finally that he had no motivation for relating sentences such as (162) to the "expect of" sense of (157). Notice, however, that in our framework we already have the machinery for relating them, under the assumption that both derive from an underlying structure of the following form:

(163)



We have already seen, in connection with our earlier discussion of the Verb promise, that the grammar requires that there be a rule which optionally deletes the Pronoun it when it is anaphoric with a VP at the end of the clause. Furthermore, we have a rule which deletes Prepositions when they occur next to the Verb. Hence, the surface structure (157) can be derived by the following sequence of rules: Preposition Deletion, Object-Preposing, It-Deletion, Preposition Deletion. If, on the other hand, It-Deletion fails to apply, then the phrase of Bill will not come to be next to the Verb, and therefore Preposition Deletion will not be applicable, thus accounting for surface forms such as (162).

There are other Verbs for which the same sort of derivation is appropriate. Consider, for example, pairs of sentences such as the following:

(164) a. I require it of you to be on time.

b. I require you to be on time.

(165) a. I requested it of John to be on time.

b. I requested John to be on time.

(166) a. They desire it of me to do what is right.

b. They desire me to do what is right.

(167) a. We demand it of you to be polite.

b. We demand you to be polite.

Notice that the same semantic restrictions which characterized the "expect of" cases hold here as well. Thus if the NP-Object cannot be in control of the situation described in the Infinitive complement, then the a.-sentences are anomolous:

(168) a. ?I require it of you to be given a present.

b. ?I requested it of the ball to roll down the hill.

c. ?They desire it of me to receive a package tomorrow.

d. ?I demand it of myself to be awarded the prize.

In the case of require and request, the b.-sentences are also anomolous under these conditions:

(169) a. ?I require you to be given a present.

b. ?I requested the ball to roll down the hill.

because these Verbs, unlike expect, have only one source, namely, the one analogous to (163). This is further shown by the fact that these Verbs cannot appear without an overt Subject for the Infinitive:

(170) a. *I require to be on time.

b. *I requested to be given a present.

Desire and demand, on the other hand, are like expect, as is shown by the fact that their Infinitive complements can occur without an overt Subject:

(171) a. I desire to receive a package tomorrow.

b. I demand to be given a package tomorrow.

Returning now to the problem posed by the Verb want, it can be seen that those speakers who accept a sentence such as (155) must have a source

of the form: I want it of myself to examine the patient. Alternatively, it could be argued that these speakers have formed sentences such as (155) on "analogy" with Verbs like expect which do, in fact, have such a source. In either case the existence of sentences such as (155) is no longer a problem, nor is the fact that judgements of acceptability tend to be conflicting.

3.2. Other Verbs With Direct Objects

We have just seen that Verbs of the believe and expect classes must be subcategorized to allow a non-underlined Direct Object-NP. One question that immediately arises is whether there are Verbs which must be subcategorized to take an underlined Object-NP, plus an Infinitive complement. In fact, there are, but it is an interesting fact--for which I have no principled explanation--that the Direct object-NP in all such cases is not the derived Subject of the Infinitive, but rather has a grammatical relation to one of the post-Verbal elements of the Infinitive, while the derived Subject of the Infinitive is invariably identical with some NP other than the Direct Object-NP. Consider, for example, sentences such as the following:

(172) a. I gave Mary a book to read.

b. John bought a book for Mary to read.

c. Mary handed Harry an apple to peel.

d. John bought a book to read.

e. I found a present to give to Mary.

f. I have a painting for you to look at.

g. John used the knife to cut the salami with.

h. Bill left the article for us to read.

Before analyzing these constructions in detail, two points must be made. First, the Infinitives in these examples are not, as one might be tempted to think, reduced forms of in order to clauses. The construction is quite distinct in several respects. In particular, the Object-NP in a true in order to construction may never be absent in surface structure, as it is in the examples above. Rather there must be a Pronoun which is coreferential with some NP in the matrix clause. In fact, the Subject of an in order to may not be absent either, unless it happens to be coreferential with the derived Subject of the matrix clause. Thus we find in order to clauses, corresponding to the examples above, of the following form:

(173) a. I gave Mary a book in order for her to read it.

b. John bought a book for Mary in order for her to read it.

c. Mary handed Harry an apple in order for him to peel it.

d. John bought the book in order to read it.

e. I found a present in order to give it to Mary.

f. John used the knife in order to cut the salami with it.

There are, however, no sentences of the following form:

(174) a. *I gave Mary a book in order to read.

b. *John bought a book for Mary in order to read.

c. *Mary handed Harry an apple in order to peel.

etc.

One might, of course, attempt to derive the surface forms in (172) from underlying forms like those in (173) by means of obligatory rules deleting the coreferential Pronouns. However, such a derivation would

ignore the obvious differences in meaning between the two types of sentence. Thus the sentence I bought a book for Mary to read is not equivalent to I bought a book in order for Mary to read it, nor does one even imply the other. Rather, the former implies a sentence of the form: the book is for Mary to read, a point to which I shall return shortly.

The second point is that the examples in (172) cannot be derived from underlying Relative clauses with a for-to complement, i.e. the sentence I gave Mary a book to read cannot derive from a structure of the form: I - gave - a book to read - to Mary. To see this, it is only necessary to try to Passivize the putative complex Object. The result is either ungrammatical , or else a sentence whose sense is quite different from the one that we are interested in:

(175) a. ?A book to read was given to Mary by me.

b. ?A book for Mary to read was bought by John.

c. ?An apple to peel was handed to Harry by Mary.

d. ?A book to read was bought by John.

e. ?The knife to cut the salami with was used by John.

On the other hand, the Direct Object-NP by itself, unaccompanied, that is, by the Infinitive clause, is perfectly amenable to passivization, and the result is a sentence which is equivalent to the active sentences in (172):

(176) a. A book was given to Mary to read by me.

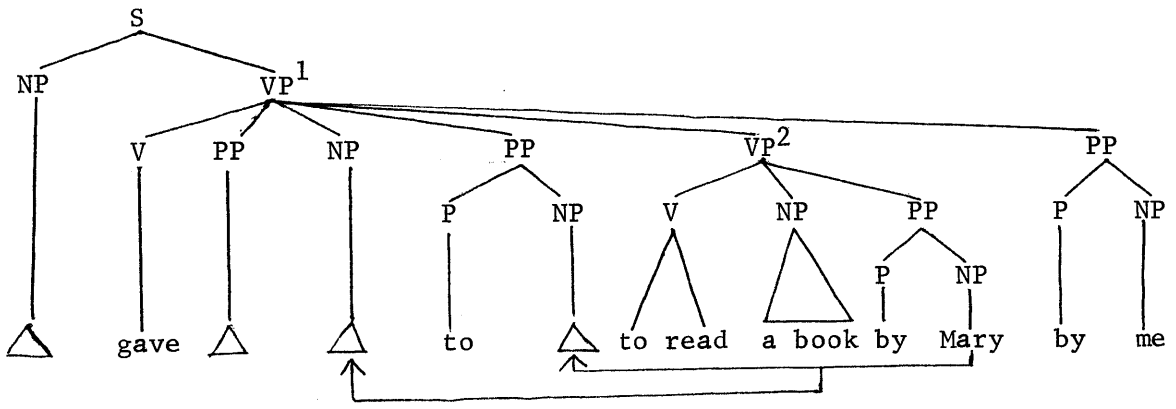
b. An apple was handed to Harry to peel by Mary.

c. The knife was used to cut the salami with by John.

d. The article was left by Bill for us to read.

If these Infinitives are not reduced Adverbial clauses, and if they are not Relatives, then the only reasonable conclusion seems to be that they are subcategorized by the Verb. Let us consider, therefore, how these sentences might be derived under the assumption that the Infinitive is in fact a VP in deep structure, which is subcategorized by the Verb in the main clause. Looking first at sentence (172) a., we see immediately that the understood Subject of the Infinitive to read is Mary, while the understood Object is the NP a book, which is also the Direct Object of the finite Verb buy. To account for the fact that Mary is the Subject of the Infinitive is not difficult, as long as we allow VP's to occur in base structures after a to-phrase. We can then derive (172) a. from a source of the following sort:

(177)



Clearly, Agent-Preposing, applying on the VP^1-cycle, will automatically move the NP Mary into the to-phrase, after which the Dative Movement rules, applying on the S-cycle, will move Mary into its surface position as the Indirect Object. Observe, however, that the rules which we have so far will not enable us to account for the fact that the NP a book, which is the Direct Object of the Infinitive to read, appears in surface structure as

the Object of the finite Verb give. In order to accomplish this, we need a new transformation, which I shall call Object Movement, which we may formulate as follows:

(178) Object Movement:

X - of NP - Y - to V - Z - of NP - W $\Longrightarrow$

X - of NP - Y - to V - Z - of NP - W

Given this rule, the NP a book will now be moved into its surface position as the Direct Object of give, thus deriving--in combination with other familiar rules--the correct surface structure I gave Mary a book to read.

Consider next the subcategorization feature which must be assigned to the Verb give. It is clear that the derived Direct Object and to-phrase in the matrix clause both have a grammatical relation to the finite Verb give. Hence, the only difference, in terms of subcategorization, between (172) a. and a simple sentence such as I gave Mary a book is that the former has an Infinitival VP-complement. The Verb give can therefore be subcategorized simply as follows:

(179) give: NP ___ (PP) of NP to NP (VP) by NP

Once again, we see that the parenthesis notation allows us to collapse two environments into a single subcategorization feature. Notice that in this case it would be equally possible to collapse the two environments by means of the parenthesis notation, if the Infinitive complement were derived from an underlying sentence. However, such a proposal would not only require a special rule of Coreferential Complement Subject Deletion, but also a condition specifying obligatory coreference between the Subject of the Infinitive complement and the Object of the to-phrase

in the matrix clause, for just the Verbs of this class. In our analysis, on the other hand, no Complement Subject Deletion rule is necessary, and the fact that the same NP serves as the Subject of the Infinitive and the Object of to in the matrix clause follows automatically from the subcategorization feature (179), plus the conventions proposed in the preceding chapter.

Let us consider next sentences (172) b. and d. In the former, the understood Subject of the Infinitive is the NP Mary, the Object of the Preposition for, whereas in the latter, the understood Subject is the NP John. (In both cases, of course, the understood Object of the Infinitive is the NP a book, as we would expect.) Recalling the analysis of the Verb buy that was proposed in Chapter II, we see that these facts are easily accounted for by means of the following subcategorization feature:

(180) buy: NP ___ PP of NP to NP (for NP) (VP)

(180) predicts that if a sentence with the Verb buy contains a for-phrase, then the its Object will also be the understood Subject of an Infinitive complement. If, on the other hand, there is no for-phrase, then the Object of the to-phrase (which, by regular rules, becomesthe surface Subject of buy) will be the understood Subject of the Infinitive complement. That the phrase for Mary in (172) b. is a true for-Dative, rather than the 'empty' for which occurs in for-to complements, is proven by the fact that it may undergo For-Dative Movement. Thus we have the optional variant:

(181) John bought Mary a book to read.

In the standard theory of Infinitive complementation, the statements

that would be necesary regarding the "controller" of the Subject-NP in the underlying for-to complement, depending on whether or not there is a for-phrase present, are of course perfectly arbitrary. In the theory proposed here, on the other hand, these facts are an automatic consequence of the claim that Infinitives are VP's, in combination with the independently motivated system of grammatical relations which underlies sentences containing Verbs such as buy, all of this information being represented in the single subcategorization feature (180).

The remaining examples in (172) can be handled in a similar way. Thus hand in (172) c. is like give; findand have would be like buy, both allowing an optional for-phrase, since we find in addition to (172) e. and f. the sentences I found a present for you to give to Mary and I have a painting to look at; the Verb leave is like give in that its surface Subject derives from the Agent-phrase, but it requires a for-phrase, rather than a to-phrase. Finally, examples like (172) g. were discussed earlier in connection with Infinitives whose "controller" is the NP in the Agent-phrase. Notice that in this case the derived Object of use derives from an Instrumental-phrase in the Infinitive complement: whether the rule that is necessary to accomplish this can be generalized with Object Movement is a question that I leave open.

The Verb leave is interesting, because it appears to be the only Verb of this type whose Direct Object may serve as the derived Subject of the Infinitive, i.e. whose Direct Object is not derived from the Infinitive clause by means of Object Movement. Thus we find sentences such as (182):

(182) a. John left the boxes to be picked up by the garbage-men.

b. Bill was left to find his own way home.

As was noted above, leave may also occur with a for-phrase, in which case the Direct Object is derived by means of Object Movement and the NP in the Dative-phrase functions as the Subject of the Infinitive, so that alongside of (182) a. we also find (183):

(183) John left the boxes for the garbage-men to pick up.

These facts can be accounted for by subcategorizing leave simply as follows:

(184) leave: NP ___ of NP (for NP) (VP) by NP

This Verb is interesting in still other ways. For example, in some contexts it may take a to-phrase instead of a for-phrase, e.g.:

(185) John left the details of the arrangement to Bill to take care of.

Finally, notice that we find sentences in which the Direct Object position has apparently been filled in with an expletive it:

(186) John left it to Bill to take care of the arrangments.

Rather than set up a special base structure to account for (186), the existence of (185) suggests that we simply make Object Movement an optional rule. We can then account for all of these contexts by means of the single subcategorization feature (187):

(187) leave: NP ___ of NP ($\left\{\begin{matrix}\text{for NP}\\ \text{to NP}\end{matrix}\right\}$) (VP) by NP

Further confirmation for the correctness of this proposal can be found in the fact that sentences with a for-phrase may also appear with expletive it:

(188) John left it for the garbage-men to pick up the boxes.

Observe also that if (184) is correct, Object Movement would in any case have to be an optional rule in order to prevent both Object Movement and Object-Preposing from applying in the derivation of (182) a., thus causing the derivation to block. If, however, Object Movement is optional, then (182) a. can be derived by means of Object-Preposing without the derivations being blocked. The facts regarding the various context in which the Verb leave may occur thus appear to support the general theory proposed here in a rather interesting way, for it is difficult to see how the generalizations captured in the subcategorization feature (187) could be represented in a natural way in the standard theory of Infinitival complementation.[6]

4.0. True For-To Complements

Before continuing with this discussion of VP-complementation, it is necessary to differentiate carefully the class of VP-complements from several types of sentential complements which appear to be true "for-to" complements in the sense in which this term is used by Rosenbaum (1967). Rosenbaum's belief was that all surface Infinitives could be derived from underlying sentences, which differed from other types of sentential complements only in the relatively superficial respect of having a special "for-to" complementizer morpheme. Rosenbaums' system was thus strikingly homogeneous, in the sense that he assumed that there was really only one basic form of complementation in English. Further differentiation among complement types could only be represented in either of two wyas: (1) By means of features on the matrix Verb, which determined whether a complement sentence could appear in surface structure with one

or another of the three complementizing morphemes "that", "for-to", or "POSS-ING"; (2) By the syntactic position in which the complement S was allowed to appear. In particular, a complement S could be immediately dominated by VP (hence the term "Verb-Phrase Complement"), or alternatively by NP (hence the term "Noun-Phrase Complement"). All the syntactic properties of verbal complements subcategorized by the Verb in English thus had to be explained in terms of two basic complement types, supplemented by a few rules for determining the correct surface distribution of the complementizing morphemes.

Over the past five or six years, however, evidence has been accumulating which shows that the criteria proposed by Rosenbaum for the differentiation of complement types in English is seriously deficient. Thus Kiparsky and Kiparsky (1972) have shown that there are important syntactic and semantic differences between the different complement types, and also among complements of the same type, which cannot be described adequately in Rosenbaum's framework. Emonds (1970), working primarily on the purely syntactic criteria for differentiating complement types, has shown that there are significant differences between <u>that</u>-complements and <u>for-to</u>-complements, on the one hand, and POSS-ING- or Gerundive-complements, on the other. Bresnan (1971) has argued that the role of the complementizing morphemes in both the syntax and the semantics of the English complement system is far more significant than Rosenbaum's treatment would suggest.

The considerations brought forward in this work not only support and extend these recent criticisms, but also suggest that the difficulties with the theory proposed by Rosenbaum are even more fundamental than has

yet been realized. In Chapter III, I tried to show that the class of complements which I call "Predicate-VP's" cannot be adequately described in terms of the notion "sentential complement" at all, and that linguistic theory must allow for the existence of non-sentential complement structures. In this Chapter, I have tried to show that the same is true of certain Infinitival complements which, in Rosenbaum's system, would be derived from underlying sentential structures.

At first it was my belief that all Infinitive complements could be analyzed as base structure VP's. However, for reasons which I shall try to make clear, it appears that there are at least some complements in English for which a Rosenbaum-type analysis is appropriate.

Notice first that all of the infinitive complements discussed so far, looked at in terms of Rosenbaum's system, have at least the following three properties:

(189) (1) The Infinitive complement may never have a Subject which is distinct from the NP which occurs immediately to its left in the matrix VP.

(2) The <u>for</u>-element of the complementizer never shows up on the surface, irrespective of whether or not the surface 'Subject' of the Infinitive has a grammatical relation to the matrix Verb.

(3) None may appear in Pseudo-Cleft sentences which do not involve the use of the "pro-Verb" <u>do</u>.

In Rosenbaum's framework each of these facts must be stated in terms of arbitrary restrictions on rules, or leads to difficulties in specific

cases which can only be resolved by positing unmotivated rules. Thus (1) can only be accounted for by marking specific Verbs as "positive absolute exceptions" to the otherwise optional rule of Coreferential Complement Subject Deletion. Similarly, (2) requires that there be a special rule deleting the element for, whenever coreferential Complement Subject Deletion has applied. Furthermore, (2) leads to difficulties in the case of believe and expect, since these Verbs never allow for in surface structure, even though their Subjects are never deleted. One solution is to posit a rule of Raising. This allows one to retain the generality of the for-Deletion rule and, on the assumption that the raising rule is ordered before Complement Subject Deletion, it also allows one to explain why the latter fails to apply to sentences containing believe. Unfortunately, there is no independent motivation for such a Raising rule, and it must therefore be regarded as ad-hoc. If there is no Raising rule, on the other hand, then it is not only necessary to make the for-Deletion rule obligatory for just this class of Verbs, but there must also be a special restriction on the Complement Subject Deletion rule preventing it from applying to the Verbs of this class, since there are no sentences of the form *I believe to have left. We shall take up shortly the significance of (3).

None of these difficulties arise, however, if the complements discussed so far are regarded as VP's, rather than as S's. To account for (1), no special restrictions on Complement Subject Deletion are necessary, since there is no need for a rule of this sort: the fact that the Subject of Infinitive and the NP immediately to its left are always the same is an

automatic consequence of the fact that the Infinitive is a VP. Furthermore, as has already been noted, this analysis automatically takes care of the "control problem" for these Verbs. Point (2) is also no problem: none of the complements in question ever have the <u>for</u> element of the complementizer, because that element is associated only with S's, never with VP's. Finally, as we shall see shortly, (3) also follows automatically from the proposed analysis.

4.1. <u>Subject Complementation</u>

In marked contrast to the Infinitive complements discussed thus far, there are several classes of complement sentences which behave quite differently with respect to points (1), (2), and (3), above. Perhaps the clearest examples are to be found among the class of Verbs which includes <u>bore</u>, <u>bother</u>, <u>frighten</u>, etc., which we analyzed in Chapter II as requiring a deep Subject and a deep Indirect Object-NP. Consider, for example, pairs of the following kind:

(190) a. It bothers me for Bill to do things like that.

b. It bothers me to do things like that.

(191) a. It frightens Bill for Mary to get anonymous letters.

b. It frightens Bill to get anonymous letters.

(192) a. It charmed the students for the professors to treat them as equals.

b. It charmed the students to be treated as equals by the professors.

(193) a. It disgusts Bill for people to talk about him behind his back.

b. It disgusts Bill to be talked about behind his back.

(194) a. It would amaze me for men to land on the moon.

b. It would amze me to land on the moon.

(195) a. For you to leave now will upset the children.

b. To leave now will upset the children.

(196) a. It would amuse them for us to sing songs.

b. It would amuse them to sing songs.

(197) a. It might anger Mary for John to be examined by the doctor.

b. It might anger Mary to be examined by the doctor.

For Verbs of this type three facts are immediately obvious:

(198) (1)' The Infinitive complement may <u>always</u> optionally have a Subject-NP which is different from the NP which is the Object of the finite Verb.

(2)' The element <u>for</u> always shows up in surface structure when the Subject- of the Infinitive is different from the Object of the matrix Verb, and is obligatorily absent when the Object of the matrix Verb is the understood Subject of the Infinitive.

(3)' The whole complement may appear in focus position in the Pseudo-cleft construction, e.g. <u>What frightens Bill is (for Mary) to get anonymous letters</u>.

The complements of these Verbs thus differ in every significant respect from those Verbs whose complements we have argued are VP's in deep structure. In fact, as I shall try to show, they behave exactly as we would expect, under the assumption that they are S's in underlying structure.

Consider first point (1)'. It has been convincingly argued by Postal

(1970) that the rule of Coreferential Complement Subject Deletion in English shares a number of significant restrictions with the rule of Pronominalization, and that the former should, in fact, be broken down into two separate parts, one being simply the normal rule of Pronominalization, the other being a special rule which deletes complement Subjects when they are coreferential to some other NP in the matrix clause. Now Pronominalization is always an optional rule: in every environment in which a Noun-Pronoun pair can be interpreted as being coreferential, there is always another interpretation under which the pair is not coreferential. But if Coreferential Complement Subject Deletion is, as Postal suggests, a combination of Pronominalization plus a rule which deletes pronominal Subjects in certain complement sentences, then the distribution in (1)' is exactly what we would expect under the assumption that the complements of Verbs such as amuse, frighten, etc. are in fact underlying S's, and hence Subject to Pronominalization and Coreferential Complement Subject Deletion. On the other hand, the apparent obligatoriness of Coreferential Complement Subject Deletion for Verbs such as try, force, etc. is exactly what we would not expect, if Postal's analysis is correct, and if these Verbs are also analyzed, as in Rosenbaum's sytem, as having underlying sentential complements. My argument is, then, as follows: Given that Postal is correct (as I believe he is) in claiming that the deletion of Complement Subjects in Gerunds and for-to complements is due to a combination of Pronominalization and a rule of Coreferential Complement Subject Deletion, it follows that whenever we find a complement for which deletion of the complement Subject is optional, then we have good reason for assuming that

it derives from an underlying sentence. Whenever we find, on the other hand, a complement for which deletion of the Subject is apparently obligatory, we have good reason for deriving it from a VP, since to derive it from a sentence would require that some sort of ad-hoc condition be placed on the regular process by which complement Subjects are deleted, whereas deriving it from a VP whould require no such special constraint.

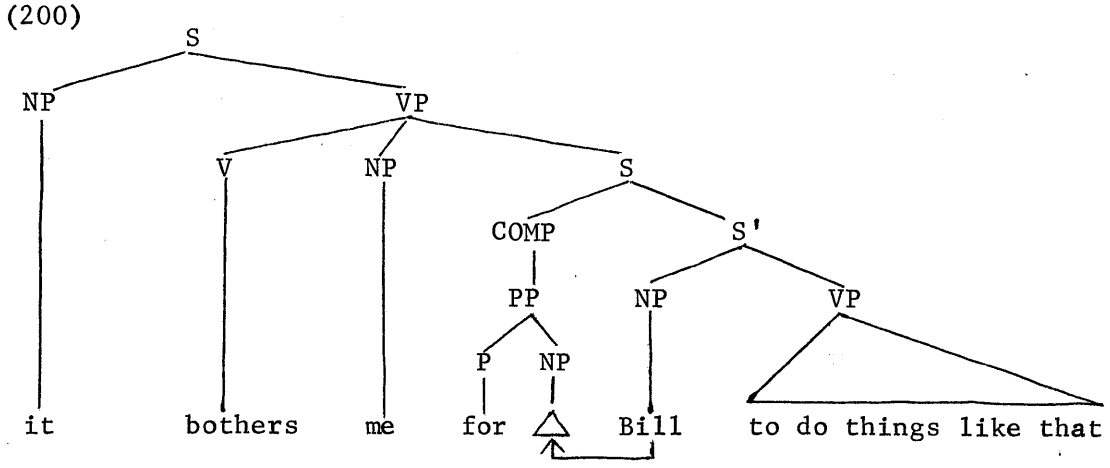
Consider next point (2)'. Following Emonds (1970) and Bresnan (1970), I shall assume that there is a universal element COMP into which the complementizing morphemes, as well as the wh-forms of Questions and Relatives, are inserted. In particular, COMP may dominate any empty NP or PP. In Questions and Relatives this node (P)-NP will be filled in obligatorily by the appropriate wh-form, while in a for-to complement it will be filled in by the complementizer element for and the Subject-NP. The base rules that I assume are thus as follows:

(199) 1. S $\longrightarrow$ COMP S'

2. COMP $\longrightarrow$ [(P) NP , $\pm$WH]

Given these rules, we can derive the complement S in the a.-sentences of (195)-(198) from a structure such as the following:

(200)



A structure-preserving rule will then automatically move the Subject of the complement sentence into the empty NP in the COMP node, as shown in the diagram.

Now, in order to account for the distribution (2)', let us make the following assumptions: (1) The elements of COMP are subject to subcategorization by the matrix Verb, so that bother, for example, can be subcategorized as follows:

(201) bother: NP ___ to NP (for NP) S'

(2) Pronominalization is a cyclic rule which assigns coreferential indices to Noun-Pronoun pairs, under roughly the conditions described in Ross (1969) and Langacker (1969). Furthermore, let us assume that Pronominalization applies only within the boundaries of S', i.e. that the elements in COMP are immune to Pronominalization. Finally, (3) let us assume that there is a rule of Coreferential Complement Subject Deletion, which deletes the pronominal Subject of an embedded S whose VP has the complementizer -ing or to, when the Pronoun is coreferential with some NP in the matrix clause. This rule can be stated roughly as follows:

(202) $X - NP - Y \quad [_S \; Pro - \left\{\begin{matrix}\underline{to}\\ \underline{ing}\end{matrix}\right\} - Z \;] - W$

$\qquad\qquad 1 \qquad\qquad 2 \qquad\qquad\qquad 3 \Longrightarrow$

$\qquad\qquad 1 \qquad\qquad \emptyset \qquad\qquad\qquad 3$

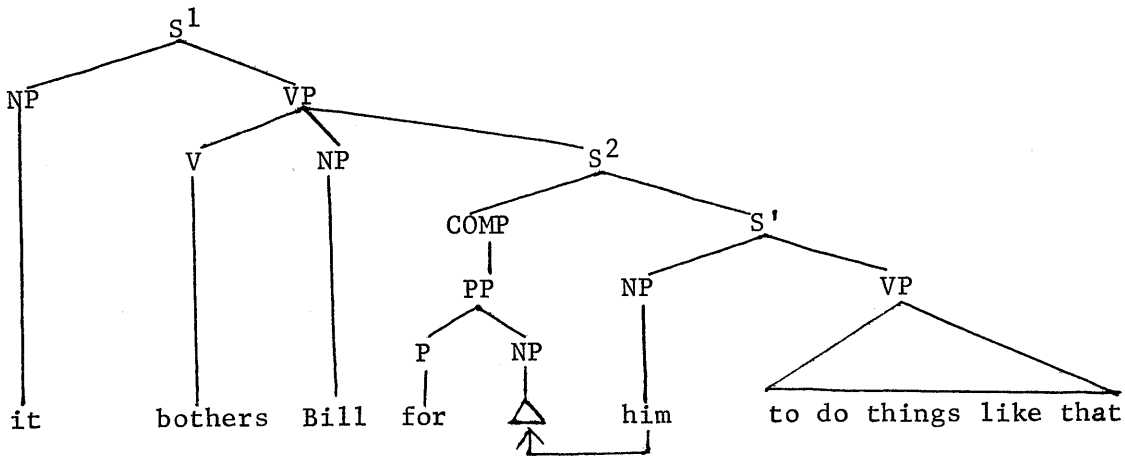
Condition: NP and Pro are coreferential

Notice that Coreferential Complement Subject Deletion (henceforth abbreviated CCSD) is a structure-preserving deletion transformation, as defined in Emonds (1970). That is, it deletes a node of category X (in this case X=NP) under identity with another node of category X. Recalling

that structure-preserving rules are subject to the condition, proposed in Chapter III, that they must apply, if their structural description is met, we see immediately that any for-to complement whose Subject-NP has not either been moved into COMP or marked coreferential with some NP in the matrix clause will be blocked by CCSD. Thus the only well-formed surface structures that will be permitted by these rules are ones that have either a for-complementizer and a Subject-NP which is not coreferential with some NP in the matrix clause, or else that have neither a for-complementizer nor an overt Subject-NP.

To see how the rules work, consider the following derivations. Suppose that we start out with the base structure (203):

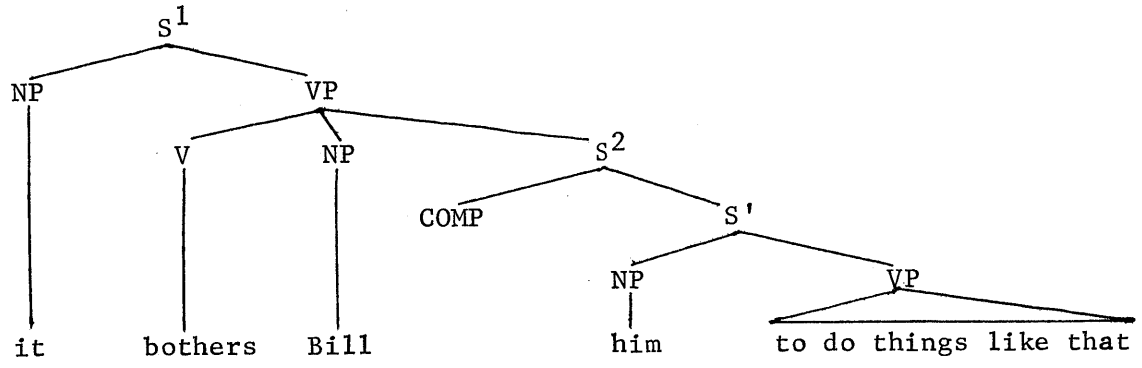
(203)



On the S^2-cycle, since COMP contains a for-NP phrase, the Pronoun him will be raised obligatorily into COMP. On the next cycle, Pronominalization cannot apply, since the Pronoun him is not contained in S'. This gives us the surface structure it bothers Bill for him to do things like that, with the Np's Bill and him correctly marked as non-coreferential.

Suppose, however, that we start out with the following base structure:

(204)



On the S^2-cycle, there is no empty NP in COMP for the Pronoun him to move into and it must therefore remain in the Subject position. Now, on the S^1-cycle, one of the environments for Pronominalization is met, and the NP's Bill and him may be marked coreferential or not, since Pronominalization is an optional rule. If they are marked coreferential, then the conditions for CCSD are met, and the pronominal Subject of the complement-S must be deleted, yielding the surface form it bothers Bill to do things like that, with the understood Subject of the Infinitive correctly interpreted as being coreferential with Bill. Suppose, on the other hand, that Pronominalization is not applied in (204). In that case the derivation will block. For although the structural description of CCSD is met, which means that the rule must apply, it cannot apply, due to the fact that the coreferentiality condition in (202) is not met. Hence there is a contradiction, and the derivation is thrown out.

Notice, incidentally, that this analysis explains neatly why Indirect Questions with a for-to complement always have a deleted Subject in surface structure. Thus we find, for example, sentences such as the following:

(205) a. Bill doesn't know what to do.

b. Mary wondered what book to buy.

but none of the form:

(206) a. *Bill doesn't know what John to do.

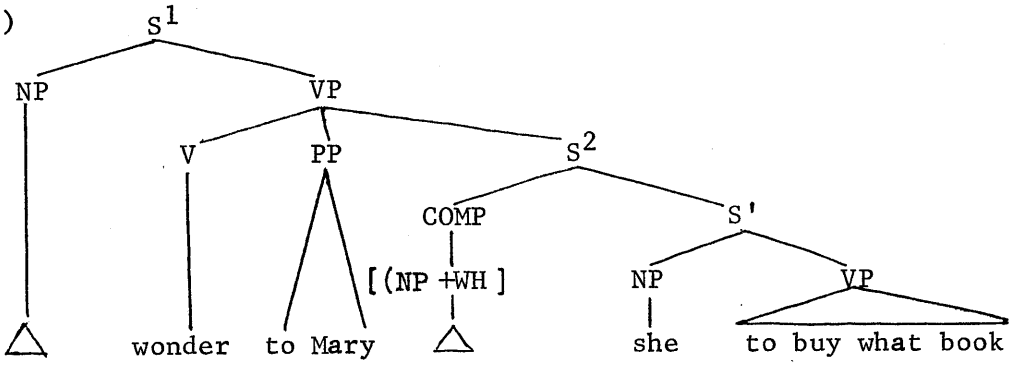
b. *Mary wondered what book Harry to buy.

These results follow immediately from the rules proposed, combined with the fact that Verbs such as wonder and know must be subcategorized to take Indirect Questions, viz.:

(207) wonder: NP ___ to NP [(P) NP, +WH] S'

The underlying structure for (205) b. would be roughly as follows:

(208)



On the S^2-cycle, the rules for WH-Movement require that the NP what book be moved into the empty NP-node beneath COMP, thus preventing the Subject she from being raised, by virtue of the structure-preserving constraint. This in turn ensures that on the S^1-cycle the derivation will block unless Pronominalization applies, marking she coreferential with Mary, in which case CCSD will obligatorily delete the pronominal Subject of the complement sentence. Sentences such as those in (206) may thus never arise.

4.1.1. The Control Problem for Indirect Questions

This analysis of Indirect Questions does, however, raise certain

issues. Recall that one of the main justifications for analyzing Infinitives as VP's was that it eliminated the "control problem", at least in the cases discussed so far. But notice that similar problems arise in the case of Indirect Questions whose complements are Infinitival. Consider, for example, the well known contrast between tell and ask:

(209) a. I told Bill what to do.

b. I asked Bill what to do.

In (209) a. the understood Subject of the Infinitive can only be Bill, whereas in (209) b. it can only be the NP I. This difference is reflected syntactically in a variety of ways. Thus, to take only one example, a Reflexive Pronoun in the complement sentence must agree with the NP in the matrix clause which is the "controller", so that we find sentences such as the following:

(210) a. I told Bill what to buy for himself.

b. I asked Bill what to buy for myself.

whereas the following examples are ungrammatical:

(211) a. *I told Bill what to buy for myself.

b. *I asked Bill what to buy for himself.

If, however, WH-complements are to be derived from underlying sentences through the processes of Pronominalization and Complement Subject Deletion, as suggested above, then there is clearly no reason why the pronominal Subject of the complement S could not be marked coreferential with either of the NP's in the matrix clause.

There are two possible approaches to this problem. One is to argue that some, or possibly all, Indirect Questions are derived from VP's.

In fact, I believe that this is a perfectly viable alternative. Unfortunately, the justification of such an analysis would require far too extensive a discussion of the rules of WH-Movement, etc. for me to discuss it in detail here. I will therefore confine myself to giving nothing more than a sketch of what would be involved in such a proposal. I shall then consider equally briefly the second alternative, which is to consider the interpretation of sentences such as those in (209) as being a matter most appropriately handled in the semantic component of the grammar, and finally I shall compare the two alternatives in a somewhat inconclusive way.

Let us consider then how Indirect Questions might be combined with a VP analysis of Infinitives. Notice, first of all, that the Verb ask and tell may occur in non-complex sentences of the following kind:

(212) a. I told a story to Bill.

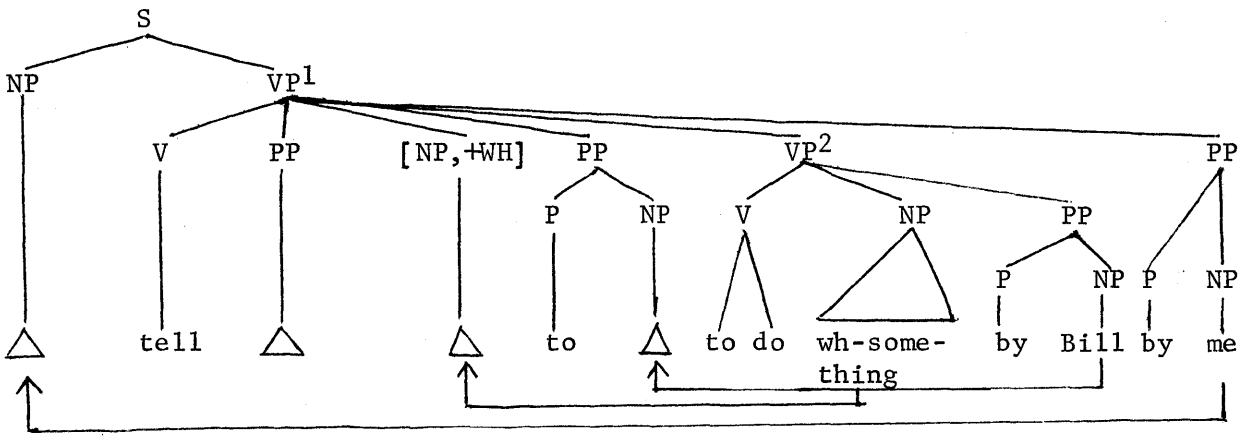
b. I told Bill something.

(213) a. I asked Bill a question.

b. I asked Bill something.

Suppose now that we allow the NP's which are specified as the "arguments" of a Verb in a subcategorization feature to occur with the feature [±WH], the two features together forming a complex feature of the type discussed in Chomsky (1970). Suppose furthermore that an empty feature complex of the form: [+NP, +WH] automatically "triggers" the rule of WH-Movement in Questions. We could then derive the sentence (209) a. from the following sort of structure:

(214)

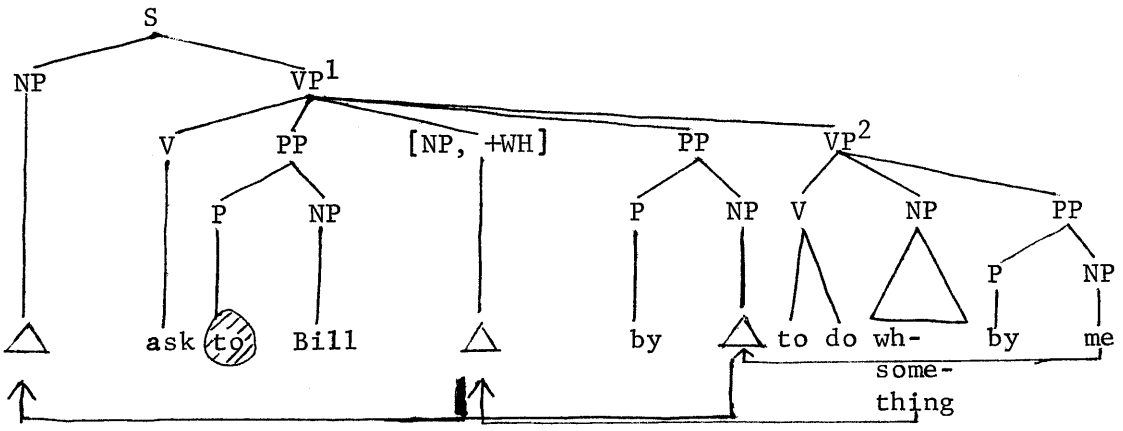


The derivation would proceed as follows: On the VP^1-cycle, Agent-Preposing would apply, moving the NP Bill into the to-phrase, followed by WH-Movement, which would fill in the empty Object-NP with the wh-word what. On the S-cycle, Agent-Preposing would again apply, moving the Agent-NP me into its surface position as Subject of the matrix S. Finally, To-Dative would obligatorily move the derived "Subject" of the Infinitive into its surface position directly to the right of the Verb tell. In order to ensure that tell is inserted in the appropriate context, it would be subcategorized as follows:

(215) tell: NP ___ PP [NP, +WH] to NP VP by NP

Consider next sentence (209) b. In order to account for the fact that understood Subject of the Infinitive is the NP I, we need only assume that the VP in this case derives from the end of the matrix VP. Thus we would have an underlying structure of the following form:

(216)



On the VP^1-cycle, Agent-Preposing and WH-Movement will apply, followed by Agent-Preposing again on the S-cycle, the result being the correct surface form: I asked Bill what to do. The subcategorization feature for ask would be as follows:

(217) ask: NP ___ to NP [NP, +WH] by NP VP

Notice that there is an entirely different sense of ask, in which it has a meaning similar to that of tell or request, and in this sense of ask the understood Subject of the Infinitive must be the Object-NP, rather than the Agent-NP:

(218) I asked Bill to do something.

This difference is reflected in the subcategorization feature for this sense of ask, which we can write as follows:

(219) ask: NP ___ to NP VP by NP

Similarly, tell may occur without an Indirect Question in sentences such as (220):

(220) I told Bill to do something.

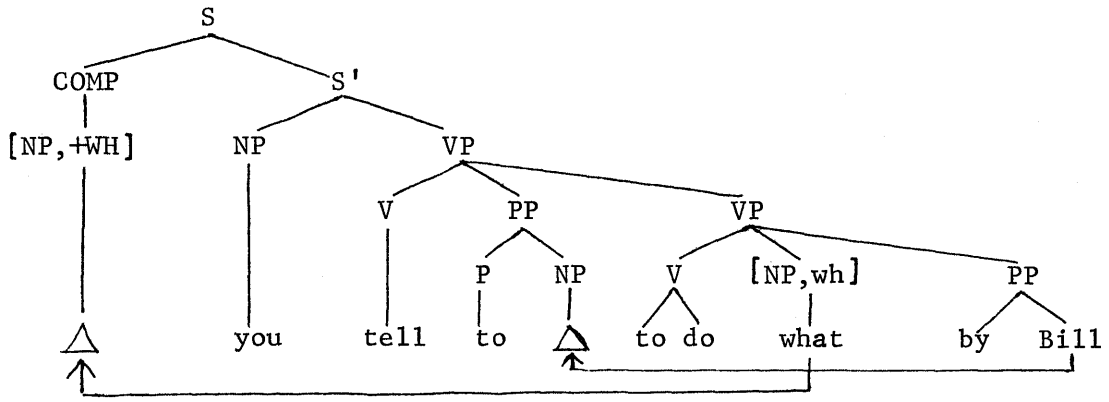
in which case it has a subcategorization feature identical to that of ask in (219).

Let us next consider briefly some of the complications that arise in connection with the rules of WH-Movement. Notice that in addition to the Indirect Question form I told Bill what to do, we also find Direct Questions of the form:

(221) What did you tell Bill to do?

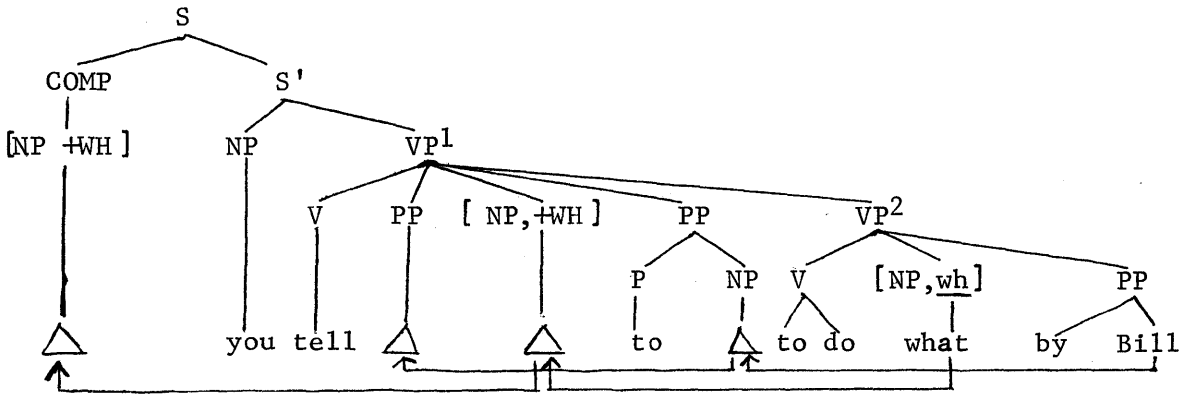
Sentences of this sort obviously must derive from a structure containing a +WH NP in the COMP of the matrix sentence, i.e. from a structure of roughly the following form:

(222)



The correct surface form is then derived by applying Agent-Preposing on the VP^1-cycle an wh-Movement on the S-cycle. There is, however, an alternative. Suppose we were to derive (221) from a structure of the following sort, with two +WH NP's:

(223)



We could then derive (221) in the following manner: On the VP^1-cycle, we apply Agent-Preposing and wh-Movement; on the S'-cycle we apply To-Dative and Preposition Deletion; and finally, on the S-cycle, we apply wh-Movement again. In other words, rather than deriving (221) by means of a single application of wh-Movement on the S-cycle, it might be possible instead to derive it by two applications of wh-Movement on successive cycles.

This proposal must be abandoned, however, upon consideration of the following sentence:

(224) What did you ask Bill to do?

Sentence (224) is not, as we might have expected, the question form of (209) b., in which the understood Subject of the Infinitive is you, but rather can only be understood in the same way as (218), in which the NP Bill is the understood Subject of the Infinitive. This fact follows immediately if wh-Movement is not in fact "successive cyclic" (cf. Postal (1972), for this term), and if (224) is derived from a structure exactly

like (222). If, on the other hand, wh-Movement were able to apply on successive cycles, then there would be no reason why (224) could not be derived from a structure exactly like (216), but with a +WH NP in the COMP of the matrix sentence, thus predicting (224) to have an interpretation analagous to that of (209) b. In fact, it is clear that in order to get the right interpretation for (224), we must prevent wh-Movement from ever applying to a complex NP with the feature +WH .

Notice that this restriction would be necessary in any case, in order to prevent the derivation of sentences such as the following:

(225) a. *Who do you wonder to give this book to?

b. *What does he know to say to the teacher?

which could otherwise be derived by application of wh-Movement on the top S-cycle to the Indirect Question forms:

(226) a. You wonder who to give this book to.

b. He knows what to say to the teacher.

Still another argument against deriving Direct Questions such as (221) and (224) by means of successive applications of wh-Movement can be derived from sentences such as the following:

(227) a. Who told Bill what to buy?

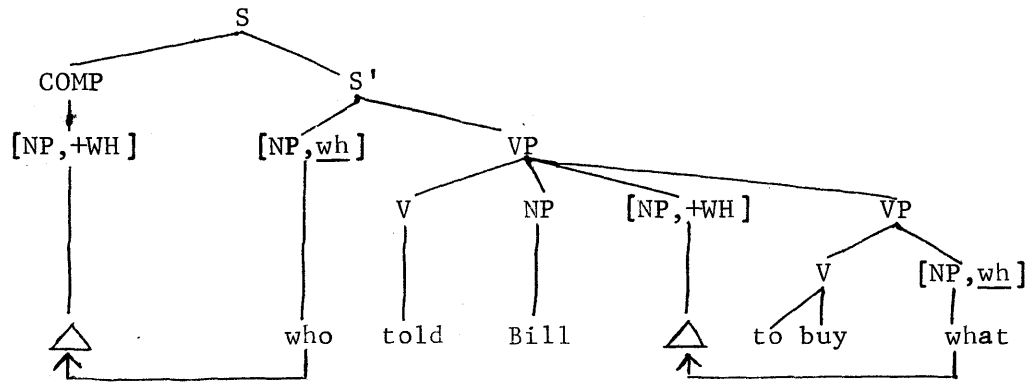
b. Who told Bill to buy what?

(228) a. Who asked Bill what to buy?

b. Who asked Bill to buy what?

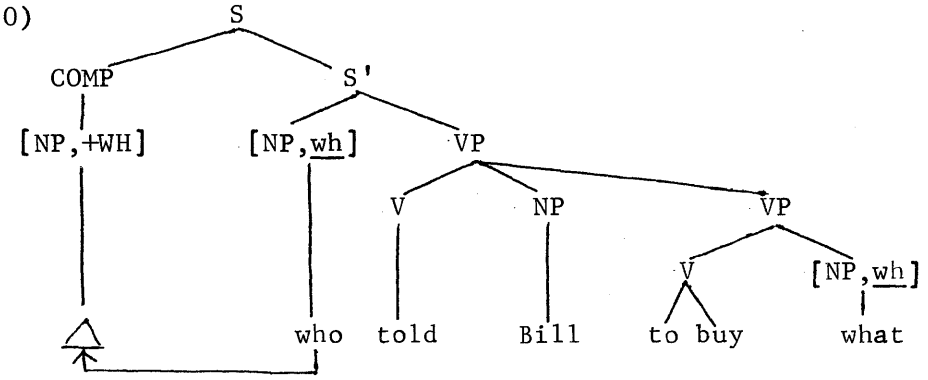
Clearly, the a.-sentences in (227) and (228) are simply Indirect Questions, like the examples in (209), except that the matrix clause also has a question word, along with a _WH NP in the COMP. Thus (227) a. would be derived from the following structure:

(229)



The b.-sentences, on the other hand, are related to sentences such as (218) and (220), which are not Indirect Questions, so that (227) b. must derive from the following underlying form:

(230)

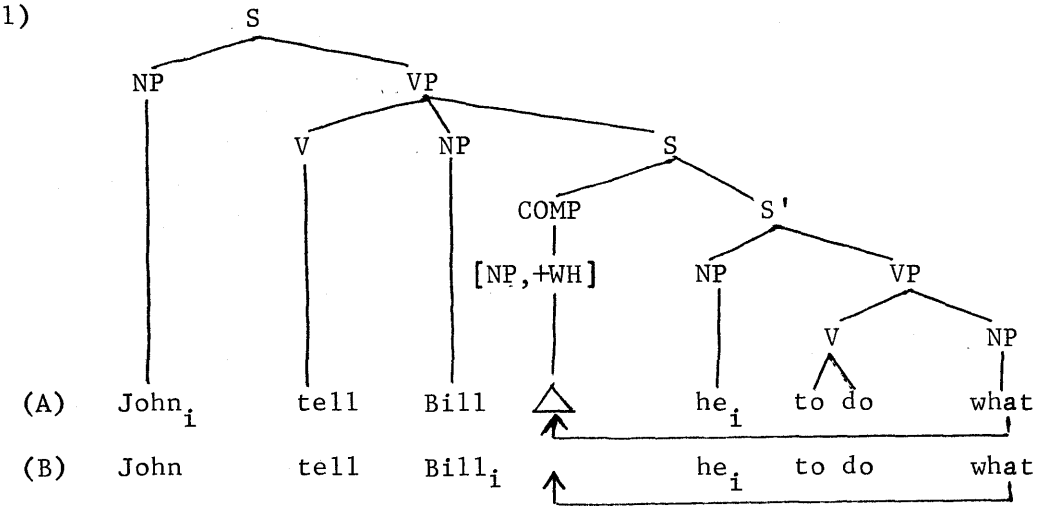


Observe, however, that if Direct Question forms such as what did you ask Bill to buy? are to be derived by means of successive application of Wh-Movement, then the Verb ask must always have the possibility of taking a [+WH] Object-NP, which means that (228) a. will incorrectly be predicted to have an interpretation analagous to that of (227) a., unless some ad-hoc condition is placed on the distribution of [+WH] NP's. The point is that the b.-sentences in (227) and (228) are possible for exactly the same reason that "double questions" such as who saw what?, or who left

what books where?, are possible, namely, because any number of NP's in a sentence may be marked with the feature wh, even though only one of them may be inserted in the COMP node. Notice also that just as one wh-word may not "cross over" another one in a simplex sentence, so that we cannot derive sentences of the form *what did who see?, *where did who leave what books?, etc., so it is the case that wh-words may not "cross over" one another in examples like (227) b. and (228) b. to form sentences such as *what did who tell Bill to buy?, what did who ask Bill to buy?, etc.

Returning now to the second alternative mentioned earlier, let us consider what would be involved in an analysis which derived Indirect Questions with Infinitival complements from underlying sentences. If it is correct to view the deletion of complement Subjects as a combination of Pronominalization and CCSD, then the grammar will necessarily produce the following two structures, either of which could result in the surface form John told Bill what to do:

(231)



However, only one of these, namely, (231) (B), will result in a correctly interpreted surface structure. Obviously, then, at some point before the

application of CCSD, an interpretive rule must apply, which will mark (A) as ill-formed and (B) as acceptable. The question that immediately arises is whether a rule of this sort would in fact be anything more than a notational variant of the VP analysis just discussed. That the two alternatives would in fact be nothing more than notational variants is indicated by the fact that, whatever other apparatus might be required to state such a rule, it must at least be able to refer to the 'deep' grammatical relation which the NP's in the matrix clause have to the Verb. Thus if we passivize example (231), deriving the sentence Bill was told what to do by John, it is still the case that the deep Object Bill is the understood Subject of the Infinitive. Likewise, for the Verb ask, it is the deep Agent-NP which is the understood Subject of the Infinitive, both in an active sentence such as John asked Bill what to do and in the Passive form Bill was asked what to do by John.

Furthermore, notice that a sentential analysis for all of the Infinitive complements discussed in this chapter could be "preserved" in exactly the same way. We could, for example, derive a sentence such as John forced Bill to leave from an underlying string of the form [___ force - Bill - by John [$_S$he - to leave]]. However, since Pronominalization could mark the Pronoun he coreferential with either John or Bill, it would be necessary to have yet another interpretive rule to account for the fact that only in the latter case does a well-formed surface structure emerge from the derivation. Observe that in order to account for the fact that Complement Subject Deletion is obligatory for force, we could simply subcategorize it to take an S', but not a for-NP phrase in COMP.

Thus it is possible in principle to derive all Infinitives from S's in deep structure. However, the cost of such a move is an enourmous increase in the power of the grammar (interpretive rules, or "derivational constraints", to relate the output of Pronominalization to deep structure) with no corresponding gain in explanatory power, since under either analysis it is the deep grammatical relation of a NP to the matrix Verb which determines whether or not it can serve as the understood Subject of the Infinitive.

It might be argued, however, that a sentential analysis of Infinitives is superior, because it allows one to explain the interpretation of the complements of Verbs such as <u>believe</u> without having to make use of the underline notation, requiring cyclical application of subcategorization conditions, and so forth. It is true, of course, that the theory of Infinitive complementation proposed here does increase the power of the grammar, but this argument misses the crucial point, which is that the devices utilized in the VP-theory are more restricted than those that are needed in order to make the S-theory work. The latter must allow for grammatical rules that can relate any arbitrary P-marker in the derivation to the level of deep structure, whereas the former allows the interpretation of a sentence to depend on what happens later in the derivation only in a specific and narrowly defined class of cases. The VP-theory thus makes a more interesting claim about the nature of language than one in which Infinitives are handled in the same way as true sentence complements such as <u>that</u>-clauses, Gerundives, Adverbial clauses, and so on.[7]

4.2. The Pseudo-Cleft Evidence

Returning to the main topic--the difference between VP-complements and for-to complements--we must now consider points (3) and (3)' above, which have to do with the behavior of complements with regard to the Pseudo-Cleft construction. One of the main pieces of evidence submitted by Rosenbaum in support of his distinction between Noun-Phrase Complements and Verb-Phrase complements was the fact that the former, but not the latter, could apparently appear freely in focus position in the Pseudo-Cleft construction. Thus the complements in (232), for example:

(232) a. Bill believes that the earth is flat.

b. Everyone prefers for John to stay right here.

can appear in constructions of the following sort:

(233) a. What Bill believes is that the earth is flat.

b. What everyone prefers is for John to stay right here.

whereas sentences such as the following:

(234) a. I defied Bill to do it.

b. Bill condescended to come with us.

clearly cannot appear in such constructions:

(235) a. *What I defied was for Bill to do it.

b. *What Bill condescended was to come with us.

Rosenbaum's reasoning was based on the fact that in a great many instances the material which appears in focus position in Pseudo-Cleft sentences is in fact a normal NP constituent, so that we find examples of the following sort:

(236) a. What John ate was the cookie.

b. What I spoke to Bill about was the up-coming rehearsal.

Observing further that the grammar must in any case be able to generate S's as complements to head Nouns such as fact, claim, etc., in order to account for complex NP's such as the fact that the earth is flat, the claim that Bill did it, and so forth, Rosenbaum concluded that the difference between the complements in (232) and those in (234) could be explained under the assumption that the former were in fact dominated by NP, whereas the latter were not. Then, since the rules which govern the formation of Pseudo-Cleft sentences, whatever their exact formulation might be, evidently must refer to a NP constituent, it follows automatically that just those complements which are dominated by NP may appear in focus position in a Pseudo-Cleft, whereas those which are directly dominated by VP may not.

Rosenbaum's argument obviously rests strongly on the assumption that any constituent which may appear in the focus position in a Pseudo-Cleft must be a NP. However, as many people have observed, examples of the Pseudo-Cleft construction are plentiful, in which constituents other than NP are to be found. Consider for example, the following:

(237) a. What you are is selfish.

b. What Bill wants to do is to be a painter.

c. What Harry is doing is watering the flowers.

d. Where I will put it is in the garbage-can.

The examples in (237) contain, respectively, in focus position: an AP, an Infinitival VP, a Predicate-VP, and a PP. In no case is there any compelling evidence that these constituents must be dominated by a NP at any point in their derivation. Hence, Rosenbaum's assumption that no S

which is not dominated by NP can appear in a Pseudo-Cleft is at best shaky.

More recently, it has been pointed out by Emonds (1970) that even the assumption that the material in focus position is extracted by a syntactic rule from the clause on the left is of dubious validity. Emonds further observes that under the reasonable assumption that the WH-clause in a Pseudo-Cleft is in fact simply a headless Relative, similar to that found in sentences such as I ate what he told me to, and so on, there is a very simple explanation for the ungrammaticality of examples such as (235), namely, that Verbs such as defy and condescend are not subcategorized to take an Object-NP, and hence could not be used to form a Relative of this type. Thus there are no sentences of the form:

(238) a. *I defied something.

b. *Harry condescended something.

To further support his point, Emonds notes that these Verbs can in fact appear in a Pseudo-Cleft construction, as long as there is an additional complement of some kind which can take the appropriate sort of Object-NP. This explains the existence of sentences such as the following:

(239) a. What I defied Bill to do was to go to the store.

b. What Bill condescended to do was to come with us.

c. What I defied Bill to give Mary was a cookie.

d. What Bill condescended to say was that he couldn't come.

The grammaticality of the sentences in (239) correlates precisely with the existence of the following sentences:

(240) a. I defied Bill to do something.

b. Bill condescended to do something.

c. I defied Bill to give Mary something.

d. Bill condescended to say something.

The conclusion that Emonds drew from these observations was that the Pseudo-Cleft was worthless as a test for the existence of NP-complements, as opposed to VP-complements, in the sense in which Rosenbaum uses these terms. To say that the Pseudo-Cleft has no value as a test for NP-constituency does not necessarily mean, however, that it cannot reveal anything to us concerning the nature of Verb complementation. In fact, what the Pseudo-Cleft construction does do is distinguish between complements which are VP's in the base and those which are S's - between VP-complements (in our use of the term) and sentential complements. If we survey all of the complements discussed thus far that we have claimed are VP's, a striking fact emerges: In no case are these complements found to occur in "normal" Pseudo-Clefts such as those in (232) and (236), and, conversely, in every case these complements can occur in Pseudo-Cleft constructions such as those in (239), which contain the "pro-Verb" do, or some other type of complement, whose Verb is capable of taking an Object-NP which is appropriate for relativization.

Consider, first, the Predicate-VP-complements discussed in Chapter III. We find, for example, Pseudo-Clefts of the following sort:

(241) a. What Bill is doing is watering the flowers.

b. What I saw him doing was running to the store.

c. What I made John do was buy a book.

d. What we found them doing was wading in the pond.

e. What I had them do was clean up the house.

f. What I had someone do to me was steal my wallet.

We do not find, on the other hand, Pseudo-Clefts of the following form:

(242) a. *What Bill is is watering the flowers.

b. *What I saw him was running to the store.

c. *What I made was John buy the book.

d. *What we found was them wading in the pond.

e. *What I had them was clean up my house. (*What I had was them clean up my house).

f. *What I had was someone steal my wallet.

Consider next the Infinitive complements to persuade, invite, force, etc. We have examples such as:

(243) a. What we persuaded Bill to do was to buy the book.

b. What they forced me to do was to wait in the car.

c. What they reminded Bill to do was to visit his mother.

d. What they teach the recruits to do is to kill.

but none of the form:

(244) a. *What we persuaded was for Bill to buy the book.

b. *What they forced me was to wait in the car.

c. *What they reminded Bill was for him to visit his mother.

d. *What they teach the recruits is to kill.

Similarly, for Verbs of the condescend-class, we find:

(245) a. What Bill condescended to do was to remove his hat.

b. What I got to do was to lead the parade.

but not:

(246) a. *What Bill condescended was to remove his hat.

b. *What I got was to lead the parade.

Likewise, in the case of try, refuse, etc., we find the following paradigm:

(247) a. What John tried to do was to leave.

b. What Bill undertook to do was to find Mary.

c. *What John tried was to find Mary.

d. *What Bill undertook was to find Mary.

Consider next promise, vow, pledge, etc.:

(248) a. What Bill promised to do was to get the bread.

b. What Mary vowed to do was to seek revenge.

c. *What Bill promised was to get the bread.

d. *What Mary vowed was to seek revenge.

Although judgements may vary somewhat (as is perhaps natural, considering the wide variety of constructions that may appear in Pseudo-Cleft form), I think that the forms with the pro-Verb do are always more natural than those without it.

Consider, finally, the Verbs which belong to the believe-class. Here again we find exactly the same results:

(249) a. What I believe Bill to have done is to have murdered somebody.

b. What I suspect him to have stolen is the cookies.

c. What I consider Bill to be is unreliable.

d. *What I believe is (for) Bill to have murdered somebody.

e. *What I suspect is (for) him to have stolen the cookies.

f. *What I consider Bill is to be unreliable.

We shall defer until somewhat later a discussion of the class of Verbs to

which expect and want belong.

4.2.1. Sentential Complements

We see, then, that even though the Pseudo-Cleft construction is not a reliable test for NP-constituency, what it does seem to do is to reveal the presence of a VP-complement: If a complement may appear in focus position only with the help of the pro-Verb do, then we may (tentatively) assume that it is a VP in underlying structure. Consider, in contrast, the situation with regard to true S-complements. As was noted by Rosenbaum, virtually all that-clauses are capable of Pseudo-cleft formation.[8] Thus corresponding to the following sentences:

(250) a. I believe that Bill is the culprit.

b. Bill requested that we leave at once.

c. It bothers me that the mail hasn't come yet.

d. I reminded John that he had an appointment at 10:00.

e. They insisted that we stay for a while.

we find Pseudo-Cleft constructions of the following sort:

(251) a. What I believe is that Bill is the culprit.

b. What Bill requested was that we leave at once.

c. What bothers me is that the mail hasn't cone yet.

d. What I reminded John of was that he had an appointment at 10:00.

e. What they insisted on was that we stay for a while.

Recalling Emonds' observation that one of the conditions for the existence of a grammatical Pseudo-Cleft is that the Verb in the what-clause be subcategorized to take an Object-NP, we note that all of the Verbs in (251) can, in fact, take an Object-NP, as well as a that-complement:

(252) a. I believe your statement.

b. Bill requested something.

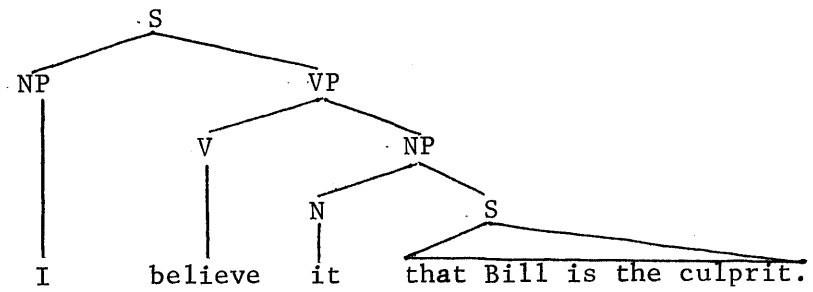
c. Something is bothering me.

d. I reminded John of his appointment.

e. They insisted on it.

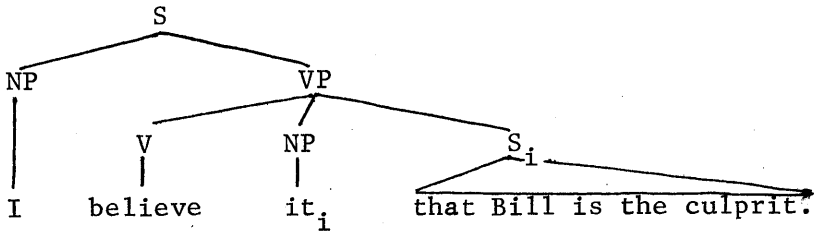
Now the conclusion that Rosenbaum drew from these observations was that the that-clause in examples like (250) was itself an NP, so that for him these sentences were simply special instances of the same V-NP (or V-P-NP) structure that was necessary in any case to characterize examples like those in (252). However, as Emonds has observed, it would be equally possible to assume the underlying structure of sentences such as (250) to consist of an Object-NP dominating the Pronoun it, plus a that-clause at the end of the VP. It would then be necessary for the semantic component to specify that the Pronoun it is anaphoric with the S at the end of the VP. Thus, whereas Rosenbaum assumed an underlying structure such as the following for an example like (250) a.:

(253)



Emonds would assume a structure of the following sort:

(254)



Aside from the many persuasive arguments in favor of a structure of the form (254) offered in Emonds (1970), note that his proposal if correct, offers further support for the theory of subcategorization proposed in earlier chapters of this work, since the subcategorization feature for (250) a. can be collapsed with the subcategorization feature for (252) a. by means of the parenthesis notation:

(255) believe: NP ___ to NP NP (that S')

Similarly, the subcategorization feature for remind can be written simply as follows:

(256) remind: NP ___ to NP of NP by NP (that S')

The point is that Rosenbaum was correct in believing that there was a relationship between the existence of sentences such as those in (250) and the existence of those in (252). He was wrong, however, in believing that both had therefore to be derived from the same underlying structure. Rather, the relationship between these sets of sentences is simply one special instance of the general principles which govern redundancy in the lexicon. In other words, the generalization in question is essentially a lexical generalization, rather than a syntactic generalization. To see that this is so, notice that if we did not assume an underlying V-NP-S structure for sentences such as (250) a., but rather a simple V-S

structure, then it would be impossible to collapse the subcategorization feature for (250) a. with that of (252) a. by means of the parentheses notation:

(257) believe: (a) NP ___ to NP that S'

(b) NP ___ to NP NP

The two features (a) and (b) in (257) are formally unrelated to one another in terms of the conventions which govern the collapsing of subcategorization features, whereas the two features:

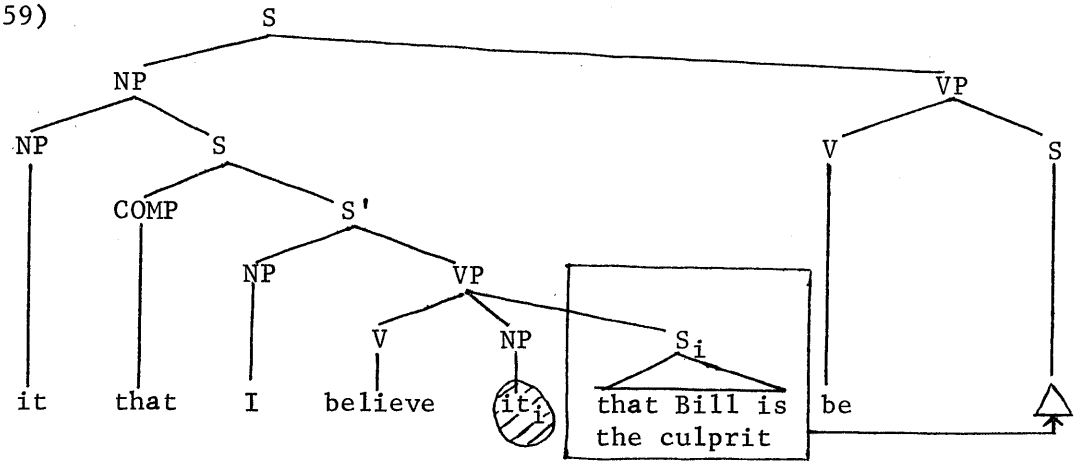
(258) believe: (a) NP ___ to NP NP that S'

(b) NP ___ to NP NP

are related, and can be collapsed into the single feature (255).

Returning now to the Pseudo-Cleft sentences in (251), notice that the presence of an it in the complement structure of the Verbs believe, request, etc. will immediately allow us to explain the grammaticality of these sentences, under the assumption that the what-clause is a "headless" Relative whose head Noun is the Pro-form it, as has been proposed by a number of people (cf. Chomsky (1970), Bresnan (forthcoming)). Thus we might derive (251) a. from a structure of the following kind:

(259)



By the regular rules for Relativization, the Object-NP it will be deleted under identity with the head Noun it. I assume that there is a rule turning the sequence it-that into the wh-form what.[9] Furthermore, we may assume that there is a structure-preserving rule which moves the complement S out of the what-clause into focus position following the Verb be. Exactly the same rules will suffice to account for the remaining sentences in (251). Thus (251) c. would derive from a structure in which the it which is coreferential with the that-clause is in Subject position in underlying structure. Similarly, in (251) d. and e., it occurs as the Object of the Prepositions of and on, respectively.

If this analysis is correct, we now have another test for determining whether an Infinitive is a true for-to complement or a VP-complement: If the Pseudo-Cleft must be formed with the help of the Pro-Verb do, then the complement must be a VP in deep structure; if the Pseudo-Cleft does not require do, on the other hand, then the complement must be a S in underlying structure, and hence must be a true for-to complement. Applying this test to the complements discussed in Section 4.1., we see immediately that they must be sentences, since we find Pseudo-Cleft sentences of the following form:

(260) a. What frightens Bill is for Mary to get anonymous letters.

b. What frightens Bill is to get anonymous letters.

(261) a. What amuses Mary is for people to talk about her.

b. What amuses Mary is to be talked about by people.

On the other hand, it is impossible to form a Pseudo-Cleft sentence using the pro-Verb do for any of the Verbs of this class:

(262) a. *What frightens Bill for Mary to do is to get anonymous letters.

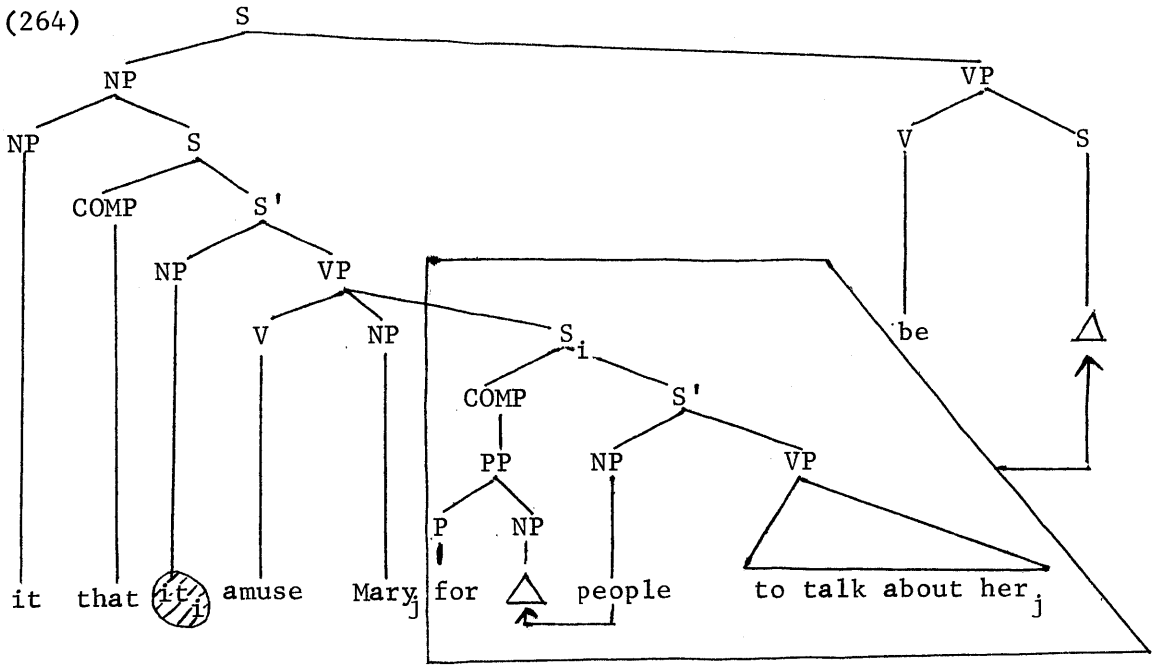
b. *What frightens Mary to do is to get anonymous letters.

(263) a. *What amuses Mary for people to do is to talk about her.

b. *What amuses Mary to do is to be talked about by people.

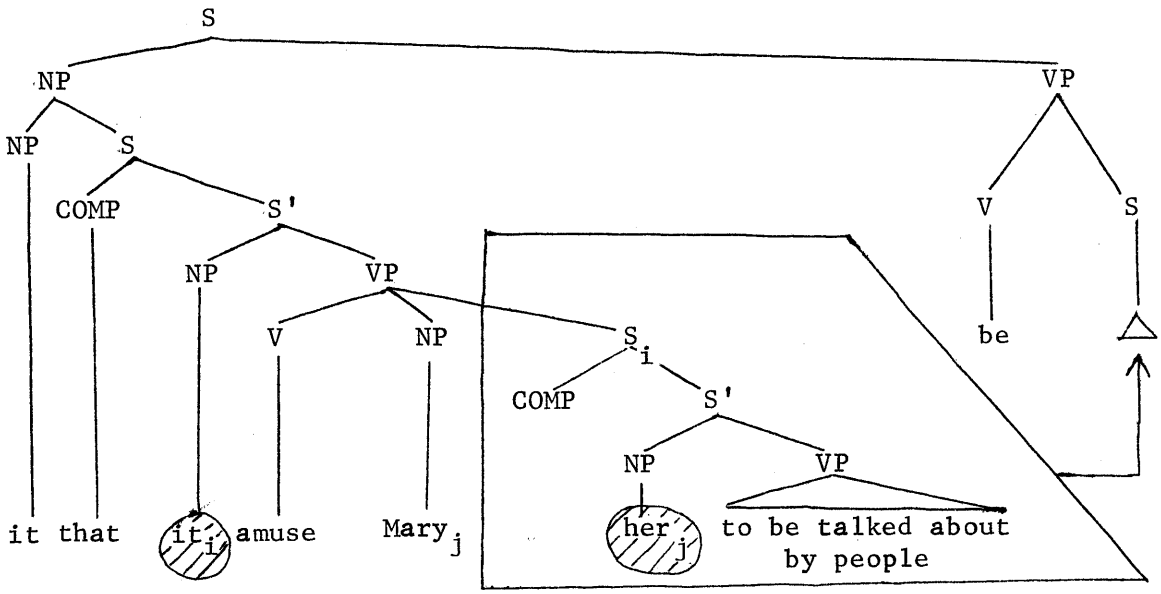
In accordance with the analysis just proposed, then, example, (261) a. would be derived from the following structure:

(264)



while (262) b. would derive from an underlying structure of the following sort:

(265)



Consider next the Indirect Questions discussed earlier. Although my judgement is somewhat uncertain, it seems to me that there is a difference in acceptability between the following pairs:

(266) a. *What I told Bill was where to hang up his coat.

b. What I told Bill was where he should hang up his coat.

(267) a. *What I wonder is who to return the books to.

b. What I wonder is who I should return the books to.

(268) a. *What I don't know is what kind of food to give the fish.

b. What I don't know is what kind of food the fish eat.

(269) a. *What I asked Bill was who to consult about the matter.

b. What I asked Bill was who I should consult about the matter.

If these judgements are correct, then the above data lends some support to the view that Infinitival WH-complements are derived from VP's, all other things being equal.

4.2.2. Other For-To Complements

There are various other Verbs whose complements, on the basis of the Pseudo-Cleft evidence, must be analyzed as sentential for-to complements, rather than as VP's. Consider, for example, the following sentences:

(270) a. Mary is aching (for Bill) to graduate from college.

b. I arranged (for Bill) to meet them at the station.

c. We begged (for Bill) to be allowed to leave.

d. I am longing (for him) to take swimming lessons.

e. We are hoping (for Bill) to be examined by the doctor tomorrow.

That these must be for-to complements is shown not only by the fact that the complementizer for shows up in surface structure and that deletion of the complement Subject is optional, but also by the fact that we find Pseudo-Cleft constructions of the following sort:

(271) a. What Mary is aching for is (for Bill) to graduate from college.

b. What I arranged for was (for Bill) to meet them at the station.

c. What we begged for was (for Bill) to be allowed to leave.

d. What I am longing for is (for him) to take swimming lessons.

e. What we are hoping for is (for Bill) to be examined by the doctor tomorrow.

We may thus hypothesize that Verbs of this kind are subcategorized roughly as follows:

(272) long: NP ___ to NP for NP ((for NP) S')

Further support for this analysis comes from the fact that in every case the Object of the Preposition for may be filled by a full NP, when there is no complement S:

(273) a. Mary is aching for a bath.

b. I arranged for a meeting.

c. We begged for some money.

d. I am longing for a piece of pie.

e. I am hoping for an unexpected windfall.

Notice, however, that there are some curious facts about the complements of these Verbs. For one thing, in the case of ache, arrange, long, and hope, it seems that the Pseudo-Cleft may also be formed with the use of the pro-Verb do:

(274) a. What Mary is aching (for Bill) to do is to graduate from college.

b. What I arranged (for Bill) to do was to meet them at the station.

c. What I am longing (for him) to do is to take swimming lessons.

d. What I am hoping (for Bill) to do is to be examined by the doctor tomorrow.

There are at least two possible approaches to this problem. One would be to allow these Verbs to take VP-complements as well as S-complements. Thus we might assume that long, for example, has a subcategorization feature of the following sort, which is completely unrelated to (271):

(275) long: NP ___ to NP (for NP) VP

Aside from the fact that this solution is counter-intuitive, it also has

the disadvantage of failing to explain why Reflexives cannot appear in the for-phrase:

(276) a. *Mary is aching for herself to graduate from college.

b. *I arranged for myself to meet them at the station.

c. *Bill is longing for himself to take swimming lessons.

d. *I am hoping for myself to be examined by the doctor tomorrow.

The other possible solution depends on the exact way in which we decide to treat Pseudo-clefts with the pro-Verb do, to which we shall turn in the next section.

Another interesting detail has to do with Verbs such as beg, scream, shout, and few others. It has been noted by Jackendoff (1969) that these Verbs apparently require that the Subject of the complement S be coreferential with their Object-NP's. At the same time, if there is no Object-NP present, they seem to require non-identity between the surface Subject and the Subject of the complement S. Thus we have paradigms of the following sort:

(277) a. I screamed to John to leave.

b. *I screamed to John for Bill to leave.

c. I screamed for Bill to leave.

d. *I screamed to leave.

(278) a. We begged Bill to stop.

b. *We begged Bill for Harry to stop.

c. We begged for Bill to stop.

d. *We begged to stop.

However, what are we to make of sentences such as the following:

(279) a. I screamed to be allowed to leave.

b. We begged to be allowed to stop.

which apparently contradict the non-identity condition which blocks (277) d. and (278) d.? These facts are difficult to explain in a theory which only allows S-complements. What is evidently going on here is that these Verbs may take either a VP-complement (when there is an Object-NP) or a for-to complement (when there is no Object-NP). Thus for the a.-sentences in (277)-(278) we find Pseudo-clefts of the following form:

(280) a. What I screamed to John to do was to leave.

b. What we begged Bill to do was to stop.

but none of the sort shown in (281), below:

(281) a. *What I screamed to John for was to leave.

b. *What we begged Bill for was to stop.

These facts are accounted for by assigning the following subcategorization features to scream and beg, respectively:

(282) a. scream: NP ___ to NP (VP) by NP

b. beg: NP ___ to NP (VP) by NP

On the other hand, the c.-sentences in (277)-(278), as well as the sentences in (279), are all derived from sentential for-to complements, as is shown by the fact that they permit Pseudo-clefts of the following kind:

(283) a. What I screamed for was for Bill to leave.

b. What we begged for was for Bill to stop.

c. What I screamed for was to be allowed to leave.

d. What we begged for was to be allowed to leave.

Finally, notice that when there is a for-to complement, the Object-NP may also be present, optionally:

(284) a. I screamed to Bill to be allowed to leave.

b. We begged Bill to be allowed to leave.

That these are, in fact, for-to complements is again revealed by the Pseudo-cleft forms:

(285) a. What I screamed to Bill for was to be allowed to leave.

b. What we begged Bill for was to be allowed to leave.

c. *What I screamed to Bill to do was to be allowed to leave.

d. *What we begged Bill to do was to be allowed to leave.

These facts can be accounted for by means of the following subcategorization features:

(286) a. scream: NP ___ (to NP) for NP by NP ((for NP) S')

b. beg: NP ___ (to NP) for NP by NP ((for NP) S')

What is particularly interesting about these sentences, however, as Jackendoff points out, is that which NP the Subject of the complement S must be coreferential with apparently depends on the semantic roles of the NP's involved. This suggests that (286) is incorrect and that there are actually three different constructions involved here. Note that when there is no Object-NP, we get either the Active complement to leave or the Passive complement to be allowed to leave:

(287) a. We begged for Bill to leave.

b. We begged for Bill to be allowed to leave.

Furthermore, both require a for it phrase, as is shown by the Pseudo-clefts:

(288) a. What we begged for was for Bill to leave.

b. What we begged for was for Bill to be allowed to leave.

Now observe that we could, in effect, prevent complement Subject deletion by subcategorizing beg, in these cases, in the following way:

(289) beg: NP ___ for NP by NP for NP S'

(289) requires that the Subject of the for-to complement always be moved into the for-phrase in COMP, thus preventing it from ever being deleted by CCSD. Now notice that when the understood Subject of the Infinitive is the Object-NP, we get the Active complement with to leave, but not the Passive complement to be allowed to leave. Thus we have (277) a. and (278) a., but (284) a. and b. cannot be understood in such a way that the Subject of the Infinitive is the Object-NP. Furthermore, for these cases we get a Pseudo-cleft with the pro-Verb do, as shown in (280). These facts are accounted for by the subcategorization features in (282), repeated below:

(290) beg: NP ___ to NP VP by NP

Finally, notice that when the understood Subject of the Infinitive is the surface Subject, as in (279) and (284), we get the Passive complement to be allowed to leave, but not the Active complement to leave, as is shown by the ungrammaticality of the d.-sentences in (277)-(278) and by the fact that the a.-sentences in (277)-(278) cannot be understood in such a way that the surface Subject is the Subject of the Infinitive. Last of all, note that in these cases there must be a for-it phrase, as is shown by the Pseudo-cleft forms (283) c. and d. and (285) a. and b. These facts can be accounted for by assuming a subcategorization feature of the following kind:

(291) beg: NP ___ (to NP) for NP by NP (VP)

What is the relevant semantic feature that must be associated with the NP which derives from the Infinitive complement? We may hypothesize that it is the feature of controllability, mentioned earlier in Section 3.1. If the understood Subject of the Infinitive is the Indirect Object, as is specified by (290), then it is presupposed that the person referred to by this NP has some kind of control over the event described in the Infinitive complement. That is why (290) allows the Active complements to leave, to stop, etc., where such an assumption is reasonable, whereas the complement to be allowed is clearly anomolous, since the understood Subject is in that case explicitly denied to be in control of the event in question. If, however, the understood Subject of the Infinitive is the Agent-NP, then the person referred to is presupposed not to have control over the event described by the complement. Hence it follows that for the subcategorization feature (291) the to be allowed complement is all right, whereas the Active complements to leave, etc. are not. Finally, if there is an Agent and no Indirect Object, and if the understood Subject of the Infinitive is not the same as the Agent-NP, then it makes no difference whether the Subject of the complement S is in control of the situation or not.

It should be pointed out that this feature of controllability is purely semantic and is not necessarily reflected in the syntactic structure in any consistent way. Thus, for example, a complement such as to be examined by the doctor may or may not presuppose controllability on the part of the surface Subject. We would therefore expect a sentence such as:

(292) I begged Bill to be examined by the doctor.

to be ambiguous, depending on whether or not the understood Subject of the Infinitive is assumed to have control over whether or not he is to be examined, and indeed that is the case, for (292) can be interpreted in such a way that either I or Bill is the understood Subject of the Infinitive. In the former case, controllability is not presupposed, whereas in the latter case it is, just as we would predict. Generally speaking, it is somewhat more difficult to find an Active complement for which controllability cannot be presupposed at all. However, it is easy to construct anomolous sentences by choosing an Infinitive which presupposes controllability, but which for some other reason--because of the presence of a Reflexive, say--must be interpreted in such a way that the surface Subject of the matrix S is the understood Subject of the Infinitive:

(293) a. *I begged Bill to hurt myself.

b. *I asked the barber to shave myself.

These Verbs, then, are of some interest, because they illustrate the considerable degree of lexical complexity that can be "built into" a single Verb form. The Verbs beg, scream, etc. not only take a for-to complement, but also allow a VP-complement in both of the positions where the PS rules allow VP's to be generated. Furthermore, it is of some interest to note that the subcategorization features (289)-(291) that we have arrived at are not "arbitrary", but correlate precisely with other properties of a purely semantic kind, which are associated with the complements of these Verbs.

4.3. Pseudo-Clefts With the Pro-Verb Do

We have seen that if an Infinitive may appear in focus position in a Pseudo-cleft sentence only with the help of the pro-Verb do, then it

must be a VP in the base. If, on the other hand, an Infinitive may be Pseudo-clefted without the help of a pro-Verb, then it must be a S. Notice, however, that the converse of this latter statement is not necessarily true. That is, Infinitives which are derived from S's in the base are not precluded from forming Pseudo-cleft sentences with the pro-Verb do. Thus consider, for example, sentences such as the following:

(294) a. What it amuses the children to do is to play hop-scotch.

b. What it amuses me for the children to do is to play hop-scotch.

c. What I wish that you would do is take the dog for a walk.

d. What he suggests we do is buy a new record-player.

e. What I disapprove of your doing is drinking so much.

f. What they forced Bill into doing was buying a used car.

As can be seen these examples, Pseudo-clefts with the pro-Verb do can be formed with that-clauses, Gerunds, and For-to complements, all of which are S's. Hence, from the fact that a Pseudo-cleft can be formed with the help of the pro-Verb do, it does not follow that a complement must be a VP. Rather, it must be a VP if that is the only way in which a Pseudo-cleft can be formed.[10]

Notice that this observation immediately explains the existence of Pseudo-clefts such as those in (274), for Verbs like ache, beg, arrange, etc. discussed in the previous section. Thus it is not necessary to assume that these Verbs take both for-to complements and VP-complements. Rather, it is a general fact about Pseudo-clefts that they may be formed with the

pro-Verb do, even if the complement is sentential.

We must now ask how Pseudo-clefts with do are to be derived. It has been suggested recently[11] that a purely transformational analysis of the Pseudo-cleft construction is impossible and that what is needed instead are interpretive principles capable of relating surface structures to deep structures and/or semantic representations. According to these proposals, the Infinitive in focus position in a sentence such as the following:

(295) What John forced Bill to do was to be examined by the doctor.

would simply be generated in the base in its surface form. The principles for interpreting Pseudo-cleft sentences would then have to specify such as that the NP Bill is the understood surface Subject and deep Object of the Infinitive to be examined; that the Infinitive to do it and the Infinitive in the focus position are anaphoric, in the sense that they refer to the same action, and so forth. Without going into the relative merits of this and other proposals which have appeared in the literature, I would like to present briefly one possible approach to this problem which can be developed in the framework proposed here and which does not depend on an expansion of the semantic component.

Observe, first of all, that the VP do it can "replace" not only embedded VP's, but can also be used to focus the VP of a simple sentence, so that we find, for example, sentences such as the following:

(296) a. What I did was hit Bill over the head.

b. What we may do is take a vacation next month.

c. What they have done is book rooms in advance.

This suggests that do is not in fact a "pro-VP" at all, but is simply

a lexical Verb in its own right, and hence capable of taking Object-NP's, PP's, and various other types of complement structures. This is confirmed by the fact that do can appear as the main Verb in sentences such as the following, as has been noted by Ross (forthcoming):

(297) a. Bill did something.

b. Harry did something horrible to Bill.

c. Mary did a report on insects.

d. John did Mary a favor.

e. Bill did it merely to curry favor.

Notice, in particular, that do may have a pronominal Object it, and therefore meets the requirements for the formation of the what-clause which appears in Subject position in Pseudo-cleft sentences.

Observe next that the surface Subject of do in these examples is clearly an Agent-NP, as is shown by the fact that it can occur with Adverbs such as deliberately, intentionally, and so forth:

(298) a. Bill did it intentionally.

b. Harry deliberately did something horrible to Bill.

and must therefore derive from the by-phrase in the base. Let us consider now a sentence such as (296) a. Recall that we have argued that if a Pseudo-cleft can be formed from some Infinitive complement only with the help of do, then it must be a VP in the base. However, this does not exclude the possibility that there might be some VP complements whose Pseudo-clefts are formed without do. This would be possible, for example, if there were Verbs which required there to be a pronominal Object-NP anaphoric with their VP-complements. In fact, we have already suggested that certain Verbs require base forms of just this kind. Thus the Verb

promise, discussed in Section 2.2., has base forms of roughly the following sort:

(299) ___ - promise - PP - it_i - to Mary - by John - [$_{VP_i}$ buy the book]

Notice that this immediately accounts for the fact that we find Pseudo-clefts such as the following:

(300) What John promised Mary was to buy the book.

Another example of a Verb which requires a VP-complement and a pronominal Object with which it is anaphoric is the Verb expect, which has as one of its underlying forms (cf. Section 3.1.) a structure of the following kind:

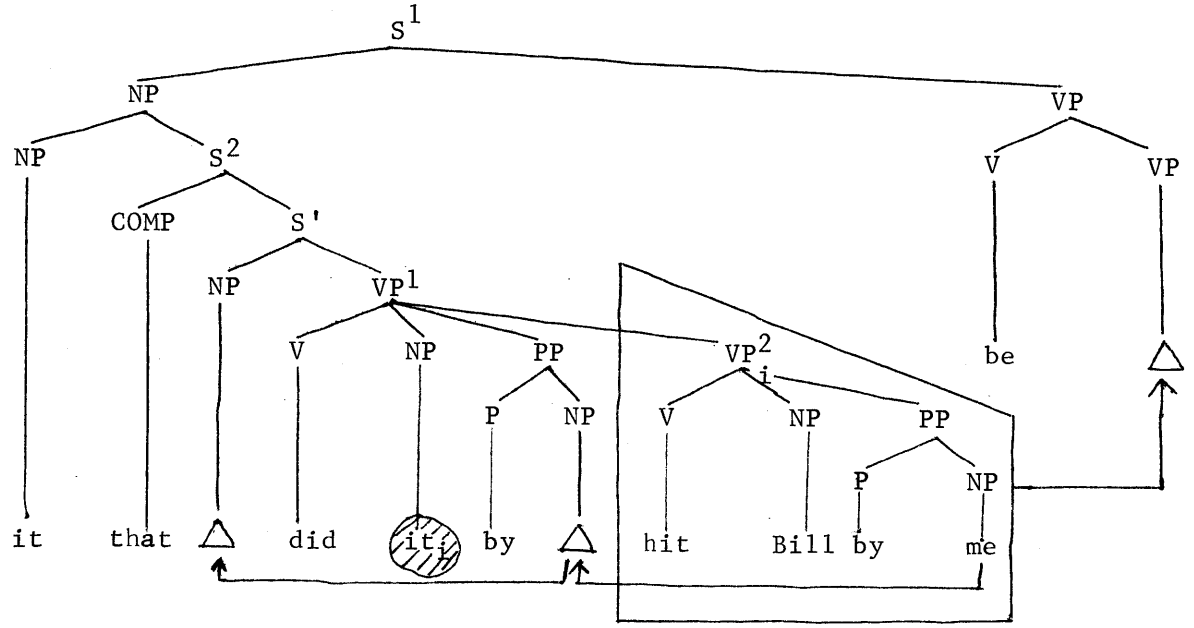
(301) ___ - expect - to me - it_i - of myself - [$_{VP_i}$ to do what is right]

and again we find that there are Pseudo-clefts without do such as the following:

(302) What I expect of myself is to do what is right.

Given that there are base forms of this type, we can immediately construct underlying forms that will account adequately for Pseudo-cleft sentences with do. Suppose that we assume the following structure for a sentence such as (296) a.:

(303)

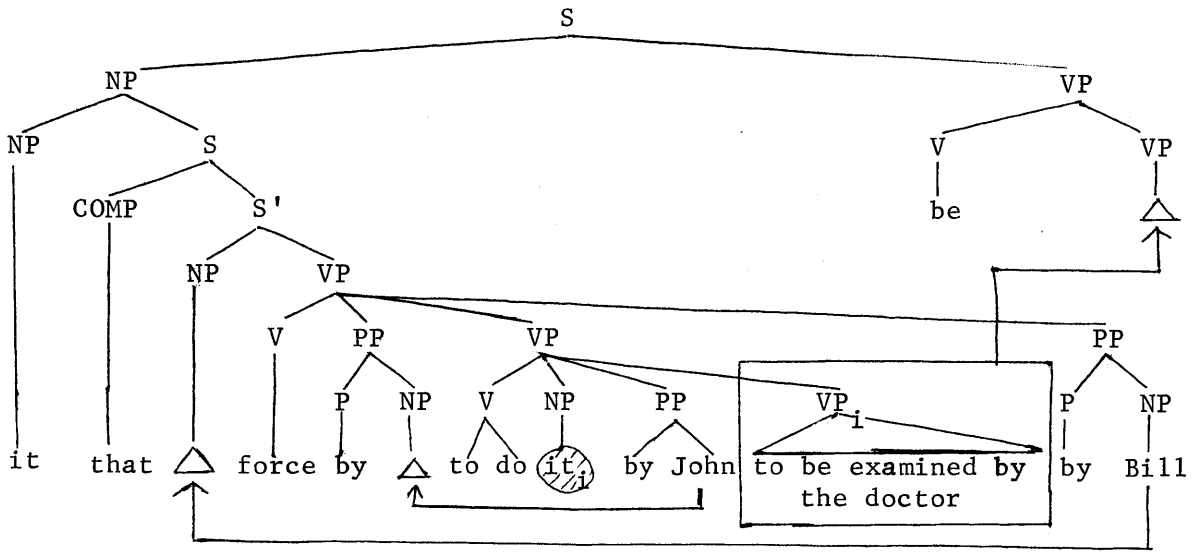


The derivation will proceed as follows. On the VP^1-cycle, Agent-Preposing will move the NP me into the by-phrase in VP^1. On the S'-cycle, Agent-Preposing will apply again moving me into its surface position as Subject of the what-clause. On the top NP-cycle, the rules of Relative clause formation will delete the repeated it and convert the sequence it-that into what. Finally, on the S^1-cycle, the rule of Pseudo-Cleft Formation, extended to apply to VP's as well as S's, will take what is left of VP^2 namely the phrase hit Bill, and move it into focus position after the Verb be.

This derivation accounts for the following facts: (1) that the Agent of do is the same as the Agent of hit; (2) that the Verb do is not simply an "empty" morpheme, but in fact contributes to the meaning of the sentence; (3) that the "Object" of the Verb do is the VP in focus position.

Point (2) is illustrated particularly clearly by a sentence such as (295). In isolation, the Passive sentence John was examined by the doctor cannot be interpreted as being an action of John's. Rather it simply refers to something that happened to John. Yet in sentence (295) John is interpreted as being the Agent of the action of being examined by the doctor. This interpretation is obviously due to the fact that the NP John is not only the Object of the Verb examine, but is also the Agent of the Verb do, and furthermore, that the VP in focus position has a grammatical relation to the Verb do. All of these facts are accounted for by deriving (295) from a structure such as the following:

(304)



Observe next that this analysis is capable of dealing with the fact that the "pro-Verb" do can occur with a variety of PP structures other than the Object-Pronoun and Agent-NP, a fact which has always posed unsolvable problems for any sort of analysis involving "replacement" of the VP by a pro-form. Thus we find examples of the following kind.

(305) a. What John did to Bill was hit him over the head.

b. What John forced Bill to do with the book was sell it.

c. What I did to Bill with the stick was hit him over the head with it.

d. What I did for Mary was lend her my TV.

Examples of this sort are easily handled by the proposed analysis, since do, being a Verb in its own right, would in any case be expected to be able to occur with the full range of complement PP's for which it is subcategorized. The fact that the Pronouns in the focussed VP are coreferential with the corresponding NP's in the clause containing do can be accounted for by the ordinary rules of Pronominalization.

Another argument in favor of the view that the Verb do in these constructions is not a pro-Verb, but is rather a lexical Verb in its own right, is the fact that there are restrictions on what kind of NP can serve as the Agent of do. Notice, for example, the ungrammaticality of sentences such as the following:

(306) a. *What John did was like the play.

b. *What Mary did was have the book.

c. *What I did was resemble my brother.

d. *What Mary will do is hear the music.

e. *What Harry did was be given a book by Mary.

The Verb do behaves in this respect no differently from any other Verb. The Verb force, for example, exhibits restrictions of a very similar kind:[12]

(307) a. ?I forced John to like the play.

b. *I forced Mary to have the book.

c. *Bill forced me to resemble my brother.

d. *I forced Mary to hear the music.

e. *We forced Harry to be given a book by Mary.

Observe next that there is entirely independent motivation for an analysis of the kind proposed here. Ross (forthcoming)[13] has observed that the same do which appears in Pseudo-clefts also shows up in constructions of the following sort:

(308) a. John hit Bill on the head, and then Mary did it, too.

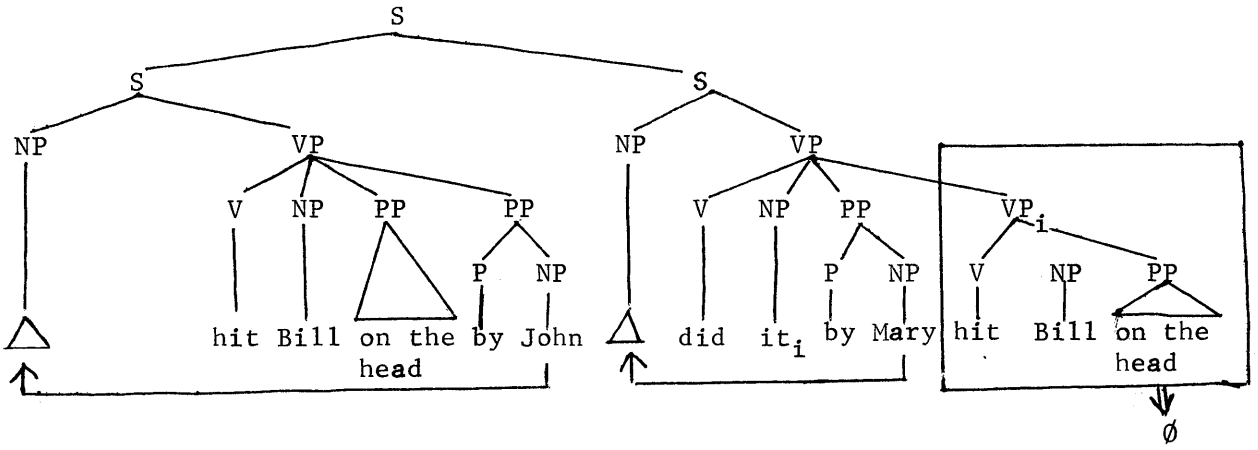
b. Bill went to the store, but he didn't do it because he wanted to.

c. I told him to clean up his room, but he refuses to do it.

d. I asked him to take out the garbage, and it was done within 5 minutes.

If do is allowed to take VP complements in the base, then the interpretation of these sentences can be accounted for by means of a late rule deleting the second of two identical VP's. Thus we could derive (308) a., for example, from a structure such as the following:

(309)



After Agent-Preposing has applied in both S's (twice in the right-most

S), the VP in the left conjoint will be identical with the embedded VP in the right one, thus allowing the latter to be deleted.[14]

Let us consider next the do-so construction, which appears in sentences such as the following:

(310) a. Mary went to the store, and Bill did so, too.

b. Harry didn't buy a record-player, and Bill didn't do so, either.

c. We need to go to the store, but to do so would require getting out of bed.

We note immediately that the do-so construction, unlike the do-it construction, may not appear in Pseudo-cleft sentences:

(311) a. *What Bill did so was buy a record player.

b. *What I forced Bill to do so was to go to the store.

This fact follows automatically if we assume that the underlying structure of the do-so construction does not contain a Pronominal Object-NP. Furthermore, notice that PP's other than the Agent-NP are not permitted in the do-so construction, so that we do not find examples of the following sort:

(312) a. *John hit Bill on the head with a stick, and Mary did so to Harry with an ax.

b. *John hit Bill on the head with a stick, and Mary did so, too, with an ax.

c. *We could get to the store on time with a car, but to do so with a bicycle would take too much time.

This suggests that the do which appears in the do-so construction, in

contrast to that which appears in the do-it construction, is not a "real" Verb, but is rather the do which appears in Negatives and emphatic sentences. That this is indeed the case is further reinforced when we observe that there are emphatic sentences of the following kind:

(313) a. Bill did so go to the store.

b. Mary did too buy the record-player.

which are exactly parallel to sentences with not and emphatic stress:

(314) a. Bill did not go to the store.

b. Bill did go to the store.

Finally, notice that parallel to the do-so sentences in (310), we find conjoined structures with a deleted VP parallel to the emphatic sentences (313) b. and (314) a. and b.:

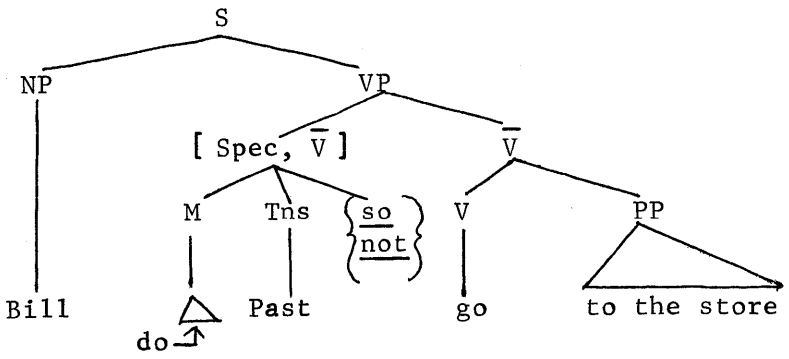
(315) a. Mary went to the store, and Bill did too.

b. Mary went to the store, but Bill did not.

c. Mary didn't go to the store, but Bill did.

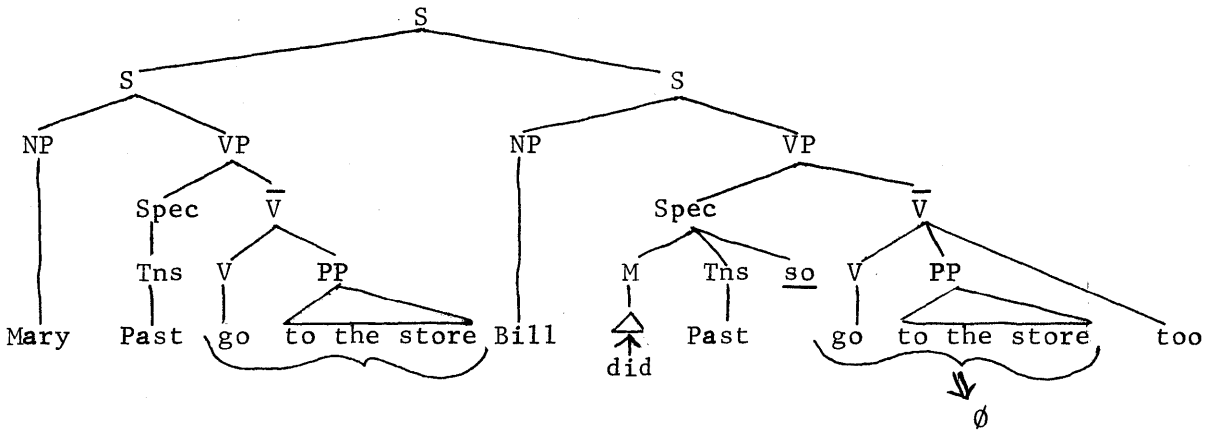
In order to account for these facts, let us assume that the "helping Verb" do is inserted under the Modal node to carry the Tense morpheme, when there is some element intervening between the Tense marker and the main Verb. We can then derive (313) a. from a structure of the following sort:[15]

(316)



We can now derive the sentences in (310) by means of a rule which simply deletes obligatorily the second of two identical V-nodes: Thus the structure underlying (310) a. would be as follows:

(317)



We see, then, that contrary to what has been claimed in the literature, the do-so construction and the do-it construction have properties that are quite distinct from one another. The do which occurs in the latter is a true Verb which has semantic and syntactic features of its own, and which, just like any other Verb in the lexicon, is subcategorized for a range of complement structures. The do which occurs in the do-so construction, on the other hand, is merely the "empty" morpheme do which is inserted to carry the Tns marker when there is some element intervening between Tns and the main Verb in the sentence, while the element so is the same emphatic marker which occurs in simple sentences such as (313) a., and not, as has sometimes been claimed, a "replacement" for an underlying sentential complement.

4.4. Verbs of the Expect-Class Reconsidered

Having discussed in some detail the relevance of the Pseudo-cleft evidence for the determination of complement types, let us reconsider

briefly Verbs such as expect and want, which were discussed earlier (cf. Section 3.1.). I argued there that these Verbs were to be subcategorized to take a VP complement, an Indirect Object-NP, and an optional Direct Object-NP. However, the Pseudo-cleft evidence reveals that for a number of these Verbs the situation is somewhat more complicated.

Consider first the Verb want. If want is analyzed as taking a VP complement, then we would expect to find that it requires a Pseudo-cleft with do, and in fact that is the case, as the following examples show:

(318) a. What I want you to do is to take out the garbage.

b. What I want to do is to take out the garbage.

However, it seems that for most people a Pseudo-cleft without do is also possible, so that we have sentences such as the following:

(319) a. What I want is for you to take out the garbage.

b. What I want is to take out the garbage.

What this suggests is that want is subcategorized to take either a VP complement or a for-to complement. The proof that this is the correct analysis lies in the fact that although the Direct Object-NP in (318) a. can be a Reflexive Pronoun:

(320) a. I want myself to take out the garbage.

b. What I want myself to do is to take out the garbage.

we cannot form a grammatical Pseudo-cleft of the form (319) a., if the Subject of the cleft for-to complement is coreferential with the surface Subject of want. Thus the following sentences are impossible:

(321) a. *What I want is for myself to take out the garbage.

b. *What I want is for me to take out the garbage.

Similarly, if the Subject of want requires a third-person Pronoun, then a sentence such as (321) a. is ungrammatical.

(322) *What Bill wants is for himself to take out the garbage.

while a sentence like (321) b.:

(323) What Bill wants is for him to take out the garbage.

can only be interpreted in such a way that the Pronoun him is non-coreferential with the NP Bill.

The point is that sentences such as (320) can only be accounted for by assuming that want takes a VP complement, whereas sentences such as (319) can only be explained under the assumption that want takes a sentential complement. It follows, then, that want must have the following two subcategorization features:

(324) a. NP ___ to NP(of NP) VP

b. NP ___ to NP of NP ((for NP) S')

Notice that these two features cannot be collapsed into a single feature by means of parentheses and braces. Suppose, however, that the Direct Object-NP in (324) a. were underlined, rather than being non-underlined, as we supposed earlier. The two features could then be readily collapsed in the following manner:

(325) NP ___ to NP (of NP) $\left(\left\{ \begin{matrix} \text{(for NP) S'} \\ \text{VP} \end{matrix} \right\} \right)$

This analysis claims that there are two sources for the sentence I want you to be on time, one in which you has a grammatical relation to want and in which the Infinitive is a VP complement in the base, the other in which you does not have a grammatical relation to want and in which it is the

the Subject of a for-to complement. Furthermore, the sentence I want myself to be on time derives unambiguously from the first source. The difference between the two sources is reflected in their respective Pseudo-cleft with do, e.g. what I want you to do is to be on time, what I want myself to do is to be on time, whereas the second, the sentential source, may Pseudo-cleft the whole complement S, e.g. what I want is for you to be on time, what I want is to be on time.[16] Finally, notice that if the Subject of the Infinitive does not have the feature of controllability then it may only be derived from the sentential source. Thus the sentence I want the garbage to be taken out can only be derived from a for-to complement, since Inanimate NP's cannot have the feature of controllability. Similarly, the sentence I want you to be given a present cannot naturally be derived from a VP complement, and hence has a Pseudo-cleft of the form what I want is for you to be given a present, but not of the form *what I want you to do is to be given a present. Likewise, we have I want to be given a present, but it sounds unnatural to say I want myself to be given a present.

Consider next the Verb expect. Expect differs from want in that it cannot form a grammatical Pseudo-cleft without do. Thus the following sentences seem unacceptable to me:

(326) a. *What I expect is for Bill to leave tomorrow.

b. *What I expect is to leave tomorrow.

whereas the following, in contrast, seem perfectly all right:

(327) a. What I expect Bill to do is to leave tomorrow.

b. What I expect to do is to leave tomorrow.

This suggests that expect, unlike want, takes only a VP complement, and not a for-to complement. Notice that the "expect of" sense of expect also may form the Pseudo-cleft with do, so that we have, for example:

(328) a. What Bill expects himself to do is to leave tomorrow.

b. What I expect Bill to do is to leave tomorrow.

This follows, of course, from the analysis proposed earlier, whereby the S in the what-clause derives from a deeper source similar to sentences such as the following:

(329) a. Bill expects it of himself to leave tomorrow.

b. I expect it of Bill to leave tomorrow.

However, what is not explained by the earlier proposal is the fact that Pseudo-clefts of the following form seem to be unacceptable:

(330) a. *What Bill expects of himself is to leave tomorrow.

b. *What I expect of Bill is to leave tomorrow.

while examples such as the following, though certainly not elegant, seem much better:

(331) a. What Bill expects it of himself to do is to leave tomorrow.

b. What I expect it of Bill to do is to leave tomorrow.

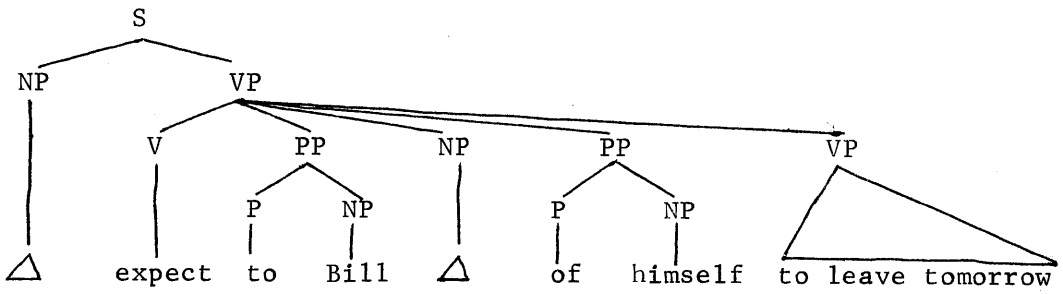
Recall that under our earlier proposal the underlying form of the "expect-of" sentences would be derived from a structure such as the following:

(332) Bill - expects - it_i - of himself - $[_{VP_i}$ to leave tomorrow]

However, if that is correct, then we would expect the examples in (330) to be grammatical, since there is an it in the underlying structure which should permit formation of the what-clause, along with extraction of the VP complement with which it is anaphoric.

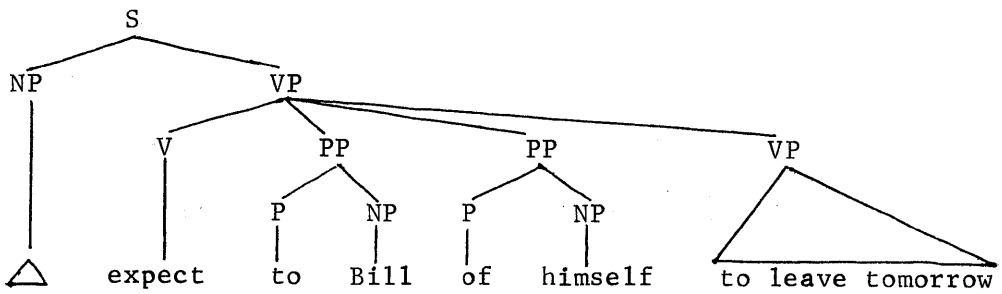
This suggests that the analysis proposed earlier is incorrect, and that the it which appears in sentences such as (327) and (331) is inserted in surface structure, rather than being present at the beginning of the derivation. Let us suppose therefore that examples such as those in (327) derive from the following kind of structure:

(333)



and that there is a rule which fills an empty Object-NP with the Pronoun it in surface structure. This rule is obviously similar to, and may perhaps be generalizable with, the rule which fills in the empty Subject-NP in sentences such as it is raining, it is snowing, etc. (cf. also Section 5.0.). This proposal would immediately explain the ungrammaticality of the examples in (330), as well as the grammaticality of examples such as those in (331). The examples in 328) without the it we can derive from a source identical to (333), except that they will not have an empty Object-NP:

(334)



After Object-Preposing has applied to (334), Preposition Deletion will automatically give us the correct surface structure (328) a.

In fact, there is independent evidence that a rule inserting it in Object position is necessary in the grammar anyway. Consider, for example, the Verb leave, discussed in Section 3.2. We had, it will be recalled, sentences such as the following:

(335) a. John left it to Bill to wash up the dishes.

b. John left it for Bill to wash up the dishes.

Now observe that the it which appears in these examples cannot be used to form a Pseudo-cleft, as shown by the unacceptability of the following sentences:

(336) a. *What John left to Bill was to wash up the dishes.

b. *What John left for Bill was to wash up the dishes.

On the other hand, Pseudo-clefts with do, such as the following are perfectly acceptable:

(337) a. What John left it to Bill to do was to wash up the dishes.

b. What John left it for Bill to do was to wash up the dishes.

Both of these facts can be explained if there is a rule which inserts it into an empty Object-NP.

Returning to expect, notice that we now have two subcategorization features for this Verb, The first, which accounts for the "expect that" sense, must be of the following form:

(338) NP ___ to NP (of NP) VP

while the second, which accounts for the "expect of" sense, can now be written as follows:

(339) NP ___ to NP (of NP) of NP VP

We see immediately that these two features can be collapsed into a single feature in the following manner:

(340) expect: NP ___ to NP (of NP) (of NP) VP

It should perhaps be noted that the it which occurs with that-clauses, in contrast to the it which occurs with Infinitives, is a deep structure element, as is shown by the fact that corresponding to examples such as the following:

(341) a. Nobody expected (it) that Bill would leave so early.

b. I expect (it) of you that you will take out the garbage.

we have Pseudo-clefts without do, such as the following:

(342) a. What nobody expected was that Bill would leave so early.

b. What I expect of you is that you will take out the garbage.

To account for these sentences, we must therefore have a subcategorization feature of the following sort:

(343) expect: NP ___ to NP of NP (of NP) that S'

Expect is thus exactly like the Verbs of the believe-class, for which we find Pseudo-clefts such as what I believe is that Bill has left, corresponding to I believe that Bill has left, but not *What I believe is for Bill to have left, corresponding to I believe Bill to have left. The differences between expect and believe are two: (1) The Object-NP is optional with the Infinitive, in the case of expect, so that we have I expect to leave, but not *Bill believes to have left; and (2) Expect has the additional possiblity of taking an of-phrase after the Object-NP, giving the "expect of" sense of the Verb, which is lacking in the case of believe.

Observe that as they stand the two subcategorization features (340) and (343) cannot be collapsed. There is, however, evidence that (343) is not quite complete. It has often been noted that Verbs such as believe and expect have a sense in which the negation of the matrix Verb yields a sentence which is equivalent in truth-value to a sentence containing a negation in the embedded that-clause. Thus, for example, sentences such as the following:

(344) a. I don't expect that Bill has left.

b. I don't believe that Bill will do it.

may be interpreted in such a way that they are equivalent in truth-value to sentences such as the following:

(345) a. I expect that Bill hasn't left.

b. I believe that Bill won't do it.

As has been pointed out in the literature, there are a number of syntactic reflexes associated with this sense of believe and expect. For example, certain Adverbial clauses which normally may occur in a simple sentence only if it contains a Negative, can nevertheless occur in the that-clause in sentences such as those in (344). Thus, although sentences of the following kind are ungrammatical:

(346) a. *Bill has left yet.

b. *Bill will do it until later.

unless the main Verb is negated:

(347) a. Bill hasn't left yet.

b. Bill won't do it until later.

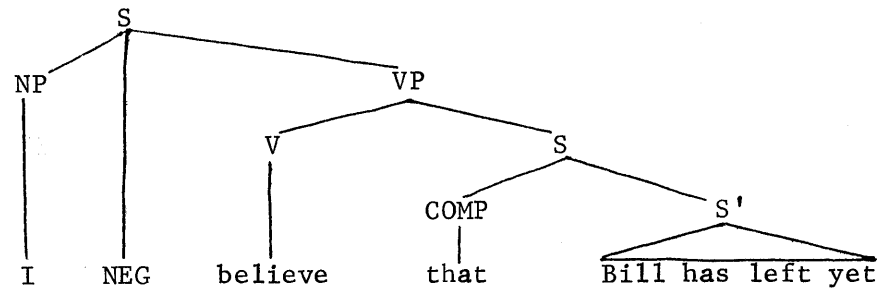
nevertheless the sentences in (346) can occur in a that-clause which is embedded below a negated believe or expect:

(348) a. I don't expect that Bill has left yet.

b. I don't believe that Bill will do it until later.

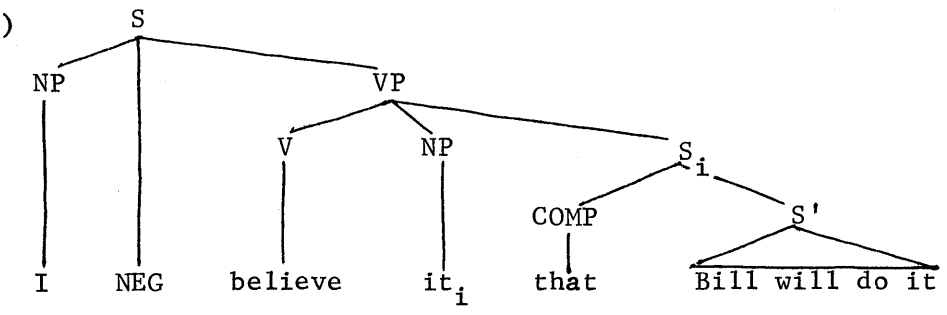
It is an interesting question whether this fact is to be accounted for by means of a syntactic rule, as has been argued by Fillmore (1963) and Lakoff (1969), or by means of an interpretive rule in the semantic component. However, whichever approach turns out to be the correct one, I would like to suggest that the conditioning environment is the same in both cases: whether or not negation of the matrix Verb is equivalent to negation of the embedded clause depends on the absense or the presence of an it which is coreferential with the that-clause. In other words, I propose that the sense of expect or believe in which sentences like (348) are possible derives from a structure such as the following:

(349)



whereas the sense in which (344) a. and b. simply negate the matrix Verb[17] derives from a structure of the form (350):

(350)



That this is indeed correct is shown by the fact that only the latter

interpretation is possible in the Pseudo-cleft construction. Thus the following sentences are impossible:

(351) a. *What I don't expect is that I will leave until 3:00.

b. *What I don't believe is that Bill will leave until later.

Instead, we must have the stressed Auxiliary which is characteristic of simple negation of the matrix clause:

(352) a. What I don't expect is that Bill will leave at 3:00.

b. What I don't believe is that Bill will do it carefully.

Returning to the subcategorization features for expect and believe, we see that in order to account for the fact that these Verbs can occur either in a construction of the form (349) or in one of the form (350), we must make the Object-NP optional, rather than obligatory:

(353) a. expect: NP ___ to NP (of NP) (of NP) that S'

b. believe: NP ___ to NP (of NP) that S'

But now notice that these features can be combined with the features that account for Infinitive complements by means of the curly braces notation:

(354) a. expect: NP ___ to NP (of NP) (of NP) $\left\{\begin{matrix}\text{VP}\\ \text{that S'}\end{matrix}\right\}$

b. believe: NP ___ to NP $\left\{\begin{matrix}\text{of NP} & \text{VP}\\ \text{(of NP)} & \text{that S'}\end{matrix}\right\}$

Notice that the subcategorization feature for believe is considerably more complicated than that of expect, This reflects the fact that the Object-NP is optional for expect, when it takes a VP complement, whereas it is not for believe. In other words, the fact that expect allows both I expect Bill to leave and I expect to leave, whereas believe has only I believe Bill to have left, and not *I believe to have left, constitutes a lexical generalization which is directly reflected in the greater simplicity of the

subcategorization feature which is necessary to characterize expect.

5.0. Raising Into Subject Position

Having discussed in some detail the evidence from the Pseudo-cleft construction, we are now in a position to deal with a class of Verbs which Rosenbaum classified--mistakenly, I believe--as instances of Subject-NP complementation. These are Infinitive constructions such as appear in the following sentences:

(355) a. Bill appears to have eaten the cookies.

b. I chanced to meet an old friend of mine.

c. Mary happens to have the book I need.

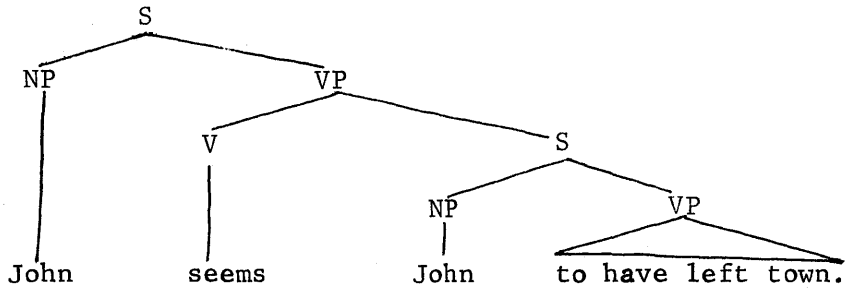
d. John seems to have left town.

e. Bill turned out to be the murderer.

f. Our plan proved to be impractical.

Rosenbaum's analysis was based on the following considerations. He first asked whether these sentences could be instances of Intransitive VP-complementation, i.e. whether they could be derived from a structure of the following sort:

(356)



This possibility he rejected, however, on the grounds that it could not account for the synonymity of Active-Passive pairs such as the following:

(357) a. John seems to have been examined by the doctor.

b. The doctor seems to have examined John.

Furthermore, a VP-Complement analysis would have failed to account for the fact that these sentences are paraphrasable by sentences such as the following, containing a <u>that</u>-clause:

(358) a. It appears that Bill has eaten the cookies.

b. It chanced that I met an old friend of mine.

c. It happens that Mary has the book I need.

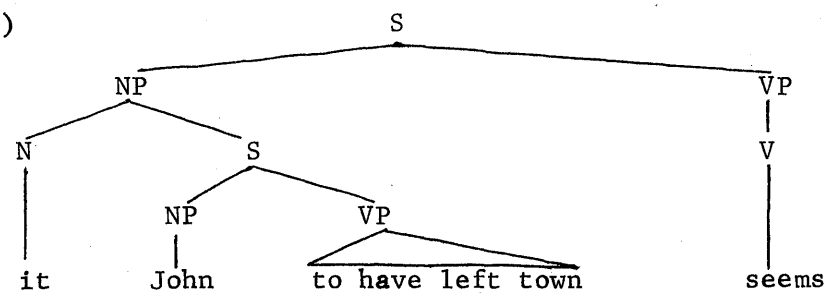
d. It seems that John has left town.

e. It turned out that Bill was the murderer.

f. It proved that our plans were impractical.

If the Infinitive constructions in (355) must be S's in deep structure, and if they cannot be instances of VP-complementation, then the only possibility that remains, within Rosenbaum's system, is that they are NP-Complements. In fact, they must be Subject-NP-Complements, since they are Intransitive, and therefore must derive from an underlying structure of roughly the following form:

(359)



This analysis immediately raises a number of problems, however. For one thing, as Rosenbaum points out, Extraposition must be made obligatory for just this class of Verbs, even though normally Extraposition

is an optional rule (cf. for example, that John does these things bothers me, it bothers me that John does these things.), since we do not find sentences such as *That Bill has eaten the cookies appears, *For Bill to have eaten the cookies appears, etc. Secondly, there obviously has to be a transformation to replace the Subject Pronoun it with the Subject of the for-to complement, in order to produce the correct surface forms in (355). Furthermore, this rule must also be obligatory, since there are no sentences of the form: *It appears for Bill to have eaten the cookies, *It happens for Mary to have the book I need, and so on. Finally, notice that the Pronoun Replacement transformation must be lexically specified as applying to this class of Verbs and to no others. It does not apply, for example, to sentences such as It bothers me for Bill to do such things, giving sentences of the form *Bill bothers me to do such things.

Thus the price one pays for maintaining a uniform analysis of Infinitive complements along the lines proposed by Rosenbaum is that Extraposition, a rule which is normally optional, must be made obligatory for a lexically specified class of Verbs; that there must be an otherwise unmotivated rule of Pronoun Replacement; and that this rule, also obligatory, must also be governed by a lexically specified class of Verbs.

Besides the obvious objection that a great many ad-hoc conditions are necessary, in order to account for just one small class of Verbs, this analysis raises interesting questions concerning the "naturalness" of the relation between deep structure and surface structure. When are we justified in setting up deep structures and transformations for which there is no evidence in the form of actual surface contrasts? For example,

the rule of Tough Movement, which also replaces a Subject Pronoun with a NP in an embedded clause, produces surface alternates such as Bill is easy to please and it is easy to please Bill, so that we have direct evidence, in this case, for the existence of a rule. However, there is no direct evidence of this kind for the existence of Rosenbaum's rule of Pronoun Replacement.

Rosenbaum attempts to forestall objections of this sort by showing that there is independent motivation for a rule of Pronoun Replacement. One argument is that Pronoun Replacement is not only necessary to account for Verbs of the happen-class, but that it is also needed in order to account for the behavior of Verbs such as believe. The many difficulties that arise from the attempt to generalize Pronoun Replacement (or "Raising", as it is often referred to) in Object position with Pronoun Replacement in Subject position have been discussed extensively in the literature, and I shall not repeat them here. Moreover, we have already seen that within our framework there is a much simpler way of dealing with Verbs of the believe-class.

Another argument of Rosenbaum's is that Pronoun Replacement is necessary in any case in order to explain the fact that there are no Pseudo-cleft sentences of the form:

(360) a. *What appears is for Bill to have eaten the cookies.

b. *What happens is for Mary to have the book I need.

c. *What seems is that John has left town.

If Pronoun Replacement is ordered before Pseudo-cleft formation, so the argument goes, we can automatically account for the non-existence of the

Pseudo-clefts in (360). However, this argument collapses, as soon as we observe that sentences containing a that-clause, such as those in (358), also do not allow the formation of Pseudo-cleft constructions:

(361) a. *What appears is that Bill has eaten the cookies.

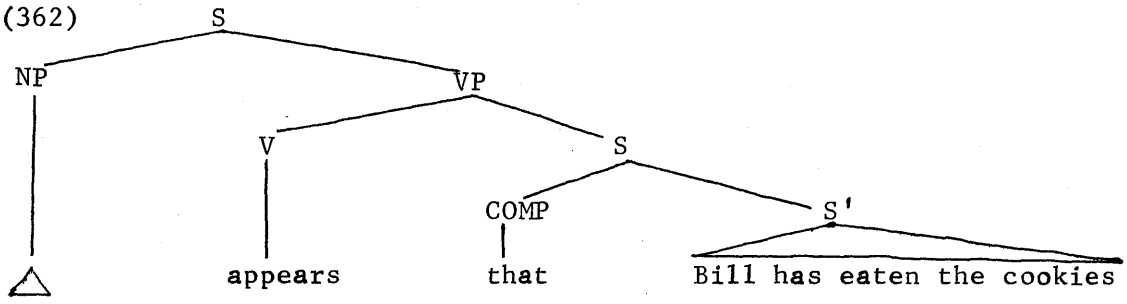
b. *What happens is that Mary has the book I need.

c. *What seems is that John has left town.

etc.

Recalling our discussion of the Pseudo-cleft in the previous sections, these facts suggest that Verbs such as appear, seem, happen, etc. do not have a pronominal Subject -NP at all in deep structure, but that the it which appears in examples (358) is inserted into an empty Subject-NP by the same rule that fills in an empty Object-NP for Verbs such as leave, expect, etc. Thus I propose that underlying a sentence such as (358) a. is a structure of the following sort:

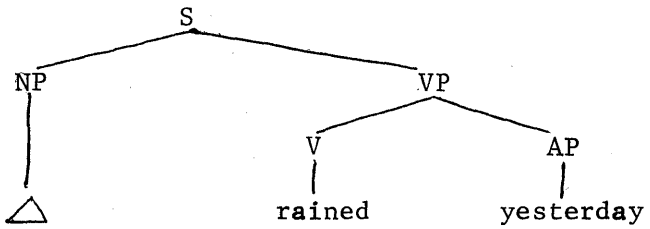
(362)



This proposal immediately accounts for the fact that there are no Pseudo-clefts of the form (361), since the Pronoun it which is necessary for the formation of the what-clause is not present. Furthermore, notice that there is entirely independent evidence for the existence of a rule which fills in empty Subject-NP's with an it, since exactly the same rule can be used to account for the surface form of sentences containing Verbs such

as rain, snow, sleet, etc., as well as Adjectives such as hot, cold, and many others. Thus, for example, the sentence it rained yesterday may be derived from a deep structure of the following sort:

(363)



thus accounting for the fact that there are no questions of the form *what rained yesterday?, that this it is semantically an "empty" morpheme, and so on.[18]

Let us consider now the Infinitive constructions found in examples such as those in (355). Although there are no Pseudo-clefts of the form (360), as has already been observed, notice that we do find Pseudo-clefts with do:

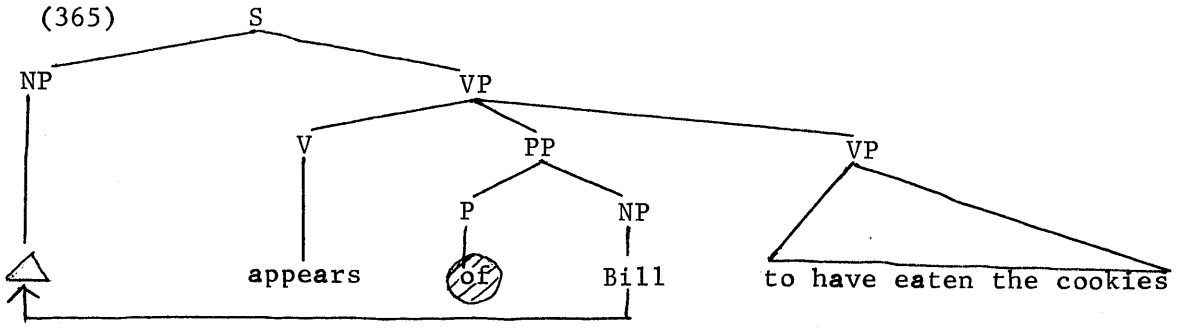
(364) a. What Bill appears to have done is to have eaten the cookies.

b. What John seems to have done is to have left town.

c. What they proved to have done was to have falsified their records.

This naturally suggests that the Infinitives in these sentences are derived from VP's. Furthermore, the surface Subject of the matrix Verb must be derived from the Direct Object position, if we are to account for the fact that it is the understood Subject of the Infinitive. I propose, therefore, to derive an example such as (355) a. from a structure of the following sort:

(365)



The Direct Object Bill is of course derived ultimately from the Agent-phrase of the Infinitive complement by means of Agent-Preposing. To this structure Object-Preposing will apply, automatically producing the correct surface structure. Finally, since pairs such as (357) a. and b. are synonymous, the subcategorization feature for these Verbs must indicate that the Direct Object-NP is non-underlined. Thus the Verb appear, for example, must be subcategorized as follows:

(366) appear: NP ___ of NP VP

Interesting confirmation of the essential correctness of this analysis can be derived from the fact that there is at least one Verb which may optionally take an Agent-phrase, as well as a Direct Object-NP. If the Agent-phrase is present, then of course the Direct Object remains in its deep structure position to the right of the Verb. Consider the following examples:

(367) a. The plan proved to be impractical.

b. John proved the plan to be impractical.

c. Subsequent developments proved the plan to be impractical.

Evidently, the only difference between prove and appear is that the former allows an optional Agent- or Subject-NP. It must therefore be subcategorized as follows:

(368) prove: { NP ___ of NP VP (by NP) / NP ___ of NP VP (by NP) }

That sentences such as (367) b. and c. are not for-to complements is shown by the fact that we find no Pseudo-clefts of the form:

(369) a. *What John proved was for Bill to have stolen the cookies.

b. *What subsequent developments proved was for Bill to have stolen the cookies.

while we do find Pseudo-clefts such as the following:

(370) a. What John proved Bill to have done was to have stolen the cookies.

b. What subsequent developments proved Bill to have done was to have stolen the cookies.

This proposal avoids, I believe, the difficulties inherent in Rosenbaum's approach. There is no need, in our analysis, for an unmotivated rule of Subject Raising. Instead, we have the regular rule of Object-Preposing. Furthermore, no ad-hoc constraints need be placed on the Extraposition transformation.[19] In addition, within the general framework proposed here, it is possible to explain the fact that Verbs such as appear, seem, etc. may never form Pseudo-clefts without do, whereas Rosenbaum's account explains, at best, why the Infinitive complements may not appear in focus position in Pseudo-clefts. Finally, our analysis allows a Verb such as prove to be subcategorized, in the intuitively correct manner, as simply having an optional Agent-phrase, whereas pairs of sentences such as (367) a. and b. are essentially unrelated in Rosenbaum's framework, one being an instance of Subject complementation,

the other an instance of Object-complementation.[20]

6.0. Other Intransitive Verbs

We turn now to a brief discussion of a number of other classes of Verbs, all of them Intransitive, which we have not yet had occasion to deal with explicitly.

6.1. Intransitive Verbs of Motion

Consider first examples such as the following, which Rosenbaum classifies as instances of Intransitive VP-Complementation:

(371) a. The police proceeded to beat the demonstrators.

b. Bill went on to become a financier.

c. Mary gradually came to realize that her job was intolerable.

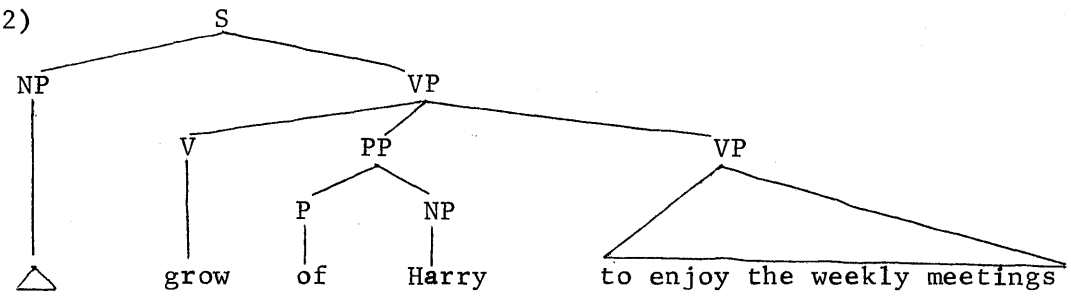
d. Harry grew to enjoy the weekly meetings immensely.

e. The cider stays in the refrigerator to keep cool.

f. That book has gone to be rebound at the factory.

We observe immediately that all of these Verbs are Intransitives of the type whose surface Subjects, it was argued in Chapter II, derive from the Direct Object position. We could, therefore, account for the fact that the surface Subject in these examples is the understood Subject of the Infinitive by deriving them in a manner analogous to the way in which we derived the examples of the preceeding section. Thus (371) d., for example, could be derived from the following structure:

(372)



Notice, however, that these Verbs differ from Verbs such as seem, appear, etc. in that the Direct Object-NP must be underlined. This is shown by the fact that there are non-synonymous pairs of the following sort:

(373) a. The police proceeded to arrest the demonstrators.

b. The demonstrators proceeded to be arrested by the police.

(374) a. Some books have gone to be rebound at the factory.

b. They have gone to rebind some books at the factory.

Furthermore, notice that while Verbs such as seem and appear permit insertion of the lement there:

(375) a. There appears to be someone at the door.

b. There seems to be a deomonstration at the park.

the same is not true of the Verbs in (371):

(376) a. *There proceeded to be a demonstration in the park.

b. *There came to be many students suspected of disloyalty.

c. *There stayed to be some patients examined by the doctor.

d. *There have gone to be some books rebound at the factory.

thus indicating that there are selectional restrictions between the Verb and its Direct Object.

Taking into consideration facts of this kind, we may subcategorize a Verb such as proceed, for example, in the following manner:

(377) proceed: NP ___ of NP VP

6.2. Verbs of Temporal Aspect

Another class of Verbs which Rosenbaum puts under the heading of Intransitive VP-Complementation are Verbs of temporal aspect such as begin, cease, commence, start, etc. We have already discussed these Verbs in Chapter III in connection with Predicate-VP complements. However, a number of these Verbs take Infinitive complements as well. Consider, for example, the following stences:

(378) a. John began to work.

b. I have ceased to be interested in the matter.

c. It commenced to rain.

d. Bill continued to read his book.

e. The water started to boil.

It has been argued in some detail by Perlmutter (1970) that Verbs of this kind have two distinct senses, depending on whether or not the surface Subject has a grammatical relation to the Verb. He points out, for example, that the Verb begin can, in certain contexts, have as its Subject the expletive there:

(379) There began to be a commotion.

Furthermore, it can take the dummy it which appear with Verbs such as rain and appear (cf. Section 5.):

(380) a. It began to rain.

b. It began to appear as if John would be late.

We also find synonymous pairs of the following sort:

(381) a. The noise began to annoy Joe.

b. Joe began to be annoyed by the noise.

again indicating that the surface Subject has no grammatical relation to the Verb. Finally, the Objects of fixed phrases such as pay heed (to), have recourse (to), make headway, etc., may also appear as the Subject of begin:

(382) a. Recourse began to be had to illegal methods.

b. Headway began to be made toward a solution.

a fact which is difficult to account for if the Subject has a deep grammatical relation to begin.

On the other hand, there are contexts in which it seems that the surface Subject does have a deep grammatical relation to Verbs such as begin. For example, there are sentences without Infinitive complements such as the following:

(383) a. I began the job.

b. Bill continued his investigations.

c. Harry started the motor.

in which the surface Subject must derive from the Agent-phrase. Furthermore, begin may be embedded beneath Verbs such as try and force:

(384) a. I tried to begin to work.

b. I forced Bill to begin to work.

In Rosenbaum's framework, this would of course mean that begin must have an Animate Subject in deep structure.

The burden of Perlmutter's argument is that in the standard theory of Infinitive complementation, these facts force us to the conclusion that Verbs such as begin must be allowed to occur in at least two

radically different deep structure configurations, one in which there is a NP-complement in Subject position (i.e. like appear and seem), and another in which there is a deep Subject-NP and an Object-complement whose Subject must be identical to the Subject of begin (just like try, in other words).[21]

Perlmutter's observations are of some interest, and it is important to see whether the conclusions to which he is led are necessarily valid. This becomes particularly clear when we consider the fact that, according to his analysis, any sentence with begin whose surface Subject is Inanimate must be treated as an instance of Subject-complement, whereas sentences whose surface Subjects are Animate Agents must be analyzed as containing an Object-complement. This means that the following pair of sentences, for example, would have to derive from radically different underlying structures:

(385) a. John began to boil the water.

b. The water began to boil.

in spite of the fact that there is, on the face of it, at least, little reason for supposing that these sentences differ syntactically in any way. Thus neither may appear in a Pseudo-cleft sentence without do:

(386) a. *What John began was to boil the water.

b. *What the water began was to boil.

and likewise both may appear in Pseudo-clefts with do:

(387) a. What John began to do was to boil the water.

b. What the water began to do was to boil.

indicating that in both cases the complement is simply an Infinitival VP complement. Similarly, in neither case may the complement have a Subject-NP which is distinct from the Subject of the matrix Verb begin:

(388) a. *What began was for John to boil the water.

b. *What the water began was for the stew to boil.

which further supports the view that what we have in both cases is a VP complement, rather than a for-to complement.

Furthermore, notice that there is not even any semantic support for distinguishing two senses of begin, when it occurs with an Infinitive complement. Sentence (385) a. refers to the point at which John's boiling of the water began, while (385) b. refers to the point at which the water's boiling began. What semantic difference is there between these two sentences that is not referrable to the fact that the Infinitive complement has an Agent-NP in one case, but not in the other? The existence of transitive sentences such as (383), while of interest, does not show that there is a difference between the pairs such as (385). In fact, sentences such as (383) even provide an argument against this assumption, for observe that although there are Intransitive sentences such as the following:

(389) a. The job began.

b. Bill's investigations continued.

c. The motor started.

corresponding to Intransitive sentences with Infinitives such as (385) b., there are no Transitive sentences of the following kind:

(390) a. *John began the water to boil.

b. *John continued the water to boil.

corresponding to the Transitive sentence (385) a.. However, if it were really the case that there was a sense of begin which required an Agent-NP in deep structure, plus an Infinitive complement, and if it were also

the case that Intransitives like (389) were analagous to Intransitives such as (385) b., then we would expect to find sentences of the form (390) [22] analagous to the Transitive sentences in (383).

What has gone wrong with Perlmutter's analysis? What assumption is it which leads him to the unacceptable conclusion that (385) a. and b. derive from radically different deep structures? The crucial piece of evidence produced by Perlmutter in favor of the existence of a 'Transitive' begin is the fact that begin can be embedded beneath Verbs such as force and try. Rosenbaum's analysis of Infinitives requires that the complement of these Verbs be derived from a for-to complement, whose Subject-NP is obligatorily deleted under identity with the Object- and Subject-NP's of force and try, respectively. So far, this causes no problems, since we could perfectly well maintain a Subject-complement analysis for begin and, as long as this deep structure has been converted to its surface form on the lower cycle, the structural description for deletion of the complement Subject will be met. However, Perlmutter introduces an additional assumption in order to explain the fact that Verbs such as force and try require identity between the Subject of the complement sentence and the NP in the matrix clause which is the controller. This assumption, which he terms the 'like-subject constraint', is that the Subject or Object of try or force, respectively, must be identical with the deep Subject of the embedded clause. Naturally, it follows immediately that begin, when embedded below force or try, must have a deep Subject-NP, and furthermore that this Subject-NP cannot be a NP-complement, since it would then not be identical to the controller NP in the matrix clause.

The problem, then, lies in the unlike subject constraint. It is the assumption that the deep Subject of try must be identical to the deep Subject of its complement sentence which leads to the conclusion that (385) a. and b. have different underlying structures. In fact, the arguments for the existence of such a constraint are extremely weak. (See Fischer and Marshall (1968) for a critique of Perlmutter's proposals.) Without going into detail here, it need only be pointed out that such a constraint leaves no way of accounting for sentences such as the following:

(391) a. John forced Bill to be examined by the doctor.

b. John tried to be examined by the doctor.

Perlmutter attempts to deal with such sentences by making the ad-hoc assumption that there is another complement sentence between force and examine, whose main Verb requires an Animate Subject. The Verb he suggests is get, so that (391) a., for example, he would derive from a source of the form: John forced Bill to get to be examined by the doctor. However, he offers no independent support for this assumption. Furthermore, it is surely obvious that any imaginable "deep structure constraint" could be justified in a similar manner. All we need to do is to find some Verb which meets the constraint in question, and which can be interpolated between the matrix Verb and its complement sentence, and it immediately becomes possible to explain away any possible exception to some putative deep structure constraint. Suppose, for example, we claim that there is a deep structure constraint requiring identity between the Object of force and the deep Object of the embedded sentence. This immediately

accounts for (391) a., but fails to explain the existence of sentences such as John forced the doctor to examine Bill. However, the constraint would be met if we simply assume that there is a deleted complement between force and examine, for example, one containing the Verb persuade. We can then derive the recalcitrant sentence from an underlying structure of the form: John forced the doctor to be persuaded to examine Bill. In support of this analysis, we might observe that a person cannot be forced into doing something unless he is persuaded that to do so would be in his own best interests.

If we abandon the unlike subject constraint, we are then left with the conclusion that Verbs of temporal aspect are Intransitive Verbs which require a n NP-complement in Subject position. However, it has already been shown in Section 5.0. that the existence of such constructions leads to unmotivated complications in the grammar of English. Furthermore, notice that for the Verbs of temporal aspect we do not even have the slight support provided in the case of appear, seem, etc. by the existence of sentences containing a seemingly extraposed that-clause, since there are no sentences such as the following:

(392) a. *It began that John worked.

b. *It ceased that I was interested in the matter.

c. *It commenced that it rained.

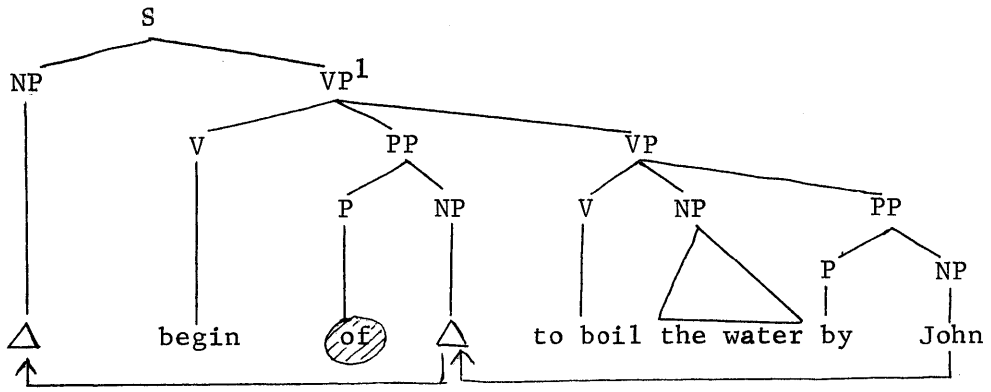
d. *It continued that Bill read his book.

e. *It started that the water boiled.

This suggests that the underlying form of sentences containing Verbs of temporal aspect is in reality very close to the form in which they appear in surface structure. In fact, we may assume that they are derived

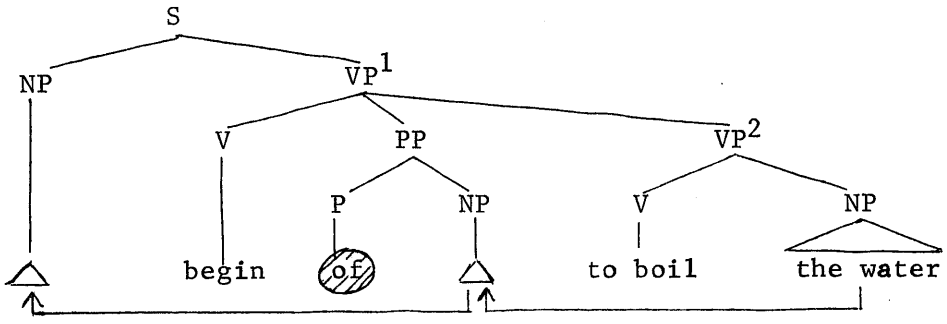
in much the same way as the Verbs discussed in Section 5.0. I propose, therefore, to derive a sentence such as (385) a. from a structure of the following sort:

(393)



The derivation is straightforward: Agent-Preposing on the VP^1-cycle, followed by Object-Preposing (and Preposition Deletion) on the S-cycle. Sentence (385) b., on the other hand, would be derived from a source such as the following:

(394)



Again the derivation is straightforward: Object-Preposing on the VP^1-cycle, followed by the same rule, applied on the S-cycle.

Finally, recalling the various arguments presented by Perlmutter in favor of a Subject-complement analysis, observe that the Direct Object-

NP must be non-underlined in the subcategorization feature for begin. Hence we may write it in the following manner:

(395) begin: NP ___ of NP VP

Before concluding this section, it is perhaps worthwhile discussing briefly the Verb threaten, mentioned by Perlmutter at the end of his paper. This Verb is interesting because it does in fact appear to have just the properties which Perlmutter wishes to attribute to the Verbs of temporal aspect. In one of the senses in which it is used, the Verb threaten may appear in sentences such as the following:

(396) a. There threatened to be a riot.

b. It threatened to rain.

c. The stew is threatening to burn.

Clearly, this sense of threaten is similar to that of begin, start, etc. However, there are other sentences, containing Animate Subject-NP's, in which the Subject of threaten is clearly agentive. Consider, for example, the following:

(397) a. John threatened to kill Bill.

b. John is threatening to burn the stew.

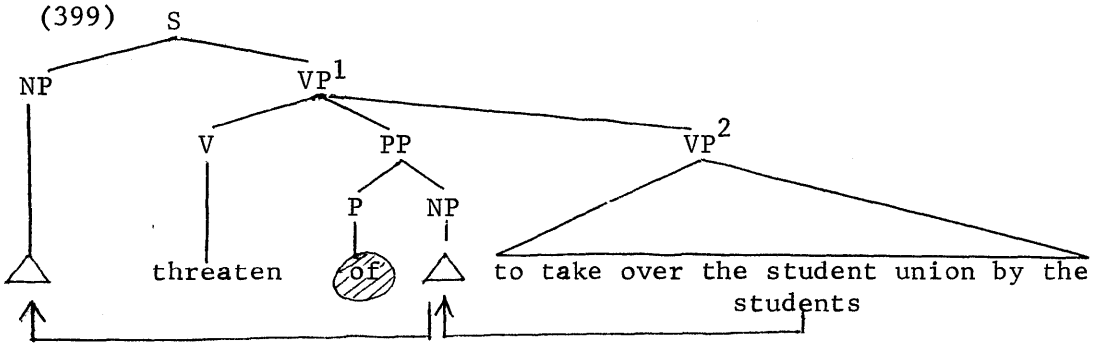
This leads, as Perlmutter observes, to ambiguous sentences such as the following:

(398) The students threatened to take over the student union.

(398) can be interpreted either as meaning that the students issued threats announcing their intention of taking over the student union, or else it can be used to describe a situation in which a take-over of the student union by the students was immanent. In the first case, the interpretation is similar to that in examples (397), while in the second

case, it is like the interpretation of the examples in (396). Let us assume that in the latter case (398) is derived in much the same way as sentences containing the Verb begin. Thus it would have an underlying structure of the following sort:

(399)



Furthermore, threaten, in this sense, would be subcategorized as follows:

(400) threaten: NP ___ to NP VP

Consider next the first interpretation. Let us suppose that in this case the surface Subject of threaten derives from the Agent-phrase. Evidence that this assumption is correct is provided by the existence of Pseudo-transitive sentences with make (cf. Section 2.2.):

(401) a. The students made threats to take over the union.

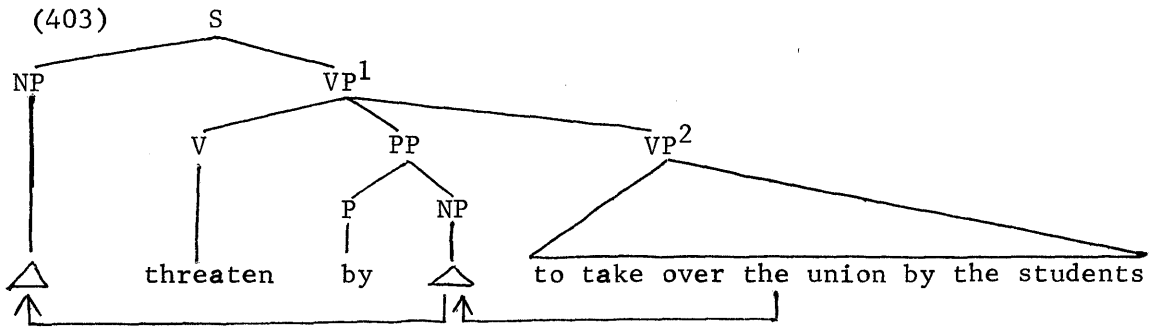
b. Threats were made by the students to take over the union.

and also by the existence of nominal forms such as the following:

(402) a. I have heard threats by the students to take over the union.

b. I have heard the students' threats to take over the union.

These facts suggest that threaten, in this sense, is to be analyzed in the same way as Verbs like refuse, discussed in Section 2.2. Let us suppose, therefore, that (398), under the first interpretation, derives from a structure of the following form:



Furthermore, it is obvious that the by-phrase must be underlined, so that we may write the subcategorization feature for this sense of threaten as follows:

(404) threaten: NP ___ by NP VP

Observe now that there is one crucial fact which shows that both of these hypothetical underlying forms must be correct. It happens that (398) may also occur with an optional Object-NP, as, for example, in the following sentence:

(405) The students threatened the administration to take over the union.

Notice first of all that the understood Subject of the Infinitive in (405) is still the NP the students - the Object-NP the administration cannot be interpreted as the Subject of the Infinitive. Furthermore, notice that (405) is unambiguous; it can have only the first interpretation mentioned above and cannot be interpreted in the same way as the examples in (396). Finally, observe that the Object-NP in (405) is in fact an Indirect Object. This is shown by the fact that it occurs with the Preposition to both in Pseudo-transitives of the form (401); as well as in nominalizations such as those in (402):

(406) a. The students made threats to the administration to take over the union.

b. Threats were made to the administration by the students to take over the union.

(407) a. I have heard threats to the administration by the students to take over the union.

Notice also Adjectival constructions such as the following:

(408) The students' actions are threatening to the administration.

All of these facts can be accounted for simply by writing the subcategorization feature (404) with an optional Indirect Object-NP to the right of the Verb:

(409) threaten: NP ___ (to NP) by NP VP

The fact that the Infinitive complement, in this sense of threaten, must follow the Agent-phrase in underlying structure explains immediately why the Indirect Object cannot be the understood Subject of the complement. Most important, however, is the fact that (409), in conjunction with (400), together explain why it is that (398) is ambiguous, whereas (405) is not. The point is that if the Indirect Object-NP allowed by (409) is not realized, then the surface Subject of threaten could derive either from an Agent-phrase, as in (403), or from the Direct Object position, as in (399). If, however, both an Agent-phrase and an Object-phrase are present, then the structure specified by the subcategorization feature (409) automatically precludes the possibility of the surface Subject's being derived from any source other than the Agent-phrase. On the other hand, the only way that a sentence can be unambiguous in favor of the non-Agentive interpretation is if the surface Subject is an NP which

cannot serve as an Agent-NP. That is why the examples in (396) are unambiguous, since Inanimate NP's and transformationally introduced elements such as there and it cannot be Agent-NP's. Finally, notice that this analysis predicts that if the Subject of threaten is Inanimate, it should not be possible to have an Object-NP preceding the Infinitive, is in fact the case:

(410) a. *The stew is threatening us to burn.

b. *The thunder threatened us to frighten the children.

c. *It threatened the spectators to rain.

d. *There threatened the administration to be a riot on campus.

We see then, that the peculiar behavior of the Verb threaten provides indirect evidence of a rather striking kind in support not only of our analysis of Verbs such as appear, seem, begin, continue, etc., but also, somewhat surprisingly, in favor of the analysis proposed earlier for Agentive Verbs such as refuse, try, attempt, and so on. Reiterating what has already been said, the point is that threaten is a lexical item which has one sense in which it behaves like Verbs such as appear and begin, but which also has another sense in which it is like Verbs such as try and attempt. The association of the two subcategorization features (400) and (409) with the single phonological form, threaten gives rise to the fairly complex distribution described above. Faced with results of this sort, an obvious question to ask is whether there is something in the semantic content of a Verb such as threaten which would allow us to predict that it could combine just these two subcategorization features, and no others, within a single lexical item. In other words, are the two senses of

threaten revealed by this analysis mere homonyms, or does the syntax of English Verbs reflect in some interesting way the operation of universal semantic principles? It seems unlikely that the first alternative can be the correct one. However, these are questions which I hope to deal with, albeit in a very tentative way, in the final chapter.

Additions - Chapter IV

[1]Rosenbaum himself tried to collapse this rule with his rule of Pronoun Replacement, which operated in the derivation of sentences such as John seems to have left (cf. it seems that John has left). However, as has been demonstrated by Ross (1967) and Kiparsky and Kiparsky (1971), this proposal runs into insuperable difficulties.

[2]Chomsky (1971) attempts to account for the behavior of believe by means of some very general constraints on the functioning of transformational rules. It is possible, but by no means obvious, that the explanation offered here is an equivalent, stated in terms of constraints on the form of grammar, of Chomsky's constraints, which are formulated as constraints on the functioning of grammatical rules. As Chomsky notes, the distinction is not one of principle, but rather of convenience.

[3]Alternatively, if the distinction between animate and inanimate Agents is to be taken care of in the semantic component, we can assign both types of Verb the second feature in (56) and simply restrict exhort and enjoin to taking +Animate Subject-NP's. Notice, incidentally, that the two features in (56) may be abbreviated as follows:

(a) $\langle \underline{\text{NP}} \rangle$ ___ to NP VP $\left\{ \begin{matrix} \langle (\text{by NP}) \rangle \\ \text{by NP} \end{matrix} \right\}$

[4]There is one apparent difficulty in relating pairs such as (72) and (75) in the way that I have proposed. Recall that for sentences such as John learned French from Bill and Bill taught French to John, it was argued in Chapter II that the Subject of learn was to be derived from the to-phrase. This would make it difficult to relate these Verbs when they occur with an Object-NP to the same Verbs as they occur in sentences with

Infinitives, as the reader can see by attempting to collapse the subcategorization features for the two cases. To remedy this defect, I would propose that the Subject of John learned French from Bill is derived from the Indirect Object position, whereas the Indirect Object in Bill taught John French can be derived either from the deep Indirect Object position, or from a to-phrase. It seems to me that the latter sentence is in fact subtly ambiguous: on one reading, it implies that John in fact learned French, whereas on the other reading it does not necessarily imply that he learned any French. Furthermore, it appears to me that the sentence Bill taught French to John is unambiguous, and has the second reading, i.e. it does not imply that John necessarily learned any French from Bill, but merely states that he received instruction in French from Bill. Finally, notice that the sentence John taught Bill to speak French is also unambiguous, but along the lines of the first reading. That is, it does imply that Bill in fact learned to speak French, thus indicating that the Object position, not from the to-phrase. Similarly, I would argue that in John got a book from Bill, the NP John derives from the to-phrase, whereas in contexts like John got sick, John got the hell out of there, John got a lot of praise, etc., John must derive from the Indirect Object position. If these facts are correct, then the subcategorization feature for teach can be given as follows:

(a) teach: NP ___ (to (NP)) $\left\{ \begin{matrix} \text{of NP} \\ \text{VP} \end{matrix} \quad (\text{to NP}) \right\}$ by NP

The reader can check for himself that under the conditions on the application of structure-preserving rules proposed in the last chapter, this

schema will generate just the right possibilities, and that all the others will lead to ill-formed surface structures. The Verb learn, on the other hand, does not allow a to-phrase, and can be subcategorized as follows:

(b) learn: NP ___ to NP $\left\{ \begin{matrix} \text{of NP} \\ \text{VP} \end{matrix} \quad (\text{from NP}) \right\}$

[5]These sentences are grammatical, of course, but have a different sense from sentences such as those in (92). We have, for example, Active and Passive pairs such as the following:

A. (1) The committee made the decision to restrict the use of library cards.

(2) The decision to restrict the use of library cards was made by the committee.

B. (1) John made the proposal to change the schedule.

(2) The proposal to change the schedule was made by John.

In fact, (93) d. and e. are not ungrammatical, when construed in this way. Notice, however, that the meaning is different from that of the Passives in (93), which shows that two different constructions are involved.

[6]Note that the considerations brought forward in this section require that we revise slightly the expansion rule for VP that was proposed in Section 2.2. Recall that we argued there that VP's must be allowed to occur in at least two places in the matrix-VP: (1) at the end of the VP, and (2) in the same position as the Predicate-node, i.e. directly following the Direct Object-NP. If the analyses offered above are correct, however, then it would appear that (2) is incorrect, and that we must allow a VP to

be generated after a to-or for-phrase, as well. Notice, however, that we can incorporate both of these observations into the phrase-structure rules by writing the expansion rule for VP as follows:

(A) VP $\longrightarrow$ (to NP) (of NP) (Pred) (to NP) (for NP) (VP)
(PP)* ($\begin{Bmatrix} S \\ VP \end{Bmatrix}$)

Interesting questions arise, if we ask whether there are sentences which contain both a Predicate-VP and an Infinitive-VP complement. In fact, it is possible that there are such sentences. Consider the following examples:

(B) a. We have a car waiting outside to drive you to the airport in.
b. They kept the water boiling to make us tea with.
c. Bill got the announcement printed up by the secretary to distribute to the students.
d. I left a piece of cake sitting on the table for you to eat.
e. I had a book stolen from my room to be used as a door-jam.

Although other analyses may be possible, it would appear, on the face of it, that these examples contain both a Predicate-VP and an Infinitive-complement. If that is the case, then either we must give up the rule of Object Movement, and assume, instead, that the INfinitive complement contains as its Object a Pronoun coreferential with the Object of the matrix Verb, which is deleted obligatorily, or else the operation of the structure-preserving rules must be modified in some way, so as to allow two identical NP's to be inserted into the same empty node. One general way of accomplishing this, suggested to me by N. Chomsky, would be to redefine structure-preserving rules in such a way that they may replace a

node X of category A by another node Y of the same category, if X is either (1) empty, or (2) identical to Y, where identity is defined to include identity of reference. Unfortunately, space prevents me from discussing in proper detail the consequences of such a revision in the theory. Note, however, that there are still many unresolved theoretical problems involved in both the definition and the use of a general notion of "identity", making it questionable whether a redefinition of the notion "structure-preserving rule" along these lines would be worthwhile, at the present time.

[7]It is beyond the scope of this work to evaluate the theory of Infinitive complementation contained in Chomsky's recent paper Conditions On Transformations. Chomsky's claim is that semantic considerations cannot enter directly into the evaluation measure for the form of syntactic rules, or directly affect the operation of syntactic rules, which are "blind" with respect to anything except structural considerations. He does, however, allow reference to semantic notions in the statement of universal conditions on the operation of syntactic rules, but these conditions, being universal, do not contribute to the complexity of the syntactic component. Chomsky also remarks (cf. footnote 12.) that "although transformations are independent of grammatical or semantic relations, they do, of course, reflect properties of lexical items and lexical categories." This remark conceals, as I hope to show more clearly in the last chapter, a crucial point, for it is far from clear that the "properties of lexical items" and "lexical categories" that are of relevance to syntax can in meaningful sense be divorced from semantic considerations. Furthermore,

if the theory of Infinitive complementation proposed here can be maintained, then it is not even clear that semantic considerations can be restricted to universal conditions on the application of syntactic rules, since notions such as "understood Subject" influence directly the form of grammar in this theory. Finally, notice that even principles such as Chomsky's "tensed S constraint", if refined sufficiently, may well turn out to reflect semantic notions. Intuitively, it seems obvious that a sentence-type which is characterized by the fact that it blocks the application of both syntactic and semantic rules which would otherwise be applicable within its domain must in some way reflect the notion "independent proposition." By this I mean to indicate a proposition which, in some sense that needs to be defined precisely in semantic theory, contains all that is necessary to stand alone as a complete proposition, or assertion, independent of the particular context in which it happens to appear. Infinitives, in contrast, appear to be semantically dependent in a way that ought also to be precisely definable. Thus the element to go (or John-to go) in a sentence such as I persuaded John to go cannot "stand alone" as complete proposition, but rather is dependent on the meaning of the whole complex expression "persuade X to Y". Note that this view is very close to that of traditional grammarians such as Jesperson, Curme, etc. who regarded the Infinitive as a "modifier" of a Noun whose function it was to "complete the meaning of the Verb". Note also the close relationship of this approach to the whole idea of "notional definition" in traditional grammar, as applied to the major categories Noun, Adjective, Verb, (See, for example, the excellent discussion in Lyons (1968)). The

term "constructional meaning" has also been employed in much the same way by a variety of linguists. In general, it seems to me that it would be rather surprising if deep syntactic facts turned out not to be influenced by semantic facts, just as it would be surprising if phonetic representations did not reflect in any way the syntactic properties of sentences. This is not to say, of course, that "syntax is semantics", a slogan which seems to me to be just as senseless as the slogan "phonology is syntax" would be.

[8]We shall deal with the exceptions to this statement shortly.

Note that this is true regardless of whether or not the that-clause is "factive" or "non-factive", in the sense of Kiparsky and Kiparsky (1972). Thus resent is factive, whereas believe is non-factive, but both may be pseudo-clefted, so that we find both (251) a., above, and What Bill resents is that people always compare him to Mozart. Similarly odd requires a factive complement, whereas likely requires a non-factive complement, but we find both What is odd is that it is raining and What is likely is that it will rain.

[9]There are other possible analyses that one might try. For example, one could assume that the Object-NP itself is the wh-form what (deriving ultimately from wh-something); that the COMP node contains an empty [+WH] NP; that the head NP is also empty; and that there is a rule moving the wh-form from the COMP-node into the empty head-NP. This would perhaps be more consistent with the general approach to WH-Movement in Relatives and Questions sketched earlier. See Bresnan (forthcoming) for a detailed analysis of the headless Relative.

[10]Notice that by this criterion certain of the Gerundive complements that Rosenbaum derives from S's with a "POSS-ing" complementizer ought to be VP's also. Thus we have (294) f., but not *What they forced Bill into was buying a used car. Similarly, for absolve NP of, coax NP into, dissuade NP from, lecture NP about, suspect NP of, and so on. Note also that deletion of the complement Subject is apparently obligatory for all of these Verbs. Thus we do not have *They forced Bill into Mary's buying a used car, *John was absolved of Bill's stealing the book, etc. These facts suggest that the PS rules must be expanded as to allow VP's as well as NP's to occur as the Objects of Prepositions. This would have the further advantage of making the distribution of -ing complements and Infinitive complements completely predictable: a VP which is dominated by NP or PP automatically requires the affix -ing, while one which is not gets the Infinitive marker to. (The -ing affix which occurs in Predicate-VP's is, I assume, a different affix, and hence not an exception to this statement.) That it is not unreasonable to allow structures of the form P-VP in the base is also suggested by the fact that there are arguments (cf. Emonds (1970)) in favor of treating certain subordinate clauses, e.g. Adverbial clauses beginning with because, so, for, etc., as consisting of a Preposition, plus a sentential complement. Thus if the range of complement structures allowed in PP's is to be extended to include S's, there seems to be no good reason not to allow VP's to occur there as well. See Emonds (1970) for persuasive arguments that Gerundive complements, other than those just mentioned, are dominated by NP in the base.

[11]See particularly Akmajian (1970), and also Emonds (1970).

[12]Again, we may speculate that the semantic feature which is relevant here is the feature of controllability. It is clear that controllability is at least in part determined by the deep grammatical relation that the NP which is to be moved into the matrix clause has to the Verb on the embedded VP. However, it is also clear that other factors, among them the semantic nature of the embedded Verb itself, must be involved as well. Thus (306) b. is ungrammatical, although the sentence What Mary did was take the book is perfectly all right, even though the NP Mary is in both cases the deep Object of the to-phrase. In some cases it seems likely that acceptability is determined by factors which are not, strictly speaking, part of grammar at all. For example, the acceptability of the sentence What Harry did was be examined by the doctor, in contrast with the unacceptability of ?What Harry did was be hit by Bill, is probably a reflection of the fact that one normally has some control over whether or not to be examined by a doctor (i.e. one has to call the doctor up, make an appointment, etc.) whereas whether or not Harry hits Bill is usually up to Bill. If we imagine a world in which people have no control over whether or not to get examined by a doctor and in which it is possible for one person to control, in some institutionalized way, actions such as hitting, on the part of another person, then no doubt these judgements would be reversed.

[13]Ross's analysis in some ways similar to mine. However, it also differs considerably in a number of respects. Thus he argues, following Rosenbaum's analysis of the complement system, that do requires a NP-

complement whose Subject is obligatorily deleted. My reasons for preferring a VP analysis have been dealt with at length. Ross also argues that the Pseudo-cleft, rather than being formed by an extraction rule, must have a sentence in the focus position which is identical to the one in the what-clause. Thus he derives (296) a. from a structure of the form:

(a) what John did $[_{NP}$ it $[_S$ John hit Bill$]]$ be $[_S$ John hit Bill$]$

His motivation for this is the existence of sentences such as: what John did was: he hit Bill. Similarly, a sentence such as (295), Ross derives from a structure resembling the sentence: What John forced Bill to do was: he forced him to be examined by the doctor. I believe, however, that these sentences are examples of a different construction. Notice that similar kinds of sentences show up in constructions other than the Pseudo-cleft: I know what John wants to buy: he wants to buy a record-player; I did something that I have always wanted to do: I went to Paris; something I want to buy is: I want to buy a new car. Although I have no explanation for sentences of this kind, I doubt that they derive from the same source as the regular Pseudo-cleft construction. Finally, Ross's analysis differs in that he wishes to argue that all "Verbs of action" are embedded beneath the Verb do in deep structure. This Verb must then be deleted obligatorily if the VP beneath it is not deleted for some reason, as it is in the Pseudo-cleft and do it constructions. The syntactic motivation for this last claim seems slight. As was pointed out earlier, there is no consistent syntactic form which characterizes the predicates which can appear in a Pseudo-cleft with do. Furthermore, it

seems clear that do actually adds something to the interpretation of a sentence, so that the sentence John was examined by the doctor, for example, is not the same in meaning as What John did was be examined by the doctor. But if Ross's analysis were correct, then we would expect these to be identical in meaning, since both would be derived from a structure with the Verb do "on top".

Notice that under the analysis proposed here it will be necessary to prevent do from occurring with a VP complement in environments other than the Pseudo-cleft construction, conjoined structures, etc., since there are no sentences of the form *John did to go to the store, *John did going to the store, and so on. (The "empty" do that appears with Negatives and in emphatic sentences, e.g. John didn't go to the store, John did go to the store, etc., cannot be the same do that appears in Pseudo-clefts, for, as Ross notes, both can appear in a Pseudo-cleft or do-it construction. Cf. What John didn't do was go to the store, John didn't go to the store and Mary didn't do it either.) Perhaps the simplest way of accomplishing this is add a surface filter to the grammar, excluding the sequence do-it-VP. Alternatively, one might simply specify in the lexical entry for do the contexts in which it is permitted to take a VP-complement.

[14]Sentences such as the following are somewhat more difficult to handle:

(a) John hit Bill on the head with a rock, and then Mary did it to Harry with an ax.

However, if we define "identity" in such a way that Pronouns are "overlooked", as has been suggested by a number of people, then these sentences

can be derived from structures of the form:

(b) John - hit Bill on the head - with a rock, and then Mary - do - it_i - to $Harry_j$ with an ax_k [$_{VP_i}$ hit - him_j - with it_k].

See Akmajian (1970) for a discussion of examples of this type.

[15] I assume, following Emonds (1970), that the be of the Progressive and Passive, as well as the have which occurs in Perfective aspect, are moved into the Modal position, when there is some element intervening between the Tns marker and the main Verb, thus accounting for the paradigms:

(a) John is so going to the store.
The store was so robbed.
John has so gone to the store.
The store is so being robbed.
etc.

(b) John is not going to the store.
The store was not robbed.
John has not gone to the store.
etc.

If there is a Modal present, then of course we get sentences like John will so go to the store, John will not go to the store, as we would expect.

[16] The situation is complicated, however, by the fact that the do-construction can always occur within the for-to complement, so that the example what I want you to do is to be on time is ambiguous in the same way as I want you to be on time. Notice that the same is true of I want to be on time, which can be derived from either a VP complement or a

for-to complement. In the former sense it can only have a Pseudo-cleft with do, e.g. what I want to do is to be on time, whereas in the latter sense it can have either a Pseudo-cleft of the form what I want is to be on time, or else of the form what I want to do is to be on time.

[17]Note that the Negative element must be stressed to get this interpretation. E.g.:

(A) Do you believe that Bill will do it?

(B) a. No, I don't believe that Bill will do it.

b. *No, I don't believe that Bill will do it until later.

[18]Notice incidentally that there is a different sense of the Verb happen in which it can appear in Pseudo-clefts, so that we find, for example, what happened was that the roof fell in. Clearly, the difference between this happen and the one found in example (358) c. is that the former requires a Pronoun it in Subject position which is coreferential with the that-clause. Equally clearly, this sense of happen is the one that occurs in a sentence such as something happened to Bill, or in questions like what happened to Bill? Furthermore, we find sentences such as it has never happened before that the roof fell in, which have an entirely different sense from that found in a sentence such as it happens that the roof has fallen in. The happen which requires a Pronominal Subject-NP has the 'literal' meaning of "something happened", whereas the happen which requires an empty Subject-NP has what we might term the 'accidental' interpretation of "it happens to be the cast that...".

[19]I have not discussed explicitly the rule of Extraposition in this work, since it does not enter in any crucial way into the topics with which

I have been concerned. Notice that within the structure-preserving framework Extraposition could be formulated either as a rule which moves an S out of a NP and inserts it into an empty S position at the end of the VP, or as a rule which performs just the reverse operation. Emonds (1970) has argued that Extraposition whould be treated as a Root transformation which replaces the Subject-NP by an S at the end of the VP. His arguments are based primarily on the supposed ungrammaticality of sentences such as That for John to smoke pot would bother his teachers is a lie. However, there are grounds for believing that the unacceptability of these sentences can be more satisfactorily explained by a model of performance. (Cf. Chomsky (1965)). Furthermore, Emonds himself provides an extremely strong argument in favor of treating Extraposition as a structure-preserving rule. He points out that the structure-preserving hypothesis, in conjunction with the assumption that there is only a single S position at the end of the VP, immediately explains why Extraposition is impossible in a sentence such as that John had blood on his hands proves that he is the murderer, e.g. *It proves that he is the murderer that John had blood on his hands. But the analysis that Emonds prefers can only handle such sentences by assuming the existence of a "doubly filled node" in the S position, a device whose use should surely be constrained as narrowly as possible. Finally, the assumption that Extraposition is a root transformation implies that there can be surface structures of the form S-VP, immediately dominated by S. However, I know of no major category other than NP that can appear in surface structure to the left of VP and immediately dominated by S. In particular, rules of

topicalization invariably place a constituent to the left of the Subject-NP, rather than replacing it.

Notice that the facts concerning prove just mentioned also provide strong support for the existence of NP-complements, in Rosenbaum's sense. Noting that the Subject-complement of the Verb prove is Factive, in the sense of Kiparsky and Kiparsky (1971), as are the Subject-complements of Verbs such as bother, amuse, frighten, etc., it is tempting to hypothesize that only Factive complements (including Gerunds) are dominated by NP, while non-Factive complements which require an it are generated at the end of the VP in the base. Thus resent would differ from believe, in that the former would require a 'true' NP-complement, whereas the latter would have an it in Object position, marked anaphoric with an S at the end of the VP. Similarly, the complement S of an Adjective such as odd would derive from the Subject-NP, while that of a non-Factive Adjective such as likely would derive from the end of the VP and be marked as anaphoric with the it in Subject position. If this proposal can be maintained, notice that it would provide further evidence for the existence of "two-way" rules, since Extraposition would have to be able to apply either "forward" or "backward", in order to account for the fact that a complement S can appear in either the Subject position or extraposed at the end of the clause for both Factive and non-Factive complements.

[20] The only other way of avoiding the problems connected with Rosenbaum's approach that I know of is one that is suggested by some remarks in Chomsky's recent paper "Conditions On Transformations". Chomsky observes that as transformations are currently formulated, there is

nothing to prevent the Passive rule from applying directly to a string of the form John - believes - [$_S$Bill - to have left], yielding the surface structure Bill is believed by John to have left. Of course, the Passive should also be able to apply to a that-clause, as well, which would produce ungrammatical strings such as *Bill is believed (that) left by John. Chomsky then attempts to show that among a number of very general constraints on the functioning of grammatical transformations is one, which he calls the "tensed S constraint", that prevents items from being extracted from, or inserted into, a tensed sentence (i.e. a that-clause). This constraint thus allows the Passive rule to apply "down into" a for-to complement, while preventing it from extracting the Subject of a that-complement.

Extending this approach to the Verbs just discussed, one might argue that sentences such as John seems to have left derive from a deep structure of roughly the form: Δ - seem - [$_S$John - to have left]. This proposal would be particularly appealing, if it could be shown that the rule which raises the Subject of the complement into the empty Subject-NP is simply the rule of Object-Preposing, applying "down into" the for-to complement, thus obviating the need for a special raising rule. Such a proposal would have other advantages as well. Thus it would immediately simplify the subcategorization features for Verbs of the seem-class, and also those for Verbs of the believe-class.

On the other hand, there are various problems with this approach. Notice in particular, that sentential complements of this sort are not simply for-to complements of the usual kind. Thus they apparently

permit Reflexivization of the Subject-NP, as in John believes himself to have been robbed, but exclude deletion of the complement Subject, cf. *John believes to have been robbed, whereas just the opposite is the case for other for-to complements, e.g. John hopes to be examined by the doctor, but not *John hopes for himself to be examined by the doctor, and likewise John condescended to be examined, but not *John condescended for himself to be examined. Similarly, it is not generally the case that the Subjects of for-to complements can be extracted by the Passive rule. For example, we cannot derive sentences such as *John is hated by Mary to be examined by the doctor, *you are preferred by everyone to leave, etc. from sources of the form Mary hates (for) John to be examined by the doctor, everyone prefers (for) you to leave, and so on. In fact, it seems clear that if the complements of believe and appear are to be analyzed as S's, then these S's will, in effect, constitute a separate complement type, one which is similar in some respects to 'true' S-complements (i.e. that-clauses and for-to complements), but is similar in other respects to VP complements (in our sense, rather than Rosenbaum's). But this fact immediately reduces the generality of the proposed solution, and makes one wonder whether such an approach is not simply an attempt to preserve the notion "deep structure" in the face of evidence to the contrary. It should perhaps be made clear that in the framework I am developing here the difference between force and believe with regard to the truth-values of pairs of sentences containing Active and Passive complements, is treated essentially as a lexical and semantic fact about these Verbs. The approach suggested by Chomsky's remarks differs only in that it would seem to require

a separate complement type corresponding to the semantic difference between these two Verb classes. The issue, then, is whether this new complement type is justifiable on purely syntactic grounds.

Many other questions of this nature are raised by Chomsky's provocative and insightful paper, which, unfortunately, it is impossible to discuss in detail here.

[21]Perlmutter argues that begin, in this latter sense, takes an Object-complement, whereas Rosenbaum treats it as an instance of Intransitive VP-complementation. For our purposes, it does not matter very much which is the correct solution within Rosenbaum's framework.

[22]Notice that a number of the Verbs of this class that take -ing complements do in fact appear in sentences of this kind, as was pointed out in Chapter III, e.g. the water started boiling, John started the water boiling. However, these are causatives, derived from structures of the form: John - [+cause] - the water - start - boiling.

CHAPTER V

SYNTAX AND SEMANTICS

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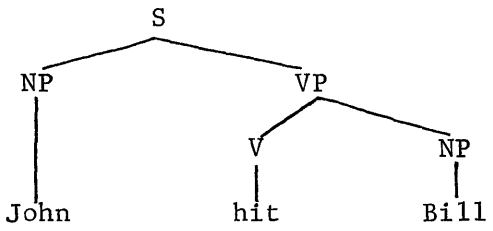
0.0. Introduction

The theory of grammatical relations developed in the preceding chapters has been characterized by two different, inconsistent, tendencies. On the one hand, I have argued that grammatical relations such as Subject, Object, Agent, and so forth, must be far more "abstract" than has usually been assumed. At the same time, however, we have found considerable evidence in favor of the view that the actual syntactic structure of sentences is, in a variety of different cases, closer to surface form than is commonly assumed.

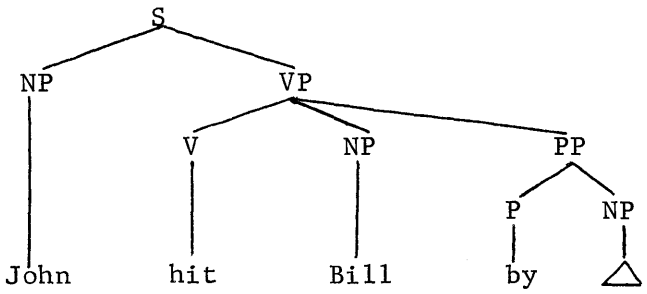
Let us consider, for example, the relationship between Active and Passive sentences in English. The standard analysis of the Passive, as exemplified in, say, Aspects, assumes that surface structure Active and Passive forms both derive from a common underlying structure which is more or less like that of an Active sentence. Thus a sentence such as John hit Bill is generally assumed to derive from a structure of roughly the following form:

(1)



while the underlying structure of a Passive sentence derives from a virtually identical structure such as the following:

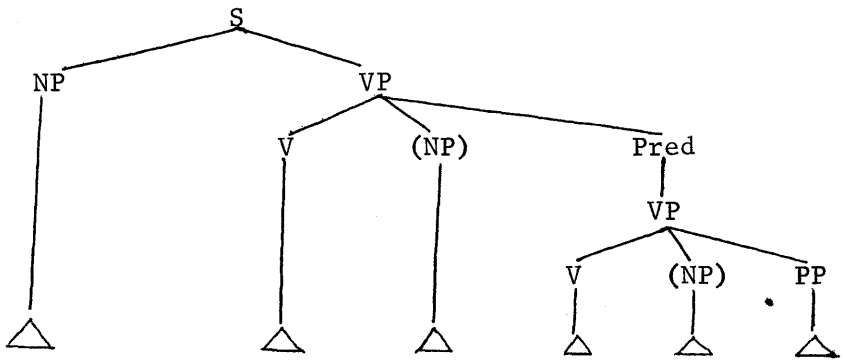
(2)



The grammar of English must then contain a syntactic transformation (or, in more recent formulations, two independent transformations) which perform the following operations on structures such as (2): (1) The Subject-NP John is moved into the empty NP position in the by-phrase; (2) the Object-NP Bill is moved into the Subject position; and (3) The Passive Auxiliary (be+EN) is inserted in front of the main Verb hit. The underlying structures (1) and (2) thus differ only in that one contains an empty PP with the Preposition by, which "triggers" the Passive rule (or rules), while the other does not.

The analysis of the Passive proposed in Chapter III differs from the "standard" analysis in two ways. First of all, the "underlying" grammatical relations present in both Active and Passive sentences are more abstract than they are in the standard analysis. Thus I have argued that the underlying grammatical relations, must be "Agent-of" and "Direct Object-of", as in the standard analysis. At the same time, I have argued that the syntactic structure of the Active and Passive forms is closer to their actual surface form. Thus the structure of an Active sentence is more or less like (1), i.e. NP - V - NP, while the structure of Passive sentences must have roughly the following form:

(3)



The motivation for analyzing the Passive Auxiliary as consisting of a main Verb be, plus a Predicate-VP complement, rather than as a discontinuous Passive morpheme (be+EN), as in Chomsky (1957), was discussed extensively in Chapter III.

Even more dramatic examples of the difference between the theory proposed here and "standard" theories are of course easy to produce. Thus it was argued, for example, in Chapter II that the grammatical relations underlying sentences such as John received the book and the book was received by John are quite different from those underlying the examples discussed above. But at the same time, the syntactic structures involved are quite close, if not identical to, those of actually occurring surface forms.

These two facts - that underlying "grammatical relations" must be far more abstract than had previously been supposed, and that syntactic structure is close to, if not identical with, surface syntactic form - strongly suggest that there is no level of "deep structure", as defined in Aspects. That is, there is no independent level of linguistic organization, discoverable on the basis of purely syntactic considerations, which has the following properties: (1) It is the level at which all lexical

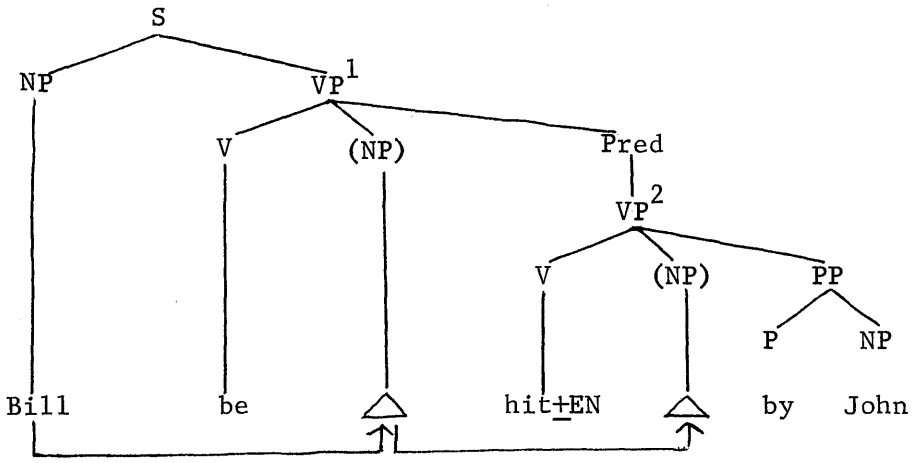
insertion rules take place; (2) It contains all the information relevant to semantic interpretation; and (3) It is characterized by a set of context-free PS rules. Furthermore, the considerations brought forward here tend to refute even the weaker form of the deep structure hypothesis proposed in Chomsky (1971), which maintains that even though the level of deep structure does not contain all the information relevant to semantic interpretation (certain aspects of the semantic interpretation of sentences being determined by surface structure, and even by intermediate stages in the derivation of surface forms), nevertheless it is the grammatical relations definable at the level of deep structure that are relevant to semantic interpretation. This weaker form of the deep structure hypothesis, which Jackendoff (1969) has called the "extended standard theory" (henceforth EST), could be maintained if it could be shown that no syntactic transformations can precede the application of any lexical insertion rules. However, I have argued at some length in Chapters III and IV that the lexical insertion rules must be allowed to apply at the beginning of each syntactic cycle, in which case some syntactic transformations must be applied before the lexical insertion rules. It follows immediately that there is no level of deep structure, even in the sense in which this term is used in the EST.

There is another property of the theory proposed here which is relevant to this discussion. I have argued (cf. Chapter II) that structure-preserving rules are, in the obvious sense, "two-way rules", i.e. it is natural to formulate structure-preserving rules in such a way that they may apply either "forward" or "backward". Thus, to take only one example, the rule of Object-Preposing must be allowed to either move an NP in the

Object position into the Subject position, or to move a NP in the Subject position into the Object position. Furthermore, I have argued that the structure-preserving rules may be allowed to apply freely. That is there are no extrinsic ordering relations between structure-preserving rules (cf. Chapter II, Section 4.4.).

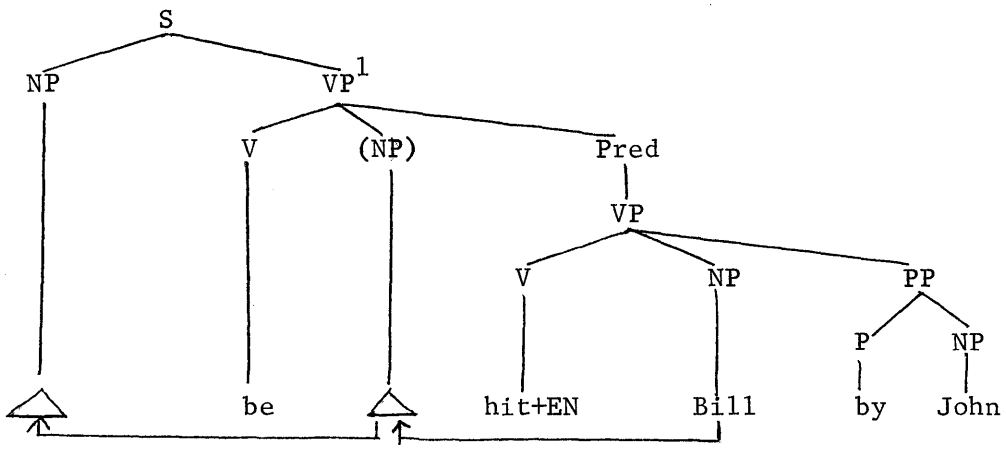
Suppose now that we simply formulate all the structure-preserving rules as two-way rules. This additional assumption obviously cannot complicate the grammar in any way, since the "direction" in which a rule applies is in any case completely determined by the nature of the underlying structure to which it applies. However, the immediate consequence of this decision is somewhat startling, for observe that the grammar now has the property that any derivation can be applied either "forward" or "backward". In other words, instead of starting out with a "base form", applying the structure-preserving rules, and thus deriving a "surface form", we could equally well start out with the surface form, apply the structure-preserving rules in reverse, and come out with the base form. Suppose, for example, that we start out with the surface structure form of the Passive sentence (2):

(4)



We see immediately that merely by applying the inverse of Object-Preposing twice, once on the S-cycle, and a second time on the VP^1-cycle, we can "derive" the base form (5):

(5)



Likewise, if we start out with the "base form" (5), we can derive the "surface form" (4), simply by applying Object-Preposing twice, once on the VP^1-cycle, and a second time on the S-cycle.

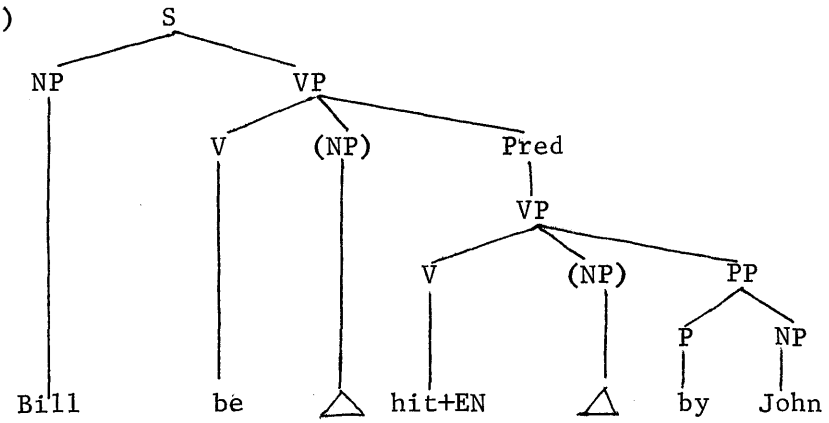
The fact that derivations which involve structure-preserving rules can go in either direction strongly suggests that the distinction between "deep structure" or "base" forms, on the one hand, and "surface" forms, on the other, is unnecessary, since a single set of PS rules is sufficient to characterize the whole class of syntactic structures, whether they are "surface" forms or "deep" forms. This in turn suggests that it would be more natural to regard the structure-preserving rules as interpretive semantic rules that apply to surface structures, and to consider the "subcategorization features" associated with Verbs as being, in effect, a part of the representation of their meaning.

To be more specific, suppose that the grammar of any language L contains a single set of PS rules which characterizes the class of surface

structures of L. Furthermore, we permit lexical items to be inserted randomly into P-markers, subject, perhaps, to the condition that they be inserted beneath the appropriate lexical category. In order to determine whether a given surface structure, constructed in this fashion, has a meaning (i.e. is well-formed), we apply the structure-preserving rules in a cyclic fashion, starting from the topmost cyclic category S, and working downward. If there is some combination of structure-preserving rules, applied in this manner, that will yield a structure which corresponds to that specified by the subcategorization feature for each lexical item in the sentence, then the sentence has an interpretation, and is therefore well-formed. If not, the sentence has no interpretation and is hence ill-formed.

To illustrate, let us consider again a surface structure of the form (4), repeated below for convenience:

(6)



In order to determine whether (6) has an interpretation, we must see whether there is some combination of structure-preserving rules which, when applied to (6), will yield a structure corresponding to that which is required by the subcategorization features for be and hit. The sub-

categorization feature for be has the following form:

(7) be: NP ___ NP Pred

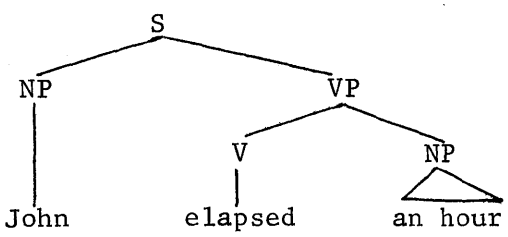
Furthermore, we can match up (7) with (6), if we apply the inverse of Object-Preposing on the S-cycle. Hence, this part of (6) is well-formed and has a semantic interpretation of roughly the form: "The (semantic interpretation of the) element Pred is predicated of the NP Bill." We go next to the VP^1-cycle. The Verb hit(+EN) has a subcategorization feature of roughly the following form:

(8) hit: NP ___ NP by NP

Is there some combination of structure-preserving rules, which, if applied to (6), will yield the form required by the subcategorization feature for hit? In this case, there is, for if we apply the inverse of Object-preposing again, we will come out with a string of the form: NP - V - NP - by NP. Furthermore, the semantic interpretation of the Predicate-VP is roughly of the form: "The NP John is the Agent-of an action of hitting, the recipient of which is the NP Bill." The surface structure (6) is therefore well-formed, and the whole sentence has a semantic interpretation of roughly the form: "The action of hitting, whose Object-of is the NP Bill, and the Agent-of which is John, is predicated of the individual r epresented by the NP Bill."

Consider, in contrast, a surface structure of the following form:

(9)



The meaning of the Verb elapse requires that it have only a single argument, which has the Direct Object relation to the Verb, as is specified in the following subcategorization feature:

(10) elapse: NP ___ NP

However, there is no combination of structure-preserving rules which can be applied to (9) to yield (10), and hence this sentence is uninterpretable and ill-formed.

If this conception of the form of grammar is correct, then it seems that there is no syntactic level of deep structure, and that surface structure is sufficient to determine the semantic interpretation of sentences. Thus we may state the following general hypothesis, concerning the form of grammar:

(11) The Surface Structure Hypothesis

The grammatical relations present in surface structure are sufficient to determine the meaning of sentences.

Alternatively, we may say that the class of well-formed surface structures in any language is determined, in part, by the meaning of the lexical items which the language contains. Either formulation - that meaning determines the well-formedness of surface structures, or that surface structure is sufficient to determine the meaning of sentences - may be used, since they are equivalent in the theory proposed here. Whichever way we choose to put the facts, the statement in (11) holds, and it is to a defence of this claim that the remainder of this chapter is devoted.

1.0. Ambiguity

One of the earliest arguments in support of transformational grammar

was the fact that certain ambiguities could be explained by deriving the same surface form from two (or more) underlying sources. Of course there are many examples of ambiguous sentences which can be accounted for adequately in terms of surface structure, as was observed by linguists working within the framework of structural linguistics. Thus, for example, the ambiguity of a sentence such as flying planes can be dangerous is attributable to the fact that there are two possible ways of analyzing it in surface structure, one in which the phrase flying planes is a compound Noun, the other in which it is a Gerundive nominal.

However, there are other ambiguous phrases for which such an explanation is not available. Consider for instance, Chomsky's famous example the shooting of the hunters, which may have an interpretation analogous to that of a sentence such as the hunters shoot someone, or, alternatively, to a sentence such as someone shoots the hunters. Here there is no reason for supposing that the surface phrase the shooting of the hunters is analyzed in two different ways, and hence the ambiguity must be explained at some deeper level. To take a slightly more complicated example, consider the multiple ambiguity of the sentence I had a book stolen. Here again there is no reason for supposing that any of the three possible interpretations of this sentence can be accounted for directly in surface structure. Rather, there is simply a single structure of the form: NP - V - NP - VP, from which it follows that there must be some deeper level of linguistic organization at which the different interpretations of this sentence are represented unambiguously.

Now the theory proposed in Chomsky (1957) claims that it is possible

to construct grammars in such a way that ambiguous sentences of this sort are always assigned distinct representations at some level, and furthermore that the grammar which succeeds in assigning the correct representations to such ambiguous sentences will always be the optimal grammar, as defined by some evaluation procedure which is independent of the grammars of particular languages, and hence is a part of universal grammar. However, Chomsky goes a step further, and argues in addition that the evaluation measure for syntax can be specified without reference to semantic notions of any kind. Thus the claim of Syntactic Structures, which is still maintained in EST, is that the ambiguities of phrases such as the shooting of the hunters can be accounted for in purely syntactic terms.

This is an extremely strong claim; if it is false, it should not be difficult to find evidence to refute it. In fact, there is, I believe, evidence of just this sort. Notice that phrases such as the shooting of the hunters can be disambiguated merely by replacing the NP the hunters with another NP of the appropriate kind. Thus, for example, the phrase the shooting of the gun has only a single interpretation, parallel to that of the sentence someone shoots the gun. Why is this? Clearly, it is because the Noun gun is not one which can serve as the Agent of an action such as shooting. Furthermore, the non-ambiguity of the phrase, in such cases, is related to the fact that sentences such as *the gun shoots someone are semantically anomolous.

From a consideration of facts of this sort, it follows immediately that we must either give up the claim that the evaluation measure for syntax is independent of semantics, or else we must claim that the anomoly

of sentences such as *the gun shoots someone is to be explained syntactically. The latter alternative is in fact the position adopted in Chomsky (1965), in which it argued that the lexical insertion rules must be sensitive to the "intrinsic" features on the heads of phrases which are subcategorized by the Verb. However, once we admit restrictions of this kind into the syntactic component, it is difficult to see where the line should be drawn, as has been argued recently by a number of people (cf., for example, McCawley (1968b), Jackendoff (1969)), suggesting once again that the distinction between syntax and semantics is in these cases, an artificial one.

It could still be argued, of course, that even if selectional restrictions are semantic, it is still necessary to give a purely syntactic account of the ambiguity of phrases such as the shooting of the hunters. Under this view, the syntax would merely provide two structures of a kind that would serve as appropriate input to the semantic component, the actual ambiguity, or lack of it, being decided by semantic considerations. However, this modified hypothesis is unconvincing, simply because the selectional restrictions imposed on Nouns by Verbs are not, in general, separable from the semantic function of the Nouns. The burden of proof is thus on one who wishes to separate the deep grammatical function of a Noun from the selectional restrictions which are imposed on it, since there is always an alternative, namely, to maintain that both the function and the accompanying restrictions are semantic.

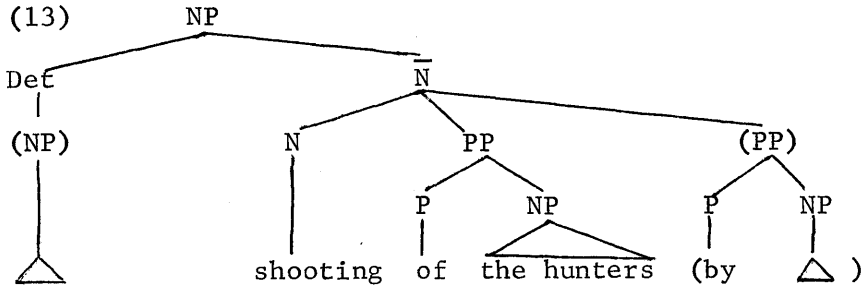
Let us consider, therefore, the alternative to the syntactic treatment of ambiguity, and see how the ambiguity of the phrase the shooting of the

hunters can be accounted for under the assumption that it is the meaning of the Noun shooting which is responsible for its ambiguity. The meaning of the Noun shooting is such that it may take either an Agent-phrase, or an Object-phrase, or both. This fact can be represented by assigning it a subcategorization feature of the following form:

(12) shooting: (NP) ___ (of NP) (by NP)

Consider now a surface structure of the following form:

(13)



In order to determine the meaning of this phrase, we must see whether some combination of structure-preserving rules can be applied to it to yield one of the features specified by (12). We see immediately that if no rules apply to (13), the structure corresponds to one of features abbreviated by (12), namely the following:

(14) shooting: ___ of NP

Hence, the phrase is interpretable, and the NP the hunters is, in this case, the Direct Object of shooting. Furthermore, notice that by applying the rules of Object-Preposing and Subject-Postposing, we will derive a structure which matches up with another of the features abbreviated by (12), namely, the following:

(15) shooting: ___ by NP

and in this case the NP the hunters will be interpreted as the Agent of

shooting. The structure (13) thus receives two different semantic interpretations, and is therefore ambiguous.

Consider, in contrast, a phrase such as the shooting of the hunters by the game warden. Obviously, in this case there is only one subcategorization feature among those abbreviated by (12) which can be matched up with a structure of this form, viz.:

(16) shooting: ___ of NP by NP

from which it follows that a phrase of this type is unambiguous.

Let us consider next how we can account for the non-ambiguity of a phrase such as the shooting of the gun. This is easily accomplished, if we simply allow the subcategorization features to specify not only grammatical relations, but also any specific semantic restrictions which the Verb imposes on the NP which bears a given grammatical relation to the Verb. The Noun shooting has the property that its Agent-NP must be Animate (and perhaps also Human). This information can be incorporated into the subcategorization feature for shooting in the following manner:

(17) shooting: ___ (of NP) (by NP) $\begin{bmatrix} \text{Animate} \\ \text{Human} \\ \text{Physical} \\ \quad \text{Object} \\ \quad \text{etc.} \end{bmatrix}$

We then impose the general condition that any NP which bears some semantic relation to the Verb must contain the semantic features which the subcategorization feature specifies for the semantic relation in question. Applying this convention in the case of a phrase such as the the shooting of the gun, we see immediately that although the application of the structure-preserving rules will allow us to match up this surface form with the

subcategorization feature (15), the semantic features associated with the NP the gun do not agree with those required for an Agent-phrase, and hence the NP the gun cannot be interpreted as an Agent. On the other hand, there is no problem in interpreting this NP as an Object-NP. Hence the phrase the shooting of the gun is unambiguous, having only an interpretation analogous to that of a sentence such as someone shoots the gun.

Notice that this device can be extended to account for the interpretation of sentences which contain "unspecified NP's" in an entirely natural way. It is well known that certain Verbs, such as eat, read, write, and many others, may appear in surface structure without Object-NP's. However, such sentences must be interpreted as containing an "unspecified" Object. Thus the sentence John ate must be interpreted as meaning "John ate something", and likewise the sentence John read for an hour presupposes that John was reading some unspecified piece of reading matter. We can now account for facts of this sort simply by allowing the underline itself to be optional. In addition, we assume that empty (i.e. non-underlined) nodes may appear in subcategorization features with the semantic features that the Verb normally imposes on the NP in question. Thus the subcategorization feature for eat, say, can be written simply as follows:

(18) NP ___ of $\left(\underline{\text{NP}}\right)$ by NP

$$\left[\begin{array}{l}\text{Phys.Obj.}\\ \text{Food}\\ \quad\text{etc.}\end{array}\right]$$

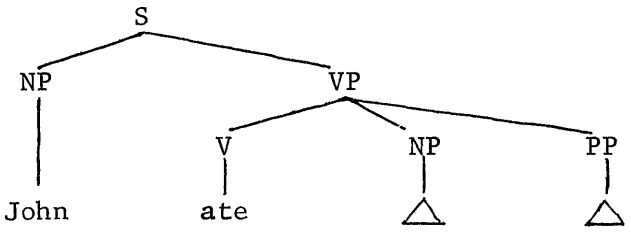
If we now adopt the general condition that an empty node which occurs in a position in surface structure which matches up with an optionally under-

lined NP in a subcategorization feature, e.g. the Object-NP in (18), is automatically interpreted as meaning "unspecified NP having the semantic features F_1, F_2,...", where F_1, F_2, ... are the semantic features normally imposed on the NP in question, then we can immediately account for the interpretation of sentences such as John ate. In addition, we must amend slightly the general constraint on empty nodes in the following manner:

(19) Any surface structure containing an empty node (i.e. a node dominating terminal symbol Δ), which is neither filled in by some NP in the course of semantic interpretation, nor is assigned the semantic interpretation "unspecified NP" is rejected as ill-formed.

A sentence such as John ate, then, will derive from a structure of the following form:

(20)



We see immediately that by applying Subject-Postposing, we can match up (20) with the subcategorization feature (18). In addition, since the Verb eat has an optionally underlined Object-NP, the empty Object-NP in (20) can be assigned the interpretation "unspecified NP", and hence the sentence is well-formed.

Returning briefly to the phrase the shooting of the hunters, notice that we can now account for certain facts regarding its interpretation which were overlooked in our earlier discussion. Note, first of all,

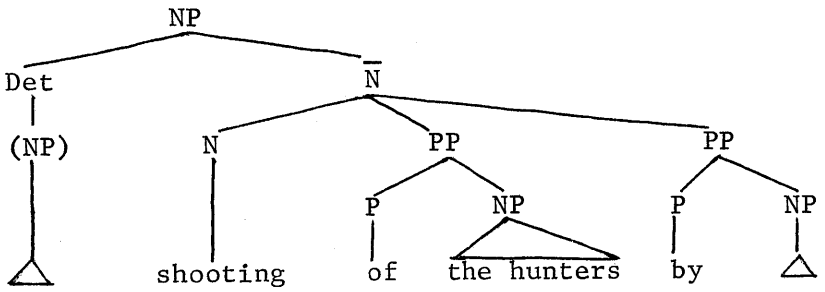
that if the NP the hunters is interpreted as the Object-NP, then there must be an "understood" Agent. Secondly, observe that neither the phrase the shooting by the hunters, nor the phrase the shooting of the hunters, in its Agentive interpretation, presupposes an unspecified Object-NP. Thirdly, notice that the surface form the shooting by the hunters is unambiguous, and has only the Agentive interpretation. Obviously, these three facts are related to one another. Furthermore, none of them are accounted for by the subcategorization feature (17).

However, it turns out that we can easily incorporate this information into the subcategorization feature for shooting, by making use of the device of subcategorizing the underline. Rather than making the whole Agent-phrase optional, we must instead simply make the underline optional for the Agent-NP. We will then have a feature of the following form:

(21) shooting: (NP) ___ (of NP) by $\begin{bmatrix} (\underline{\text{NP}}) \\ \text{Animate} \\ \text{Human} \\ \cdot \\ , \\ \cdot \end{bmatrix}$

This feature says that the meaning of the Noun shooting is such that it requires an Agent, either overt or understood, and that it may optionally have an Object. Now let us see how (21) accounts for the facts mentioned above. Suppose, first of all, that we have a surface structure of the following form:

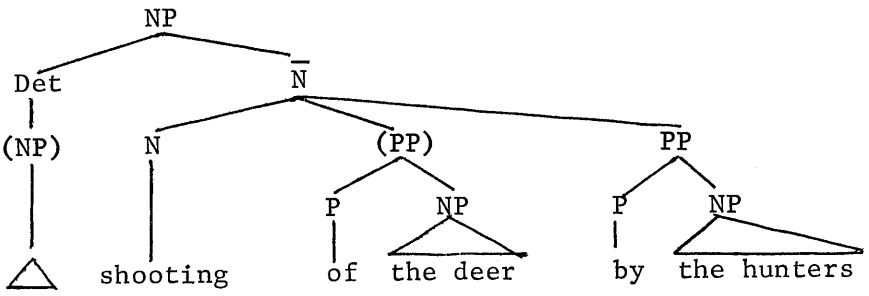
(22)



If we apply no structure-preserving rules to (22), then we will automatically get an interpretation of this phrase in which the NP the hunters is the Object, and in which there is an unspecified Agent. If, on the other hand, we apply Object-Preposing and Subject-Postposing, then the NP the hunters will be interpreted as the Agent, and there will be no Object. This accounts for the fact that the non-Agentive interpretation of the shooting of the hunters always has an unspecified Agent, as well as accounting for the fact that the Agentive interpretation of the same phrase does not presuppose an unspecified Object.

Consider next the interpretation of a surface form such as the following:

(23)



We see that if the optional Object-NP is present, the phrase matches up with one of the subcategorization features abbreviated by (21), and is unambiguously interpreted as containing an Object and an Agent. If, on the other hand, the Object-NP is not present, then the NP the hunters can

only be interpreted as an Agent, and furthermore, there is no unspecified Object presupposed.

Consider, finally, the interpretation that will be assigned by (21) to a surface phrase of the form the shooting. In this case, we must have an empty Agent-phrase in surface structure, which will automatically be given the interpretation "unspecified Agent." This seems to be correct, for in fact a NP of this form is interpreted as referring to some event in which unspecified persons were engaged in shooting.[1]

We see, then, that not only can the interpretation of the phrase the shooting of the hunters be accounted for adequately in a theory which takes the ambiguity of such phrases to be a semantic rather than a syntactic problem, but furthermore by using the device of parenthesizing the underline (a device which is needed in the theory of grammar anyway), we can explain a number of related facts in a rather natural way, by means of the single subcategorization feature (21). Furthermore, our theory does not require that selectional restrictions be divided arbitrarily into those that are "syntactic" and those that are "semantic". Instead, we simply have a feature of the form (21) which represents the meaning of the Verb shoot. Surface structures are interpreted directly by means of the semantic representation associated with the Verb, in combination with the structure-preserving rules. I submit, therefore, that the facts concerning ambiguity thus tend to provide additional support for the Surface Structure Hypothesis.

2.0. The Surface Subject Position

If the conception of grammar proposed in the preceding sections is

correct, then there is only a single set of PS rules which characterizes the infinite class of surface structures of the language. It follows from this that we no longer need to worry about motivating a deep structure Subject position, since the grammar in fact contains no level of deep structure.

This immediately suggests that it is unnecessary for the subcategorization features to refer to the surface Subject position at all, or, to put it slightly differently, that the Subject relation is not a "deep" (i.e. semantic) relation. In fact, this is precisely the position taken by Chomsky (1965). Furthermore, Fillmore (1968) has argued that the Subject position is unnecessary at the level of semantic representation.

It will be recalled, however, that in Chapter II we presented certain arguments in favor of the view that there is a deep Subject position. It is therefore necessary to examine these arguments closely, in order to see how strong they really are. In fact, I believe that it is possible in every case, contrary to what I claimed earlier, to show that the supposed deep structure Subject is really derived from some other position in the sentence.

Let us consider the first argument, which has to do with the distinction between "personal" and "non-personal" Agents. As is well known, a sentence such as the following is ambiguous:

(24) John hit the wall.

depending on whether or not the Subject-NP John is interpreted as a personal Agent. If it is not, then the interpretation of a sentence such as (24) is precisely parallel to that of a sentence such as the following:

(25) The rock hit the wall.

That is, the NP John refers, in effect, to John's physical body, so that the sentence means simply that John's body came in contact with the wall in a certain way. If, on the other hand, John is interpreted as a personal Agent in (24), then the sense is quite different. John is in that case considered as an active, willing agent, he can be held responsible for his actions, and so forth.

Now it was pointed out in Chapter II that the ambiguity of sentences such as (24) could be explained under the assumption that personal Agents derive from the by-phrase, whereas non-personal Agents derive from the Subject position in deep structure. Verbs must then be subcategorized for whether they can take deep Subjects or deep structure Agents.

Notice, however, that no real arguments in favor of such an analysis were given. Rather, it was merely pointed out that it is possible to make such a distinction, within the structure-preserving framework. Worse yet is the fact that there are actually arguments against such a proposal. It was noted, for example, that both personal and non-personal Agents behave identically with respect to passivization. Thus we find grammatical Passive forms for both (24) and (25) (under either interpretation), as the following examples show:

(26) a. The wall was hit by John.

b. The wall was hit by the rock.

and the same is true of every other example that I know of. But if personal and non-personal Agents really occupy different deep structure positions, then we would expect them to behave differently with respect to at least some syntactic transformation. However, that does not seem

to be the case, suggesting that the distinction should be accounted for in some other way.

An even stronger argument against this proposal is the fact that it complicates the statement of the subcategorization features for every Verb in the language for which the distinction is optional. Thus hit, for example, must be assigned two entirely different subcategorization features of the following form:

(27) a. NP ___ of NP by NP

b. NP ___ of NP

It is exceedingly difficult, given the conventions for subcategorizing subcategorization features that we have at our disposal to collapse two features of this kind in any simple way. The analysis proposed in Chapter II thus claims, in effect, that there is no relationship between these two senses of the Verb hit, a result which seems counter-intuitive.

Another fact that is relevant here is the following: whereas animate Subjects which have a non-personal interpretation must always have a personal interpretation, as well, the converse is not true. That is, a Verb may require that its Agent have only a personal interpretation, but there are no Verbs which require that their Subjects have only a non-personal interpretation.

This fact added to the difficulties noted above strongly suggests that the proposal in Chomsky (1972) is correct, and that there is simply a lexical redundancy rule, which may well be universal, which optionally interprets animate Subjects as personal Agents. Verbs which require that their Subjects have a personal interpretation only would then have to

be specially marked in the lexicon. Not only does this proposal simplify the grammar considerably, since we are now free to derive all Agents from a deep by-phrase, but furthermore, it correctly reflects the fact that the "unmarked" situation is for an animate Subject-NP to have either a personal, or a non-personal interpretation. The "marked" situation, in contrast, is for a Verb to require that its Subject-NP have only a personal interpretation, while the third possible case, namely, that of a Verb which requires that its Subject-NP have a non-personal interpretation only, is correctly excluded altogether.

I conclude from this discussion that the evidence does not support an analysis of the type proposed in Chapter II, thus demolishing the first argument in favor of the view that there is a "deep" Subject position.

The only other argument in favor of a deep Subject position that was presented in Chapter II is one that has to do with the behavior of a small class of Verbs in English which Lees (1963) refers to as "middle" Verbs. The interesting thing about these Verbs is that they lack grammatical Passive forms, and it was pointed out in Chapter II, correctly, I believe, that within the structure-preserving framework, it is simpler to account for this fact, if the surface Subjects of these Verbs are derived from the Subject position in deep structure than it would be if they were derived from the Agent-phrase. However, this argument overlooks the possibility of deriving the Subjects of these Verbs from some other position in the VP.

In fact, if we examine the Verbs of this class one by one, we shall see that in each case there is syntactic evidence in favor of deriving the

surface Subject-NP from the Object position in deep structure. The relevant examples are the following:

(28) a. John weighs 170 lbs.

b. The book costs $10.

c. John resembles Mary.

d. This word means 'book'.

e. The suit fits me perfectly.

f. John married Mary.

Consider first the Verb resemble. We note immediately that corresponding to sentences such as (28) c. we find derived nominal forms such as the following:

(29) a. John's resemblance to Mary.

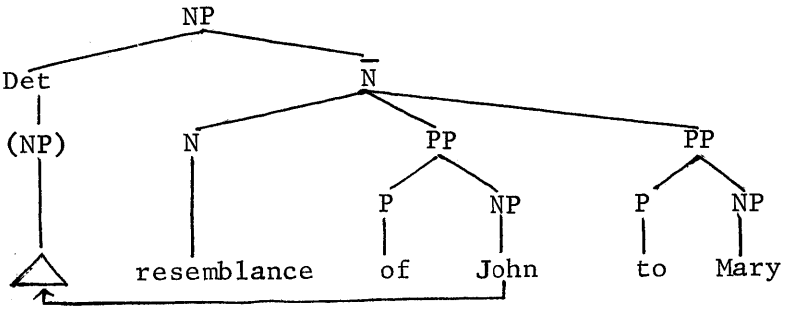
b. the resemblance of John to Mary.

On the basis of (29) a., we might be tempted to argue that resemble is just like Verbs such as annoy, amuse, etc., in that it requires a deep Indirect Object-NP, but that it differs from them in requiring a deep structure Subject, rather than an Agent. This proposal would have the advantage of explaining automatically why these Verbs have no Passive forms, as long as we prevent them from being subcategorized to take an empty by-phrase. However, example (29) b. shows that this proposal is impossible, for if the to-phrase is an Indirect Object, then there will be no way of getting the Subject-NP John into the Direct Object position, since Indirect Objects must be generated to the left of the Direct Object position. Thus the only way of accounting for (29) b. would be to extend the inverse of Object-Prepsing, to allow it to apply over an Indirect Ob-

ject, since Object-Preposing itself must be formulated so as not to apply over an Indirect Object.

Observe, however, that both of the nominal forms in (29) can easily be accounted for by means of Object-Preposing, if we assume that the NP John derives from the Direct Object position and that the NP Mary originates in a 'Goal'-phrase, with the Preposition to. We would then have the following underlying form for both (29) a. and b.:

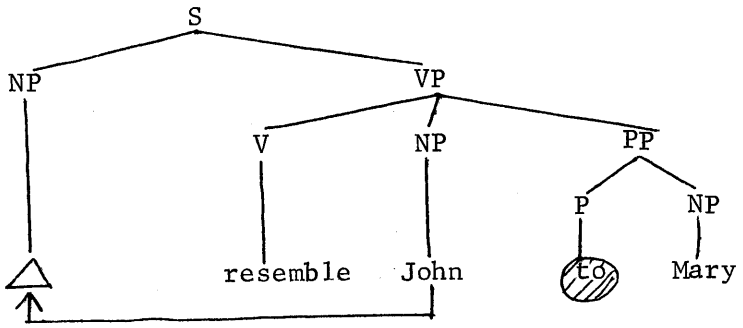
(30)



If Object-Preposing applies to (30), then we will derive the surface form (29) a.; if it does not, then we come out with (29) b.

If this proposal is correct, then we must have an underlying form such as the following for the sentence (28) c.:

(31)



But now observe that the correct surface form John resembles Mary will be derived automatically from (31), given the independently motivated rules of Object-Preposing and Preposition Deletion. Thus the NP John

will first be moved into the empty Subject position by means of Object-Preposing. Now, however, the to-phrase occurs directly next to the Verb, and is therefore deleted automatically by the Preposition Deletion rule.

Exactly the same argument can be used in the case of the Verb marry. Thus, corresponding to example (28) f., we find the following derived nominal forms:

(32) a. John's marriage to Mary.

b. The marriage of John to Mary.

Furthermore, notice that marry can also take an Agent-phrase, in which case the Direct Object and the to-phrase remain in their deep structure positions:

(33) The preacer married John to Mary.

Likewise, the Verb fit may also take an Agent-phrase, so that in addition to the intransitive sentence (28) e., we find sentences such as the following:

(34) The tailor fit the suit to me.

Thus the Verbs marry and fit can be most simply accounted for by assuming that they have a subcategorization feature of the following form:

(35) fit: NP ___ NP to NP (by NP)

If there is no Agent-phrase, then the Direct Object must be moved into the empty Subject position, after which Preposition Deletion applies, deleting the Preposition to. If, on the other hand, there is an Agent-phrase, then both the Direct Object and the to-phrase remain in their deep structure positions, and the Subject node is filled in by the Agent-NP.

Consider, finally, the Verbs cost and weigh. These Verbs are curious in a number of respects. Notice, to begin with, that we find derived nominals of the following form:

(36) a. the book's cost

b. the cost of the book

(37) a. the package's weight

b. the weight of the package.

The appearance of the Preposition of in the b.-forms suggests that the Subjects of these Verbs derive from the Direct Object position. On the other hand, notice that we also have derived nominals of the following form:

(38) a. a weight of 10 lbs.

b. a cost of $10

in which the NP's 10 lbs. and $10 also show up with the Preposition of. Furthermore, observe that there are no derived nominal forms containing both of the NP's which appear in sentences:

(39) a. *the book's cost of $10

b. *the cost of the book of $10

(40) a. *the package's weight of 10 lbs.

b. *the weight of the package of 10 lbs.

It should be pointed out, however, that this distribution is not peculiar to the Verbs cost and weigh. In fact, we find exactly the same distribution in the nominal forms of measure Adjectives such as high, long, deep, wide, etc. Thus corresponding to sentences such as the table is long, the river is deep, the cliff is high, and so on, we find nominals such as the following:

(41) a. the table's length

b. the length of the table

(42) a. the river's depth

b. the depth of the river

We also have measure phrases corresponding to these Adjectives, which are exactly like those in (38):

(43) a. a length of 10 feet

b. a depth of 10 feet

c. a width of two inches

However, the two types may not be combined, so that there are no nominals of the following form:

(44) a. *the table's length of 10 feet

b. *the length of the table of 10 feet

(45) a. *the river's depth of 10 feet

b. *the depth of the river of 10 feet

I conclude, therefore, that the non-existence of derived nominals such as those in (39) and (40) is due to some constraint governing the distribution of measure phrases which is needed in the grammar anyway, so that we may confine ourselves to an explanation of the nominal forms in (36) and (37).

Returning to the sentences containing the Verbs cost and weigh, observe that there is a relationship between pairs of sentences such as the following:

(46) a. The book costs $10.

b. The book is $10.

(47) a. The package weighs 10 lbs.

b. The package is 10 lbs. (in weight).

which is precisely parallel to that which holds between pairs of sentences containing Predicate-NP's:

(48) a. I consider Bill a fool.

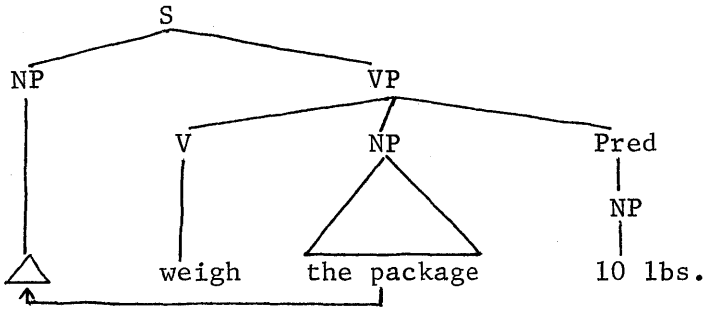
b. Bill is a fool.

(49) a. She called Bill an idiot.

b. Bill is an idiot.

This naturally suggests the possibility of deriving sentences containing the Verbs weigh and cost from structures of the following sort:

(50)



to which Object-Preposing would apply, deriving the correct surface form. Assuming that the ungrammaticality of nominals such as (39) and (40) is due to some independent constraint, a structure of the form (50) will immediately allow us to account for both the nominals in (36) and (37), and also those in (38).

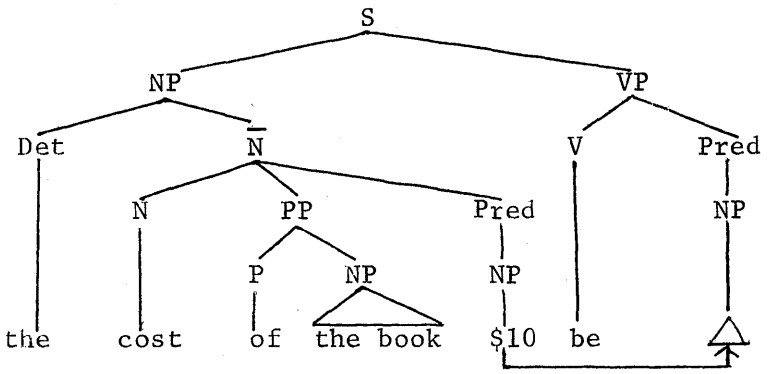
Further support for this proposal can be derived from the existence of sentences such as the following:

(51) a. {the book's cost / the cost of the book} is $10.

b. {the package's weight / the weight of the package} is 10 lbs.

A natural source for sentences of this type, given that we have underlying forms of the form (50), would be the following:

(52)



The same rule which produces sentences such as the prospects are for peace, the question is whether John should go, and so forth, (cf. Chomsky (1970), for discussion) would then extract the Predicate-NP $10 from the NP in the subject position, and insert it into the empty NP-node following be. (Note that the complex NP in the Subject position in (50) would derive ultimately from the Direct Object position).

Observe next that a similar analysis is plausible in the case of example (28) d., where again we find nominals of the form:

(53) a. the word's meaning

b. the meaning of the word

as well as ones such as the following:

(54) The meaning (of) 'book' (is uncommon in this context).

but none of the form:

(55) a. *the word's meaning (of) 'book'

b. *the meaning of the word (of) 'book'

On the other hand, notice that we do find sentences corresponding to those in (51):

(56) The meaning of the word is 'book'.

suggesting once again that the apparent Direct Object-NP in these sentences is actually derived from the Predicate node at a deeper level.

We see, then, that in every case there is motivation for deriving the surface Subject of these impassivizable Verbs from the Object position in deep structure. This removes the only other argument in favor of the existence of a "deep" grammatical relation 'Subject-of'. This in turn means that the subcategorization features for Verbs need only take account of those NP positions which are dominated by VP. Furthermore, I shall assume that all surface Subjects are derived, ultimately, from some NP position in the VP. As was noted earlier, this assumption is only compatible with the structure-preserving hypothesis, if there is no level of deep structure, i.e. if there is only a single set of PS rules in the grammar, which characterize an infinite set of surface structures, and if the subcategorization conditions are not, in fact, "syntactic" features at all, but rather represent, in effect, the meaning of Verbs. However, full justification for the validity of this view depends on the considerations brought forward in the next two sections, to which I now turn.

3.0. Reconsideration of the Verbs force and believe

In Chapter IV it was shown that Verbs such as force and believe, persuade and expect, and so on, as well as intransitive Verbs such as appear and condescend, happen and try, etc., behave identically with respect to every known syntactic test. Furthermore, all of these Verbs contrast with that-clauses and "true" for-to complements, which behave quite differently with respect to these same tests. In addition, it

happens that just those Verbs which belong to the first class have the property that their Subject-NP's must be coreferential with some NP in the matrix clause and consequently must be deleted in surface structure. True for-to complements, in contrast, have the property that deletion of a coreferential Subject-NP is always optional. That is, Verbs which take for-to complements never require that the complement Subject be coreferential with some matrix NP.

The only syntactically motivated way of accounting for the difference between the complements of Verbs such as force, persuade, expect, and so on, and the class of true for-to complements, is to assume that the former are not, as has usually been argued, full S's in deep structure, but rather that they are VP's. True for-to complements, on the other hand, must be S's, because they pattern in all relevant respects like that-complements and other deep structure S's.

Unfortunately, however, the assumption that Infinitives are VP's makes it impossible to account syntactically for the difference between Verbs such as force, persuade, condescend, and try, on the one hand, and Verbs such as believe, expect, appear, and happen, on the other. For, as has been known for some time, there is a grammatical relation between Verb and its Object (or the Verb and its Subject, in the case of the intransitives) for the Verbs of the first class, whereas for the Verbs of the second class, there is not.

The way out of this dilemma proposed in Chapter III was the following. We redefine the underline notation to mean, essentially, "has a grammatical relation to the Verb", and impose the further condition that it is always the first NP in a derivation which fills in an underlined

node that has the specified grammatical relation to the Verb. Thus, if a Verb has an underlined Object-NP in its subcategorization feature, this is interpreted as meaning that the first NP which comes to fill this position--whether it is filled in by a lexical insertion rule or by a purely syntactic transformation--is the NP which has the grammatical relation "Object-of" to the Verb. If, on the other hand, a NP, say the Object-NP, is not underlined in the subcategorization feature, this must be interpreted as meaning that no NP which comes to fill in the Object position in the course of the derivation can be interpreted as having the grammatical relation "Object-of" to the Verb. In addition to redefining the underline notation in this manner, it is also necessary to specify various conditions on the application of structure-preserving rules. In particular, we specify structure-preserving rules as having the property that they must apply, if their structural description is met. This condition is necessary, for the obvious reason that under the new definition, the underline notation no longer specifies for us the proper distribution of filled and unfilled nodes in the trees generated by the base rules. According to this proposal, then, the work that was originally done by the underline notation is taken over, in effect, by the filtering function of the structure-preserving rules, while the underline notation itself now means simply "has the grammatical relation GR to the Verb."

Notice, however, that defining the underline notation in this way is really somewhat unnatural. The term "grammatical relation" as it is usually defined, refers simply to some particular structural relation

between the elements of a P-marker, and is definable in a purely formal way in terms of notions such as "to the left of", "to the right of", "immediately dominates", etc. Thus "Subject-of" a S is simply the relation which holds between the lef-most NP immediately dominated by S and S itself. Similarly, the grammatical relation "Object-of" a sentence is nothing more than the relation which holds between the left-most NP immediately dominated by VP, where this VP is in turn immediately dominated by S, and S itself; and so on. But observe that in defining the underline notation as meaning "has the grammatical relation GR to the Verb" we certainly intend to do more than indicate the particular configuration of elements that defines the formal relation GR. In fact, the whole notion is somewhat self-contradictory, since once we have defined a particular grammatical relation, say "Object-of", in purely formal terms, a given NP in a particular tree must necessarily have this grammatical relation to the sentence, or not. It is somewhat senseless to then declare that by underlining, say, the Object-NP, we determine that this NP "really" has the grammatical relation "Object-of" to the sentence, while by leaving it not underlined we determine that the NP in question "really" doesn't have this grammatical relation to the sentence.

These difficulties strongly suggest there is a fundamental flaw in the analysis of Infinitives proposed in Chapter IV. On the other hand, the explanation of the difference between <u>force</u> and <u>believe</u> that is required under a Rosenbaum-type analysis is equally fraught with difficulties, as has been realized for some time. Basically, there are only two possible alternatives. The first is to assume that there is a special

raising rule which extracts the Subject of the complement to Verbs such as believe and expect and creates a derived Object-NP in the matrix clause. If, in addition, we accept certain conventions proposed by Ross (1969b) which automatically "prune" S-nodes which do not branch, then the result of the application of the raising rule will be a derived constituent structure of the form V-NP-VP.

The problem with this approach is that there is no independent motivation whatsoever for the required raising rule. Furthermore, there are certain facts, noted by Chomsky (1972), which tend to support the view that the complement of believe has the structure of an S.

The other possible approach is the one proposed in Chomsky (1972). Chomsky argues that rather than extracting the Subject of the complement S by means of a special rule, rules such as Object-Preposing should simply be allowed to apply down into the complement. Thus a Passive form John is believed to have left would, in his theory, be produced directly through the application of Object-Preposing to a string of the form: NP - V - $[_S$NP - ...] . In order to prevent a derivation of this kind in the case of a that-complement, however, he is forced to formulate an elaborate set of constraints on the functioning of syntactic rules. While the general approach is promising, and the particular analysis which he proposes yields many new insights, an evaluation of the implications of his proposals is, unfortunately, beyond the scope of this study.

There are, however, two specific objections to his treatment of Infinitives which should be mentioned. The first is that in order to make his analysis of believe work, it is necessary to assume that there are two different complementizers, a for-to complementizer and a to-comple-

mentizer. (See Bresnan (1972) for a specific proposal along these lines). The reason is that true for-to complements behave, in general, like that-complements with respect to the constraints on the functioning of grammatical rules which he proposes. However, this is an ad-hoc assumption, for which there is no obvious justification, beyond the fact that it makes his analysis work.

The second difficulty is that Chomsky's analysis fails to account for the fact that the derived constituent structure of the complements to Verbs such as believe is clearly of the form V - NP - VP and not of the form V - S. Postal (forthcoming) has amassed a considerable number of arguments in support of this view, and it is unclear how Chomsky's analysis can account for the facts brought forward by Postal.

The standard theory of Infinitive complementation is thus caught on the horns of a dilemma. It must either assume that there is a single complement-type which underlies all Infinitive constructions, in which case an ad-hoc raising rule is necessary, or else it must assume that there is no raising rule, in which case two different complement types for Infinitives must be assumed. In addition, there is a mass of contradictory evidence, some of which seems to support the view that the complements to Verbs such as believe have the constituent structure V - S, some of which seems to support the view that the correct constituent structure is V - NP - VP.

On the other hand, the analysis proposed in Chapter IV, while it has the advantage of accounting for the purely syntactic differences between for-to complements and Infinitives, is apparently incapable of explaining the difference between the Verbs force and believe. Neverthe-

less, I believe that these difficulties can be resolved in a satisfactory manner, as I hope to deomonstrate in the following section.

4.0. Does Deep Structure Exist?

Having discussed in a preliminary way the main points that are issue, I am now prepared to present what I believe to be a conclusive demonstration that deep structure does not exist, or, equivalently, that the Surface Structure Hypothesis is correct, and that the grammatical relations present in surface structure are sufficient to determine meaning.

My argument, reducing the matter to essentials, is that a fully satisfactory treatment of the Verbs believe and force is possible only if all of the following assumptions are true:

A. The grammar contains a single set of PS rules which characterize an infinite class of surface structures.

B. Infinitives are VP's, and furthermore VP is a cyclic node.

C. The structure-preserving rules and the lexical insertion rules (i.e. the subcategorization features) are applied on each syntactic cycle, starting from the lowest and working upward.

D. The structure-preserving rules and the lexical insertion rules apply freely in any order.

The crucial assumption is of course D., which claims that lexical insertion rules and syntactic rules may be applied in any order with respect to one another. Furthermore, notice that the question of whether deep structure exists or not is an entirely empirical issue. If it turned out, as a metter of empirical fact, that it was unnecessary for any

lexical insertion rule ever to follow a syntactic rule, then this result would constitute an exceedingly strong argument in favor of the existence of a level of deep structure, since a grammar in which all the lexical insertion rules preceed all of the syntactic rules on each syntactic cycle is entirely equivalent, a mere notational variant, in fact, of a grammar in which all lexical items are inserted simultaneously at the beginning of the derivation, followed by the application of the syntactic rules; and such grammar is, of course, by definition a theory which contains a level of deep structure.

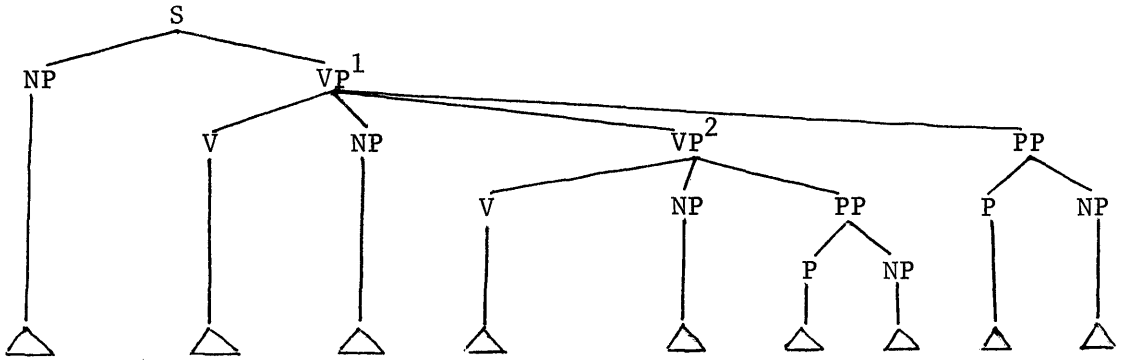
If, on the other hand, it turns out that there is even <u>one</u> lexical insertion rule which must follow some syntactic rule on the same syntactic cycle, then we will have demonstrated that there is no level of deep structure.

Let us consider, then, the derivation of the Verbs <u>force</u> and <u>believe</u>. It will be recalled that <u>believe</u> has a subcategorization feature of roughly the following form:[2]

(57) <u>believe</u>: ___ NP <u>VP</u> by <u>NP</u>

Notice that since the subcategorization features no longer need to refer to the Subject-node, as was argued in Section 2.0., we may assume that the lexical insertion rules for Verbs apply on the VP-cycle, rather than on the S-cycle. Bearing this in mind, let us assume that we start out with a structure of the following form:

(58)

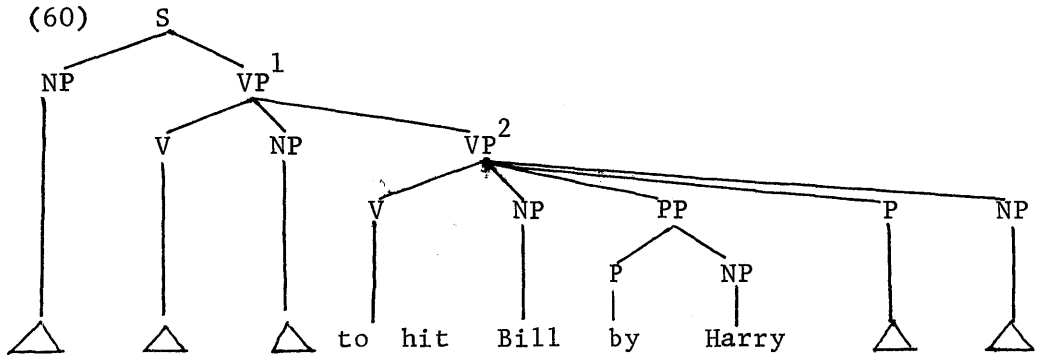


and consider how we may derive the sentence John believes Harry to have hit Bill. On the lowermost VP^2-cycle, we must insert the Verb hit, which has a subcategorization feature of roughly the following form:

(59) hit: ___ NP by NP

The result of inserting hit on the VP^2-cycle is a tree of the following sort:

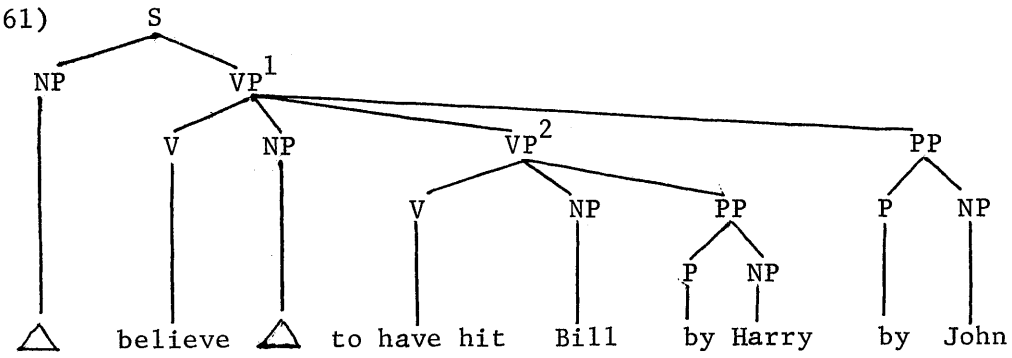
(60)



No other syntactic rules are applicable on this cycle, and therefore we move up to the VP^1-cycle. We must now insert the lexical item believe. Looking at the subcategorization feature (57), we see that believe requires an empty Object-NP, a VP, and an Agent-phrase. The VP complement is already present, and hence we need only insert an Agent-phrase, and then

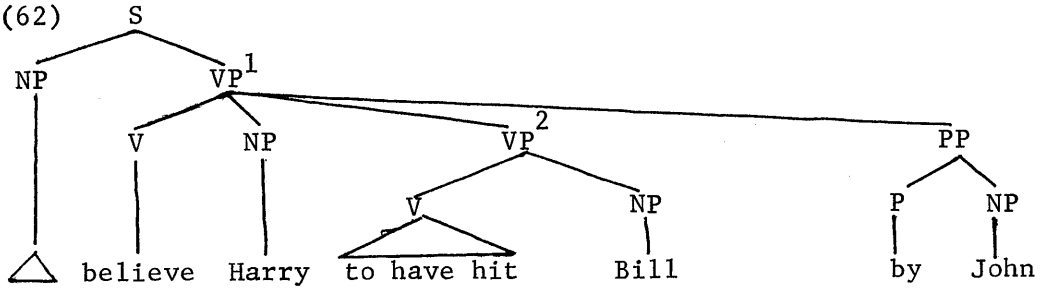
the Verb believe. The result is a tree of the following form:

(61)



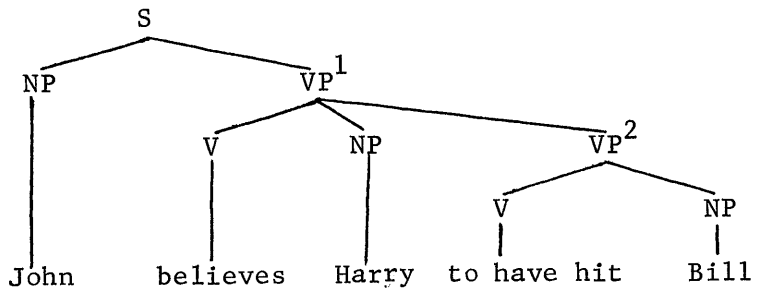
We now check to se whether any of the structure-preserving rules are applicable on the VP^1-cycle. In fact, the structural description for Agent-Preposing is met, and we must therefore move the NP Harry into the Direct Object position in VP^1, thus producing a structure of the following kind:

(62)



No other syntactic rules are applicable on the VP^1-cycle, and we therefore move up to the S-cycle. The only rule which is applicable on the S-cycle is Agent-Preposing, and the NP John is therefore moved into the Subject position, and the result is the correct surface form (63):

(63)



The derivation may thus be summarized as follows:

(64) VP^2: 1. Lexical Insertion: hit

VP^1: 1. Lexical Insertion: believe

2. Agent-Preposing

S : 1. Agent-Preposing

Notice that we have accounted correctly for the surface form of this sentence without assuming any structures other than those which are needed to characterize the surface forms of sentences, in any case. Furthermore, notice that we have also accounted correctly for the interpretation of this sentence, under the assumption that the subcategorization features contain the information which is necessary for the interpretation of sentences for at the point at which the lexical insertion rule for believe is applied, VP^1 has no Object-NP, and hence the surface Object of believe is never interpreted as having a grammatical relation to the Verb believe.

Now let us consider the derivation of the sentence John forced Harry to hit Bill. The Verb force, it will be recalled requires a subcategorization feature of the following kind:[3]

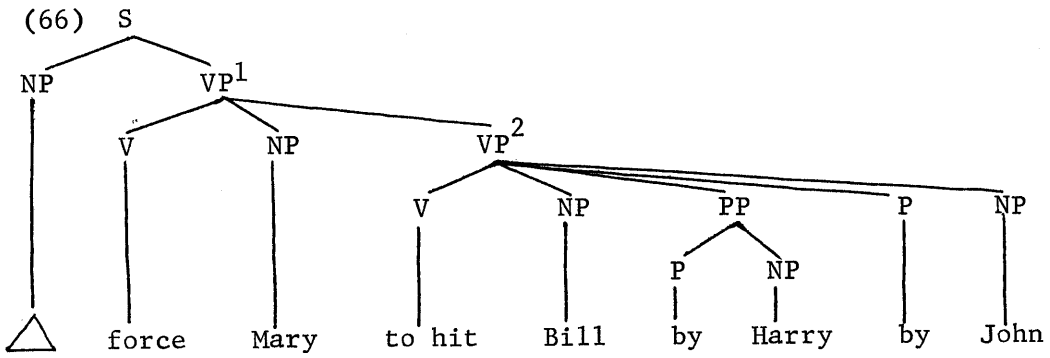
(65) force: ___ NP VP by NP

We start out with a structure identical to the one we started with before,

namely, one of the form (58). Furthermore, on the VP^2-cycle we insert the lexical item hit, just as we did in the previous derivation, resulting in a structure of the form (60). So far, then, the derivations of the two sentences are identical.

We now move up to the VP^1-cycle, but this time we wish to insert the lexical item force, rather than the lexical item believe. Looking at the subcategorization feature for force, we see that it requires a filled Object-NP, a VP complement, and an Agent-phrase. Suppose, therefore, that we insert force, at the same time filling in the by-phrase and the Object-NP. The result of this operation will be a structure of the following form:

(66)

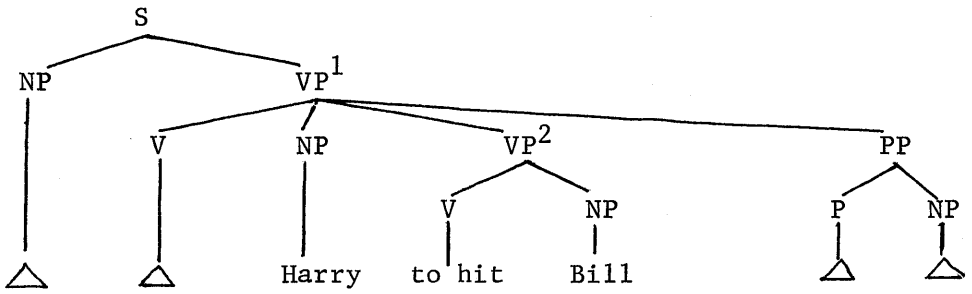


Observe, however, that this immediately gets us into trouble, because the rule of Agent-Preposing is an obligatory rule, i.e. it must apply if its structural description is met. However, it cannot apply, because the Direct Object-NP in VP^1 is already filled by the NP Mary. It follows immediately that the derivation must block, leaving us with no way, apparently, of deriving the sentence John forced Harry to hit Bill.

Suppose, however, that instead of applying the lexical insertion rule for force at the beginning of the VP^1-cycle, we simply permit the lexical insertion transformation to apply after the rule of Agent-Preposing. If

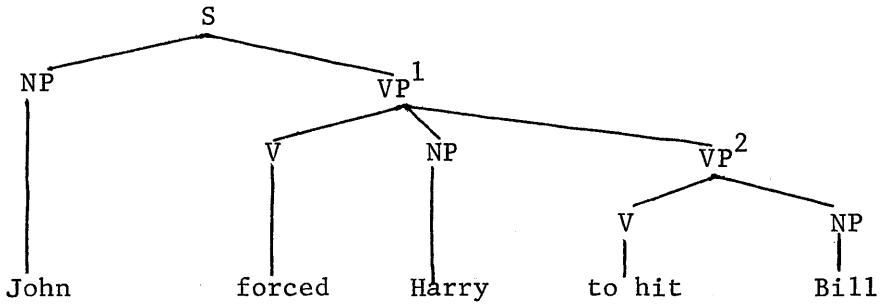
we do this, then the result of applying Agent-Preposing to the structure (60), on the VP^1-cycle, will be a tree of the following sort:

(67)



Looking at the lexical insertion rule for <u>force</u>, we see immediately that the condition that the Object of <u>force</u> be filled is already met, by virtue of the prior application of Agent-Preposing. Hence, we need only fill in the <u>by</u>-phrase, after which the lexical insertion rule for <u>force</u> may apply. Finally, we apply Agent-Preposing again on the S-cycle, with the result that we come out with the correct surface form (68):

(68)



The derivation of the sentence <u>John forced Harry to hit Bill</u> must, therefore, have the following form:

(69) VP^2: 1. Lexical Insertion: <u>hit</u>

VP^1: 1. Agent-Preposing

2. Lexical Insertion: <u>force</u>

S : 1. Agent-Preposing

Comparing (64) with the derivation (69), we see that the only difference between the two is that in the former, the lexical insertion rule for the main Verb in VP^1 must precede the rule of Agent-Preposing, whereas in the latter it must follow Agent-Preposing.

We have thus demonstrated that there is a lexical insertion rule which must follow the application of somesyntactic rule on the same cycle, from which it follows automatically that there is no level of deep structure. Furthermore, notice that the lexical insertion rule for force must not only follow the rule of Agent-Preposing, but in fact it must be able to follow any preposing rule, i.e. any rule which fills in the Subject position in sentences. Thus, in order to produce a Passive sentence such as John forced Harry to be examined by the doctor, we must allow the lexical insertion rule for force to apply after the application of Object-Preposing on the uppermost VP cycle.[4]

The crucial point in this argument is that we have succeeded in accounting for the fact that sentences containing force and believe have exactly the same surface form, namely, [V - NP - VP] , as well as for the fact that they differ radically in their interpretation, without having to make any ad-hoc assumptions, and without having to add any new rules to the grammar. There is no need, in the theory proposed here, for an unmotivated rule of Raising. The only rules that we need in the grammar are the independently motivated rules of Agent-Preposing, Object-Preposing, and so on, plus the lexical insertion rules for force and believe, which are likewise independently motivated. Similarly, there is no necessity, in this grammar, to set up two separate and unrelated complementizers, in order to account for the fact that the Subjects of some Infinitives, but

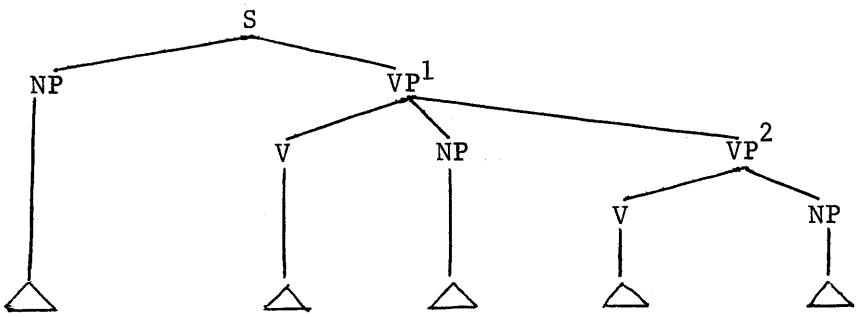
not the Subjects of others, can be extracted by means of rules such as Object-Preposing. Instead, we simply have VP's on the one hand, and S complements on the other. Furthermore, the fact that Verbs such as force and believe are "positive absolute exceptions" to the rule of CCSD, follows automatically from form of the grammar, in the theory proposed here. There is no need for special deep structure constraints, in order to account for the difference between Infinitives and for-to complements. It is sufficient to indicate in the subcategorization feature for a Verb that it takes a VP complement, and these properties follow automatically. Finally, as was observed in Chapter IV, the analysis of Infinitives proposed here makes it possible to account for the "control" problem, simply by virtue of the fact that VP's may appear in different positions in surface structure. Thus if a Verb requires a VP complement immediately to the right of an Agent-phrase, then the Subject of the Infinitive will automatically be interpreted as the Agent of the matrix Verb, while if the VP occurs next to a Direct Object, then it will automatically also be interpreted as the Subject of the Infinitive.

We observe next that derivations precisely parallel to those proposed for force and believe can be used to accoant for the difference between intransitive sentences such as John appears to have left and John condescended to leave, thus obviating the need for a rule raising the Subjects of Infinitive complements into the Subject position in the matrix S.[5] Let us consider first the Verb appear. This Verb, it will be recalled, requires a subcategorization feature of the following kind:

(70) appear: ___ NP VP

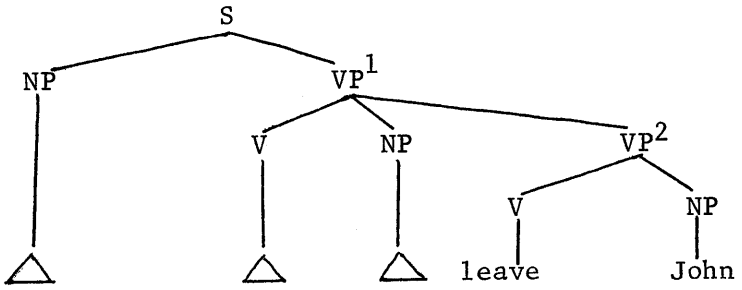
In order to derive the sentence mentioned above, we need a tree of the following form:

(71)



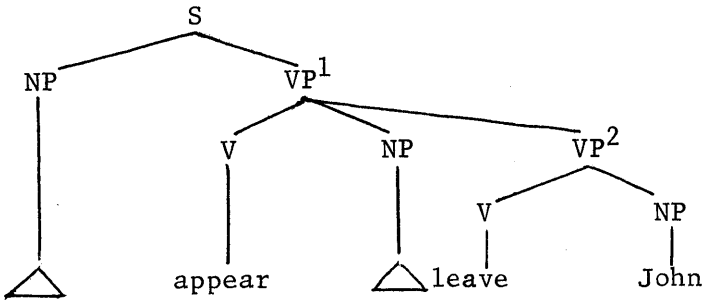
On the VP^2-cycle, we insert the NP John and the Verb leave. Then since there are no other rules which are applicable, we go up to the VP^1-cycle. At this point, we have a structure of the following kind:

(72)



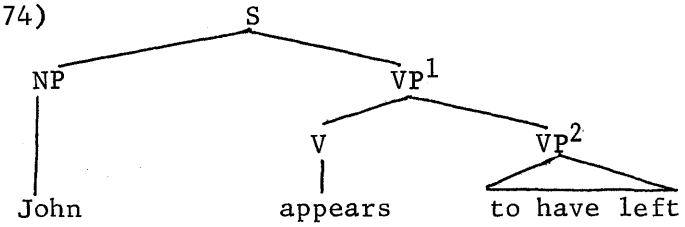
into which we wish to insert the lexical item appear. Looking at the subcategorization feature for appear, we see that it requires a VP complement and an empty Object-NP. These conditions are satisfied by (72), and therefore the first rule to apply on the VP^1-cycle is the lexical insertion rule for appear, giving us the following structure.

(73)



Now we may apply Object-Preposing on the VP^1-cycle, as is indicated in (73), followed by Object-Preposing again on the S-cycle, and the result is the correct surface form (74):

(74)



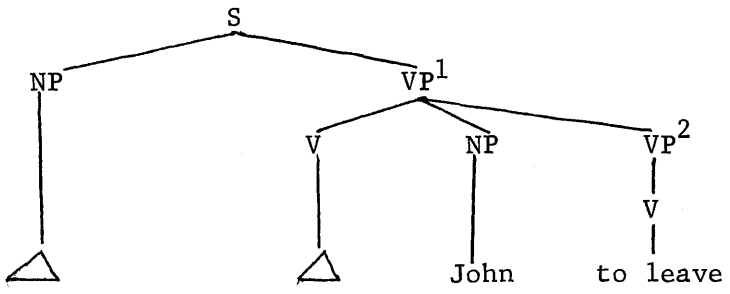
Furthermore, the NP John is correctly interpreted as having no grammatical relation to the Verb appear.

Consider next the derivation of the sentence John condescended to leave. The Verb condescend, in contrast to appear, requires in its subcategorization feature a filled Object-NP:

(75) condescend: ___ NP VP

Looking back at the intermediate structure (72), suppose that at this point, at the beginning of the VP^1-cycle, we apply Object-Preposing. The result of this operation is a structure of the following form:

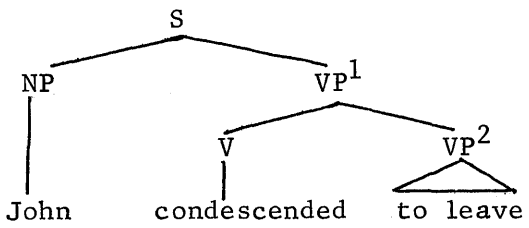
(76)



We see immediately that the Verb condescend may now be inserted, since we have a structure containing a filled NP and a VP complement. We then move up to the S-cycle, where Object-Preposing is again applicable, and

the result is a surface structure identical in form to that of the sentence John appears to have left:

(77)



The two derivations thus look as follows:

(78) VP^2: 1. Lexical Insertion: leave

VP^1: 1. Lexical insertion: appear

2. Object-Preposing

S : 1. Object-Preposing

(79) VP^2: 1. Lexical Insertion: leave

VP^1: 1. Object-Preposing

2. Lexical Insertion: condescend

S : 1. Object-Preposing

Once again, we see that the only difference between the two is that in one case lexical insertion must take place before Object-Preposing on the VP^1-cycle, whereas in the other it must take place after Object-Preposing. Furthermore, the grammar generates the correct surface forms of these sentences directly, without the necessity of assuming an ad-hoc and unmotivated rule of raising into Subject position. At the same time, we account for the difference in meaning between sentences with appear and sentences with condescend, by virtue of the fact that the subcategorization features (70) and (75) require an unfilled and a filled Object-NP, respectively.

As far as I can see, this argument that deep structure does not exist is as near to being conclusive as it is possible for an argument to be in linguistic theory. Each of the basic assumptions A., B., and C. has been painstakingly motivated in the course of this work. The only assumption which makes it possible to account correctly for Verbs such as believe and force, appear and condescend, and so forth, within this framework, is assumption D. And if D. is correct, then there can be no level of deep structure.

5.0. Implications

We must now consider, as briefly as possible, some of the more obvious consequences of the theory, as presented in its final form in this chapter. The considerations brought forward here will, I believe, considerably reinforce the conclusions arrived at in the preceding sections, and will, at the same time, draw together all of the seemingly disparate phenomena discussed in the preceding chapters into a single, unified conception of the role of deep grammatical relations in the theory of syntax.

5.1. Causatives

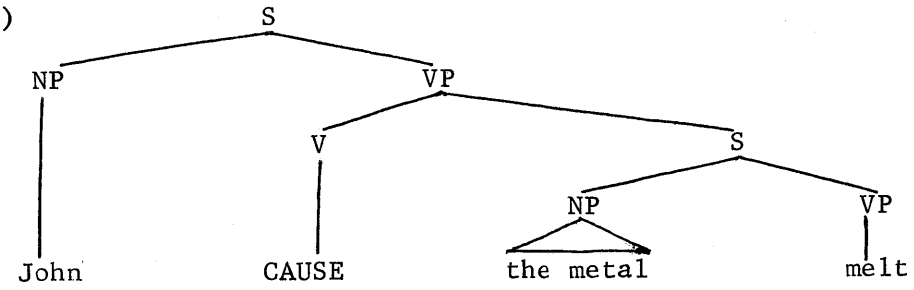
The first attempt to deal with causative Verbs such as melt, roll, grow, etc. in a systematic way within the framework of transformational grammar was made by Lakoff (1965). Lakoff, observing that there is a relationship between pairs of sentences such as the following:

(79) a. John melted the metal.

b. John caused the metal to melt.

proposed to derive both types of sentences from an underlying structure similar to (79) b. The structure that he assumed had roughly the following form:

(80)



where the element CAUSE in the matrix S is assumed to be an "abstract" Verb, having semantic and syntactic features, but no phonological form. Depending on what rules apply to it, this structure will result in either of the surface forms in (79). If the abstract Verb CAUSE is "segmentalized" as the phonological form cause, then we come out with the sentence (79) b. If, on the other hand, we apply Raising, which takes the Subject of the embedded sentence and creates a derived Object in the matrix S, plus the rule of Predicate-Raising, which takes the Verb in the embedded sentence and combines it with the abstract Verb CAUSE, then we will come out with the surface form (79) a. The basic analysis proposed by Lakoff was later extended by McCawley (1968b.), who attempted to account for the relationship between Verbs such as kill and die in much the same way.

This proposal, while appealing for a number of reasons, is, however, impossible to maintain. Aside from the fact that pairs such as (79) a. and b. are not, in general, synonymous, there is one very basic problem involved in any causative analysis of this type, which has been most clearly exposed by Fodor (1970). The problem is that single words, such as melt, simply because they are different in syntactic structure from complex phrases such as cause to die, will always have different co-

occurrence possibilities. Any analysis of the type proposed by Lakoff will therefore inevitably be plagued by the necessity for numerous ad-hoc constraints on the syntactic rules, in order to prevent melt from occurring in all of the same positions that cause to melt is permitted to occur. The situation is even worse, of course, as Fodor demonstrates, when the lexical items in question do not even have the same phonological form, e.g. kill and cause to die.

On the other hand, the problem of accounting, in some systematic way, for the relationship between pairs of sentences such as those in (79) still remains. At the end of Chapter II, I proposed an analysis of causative Verbs, which, while it avoids the difficulties raised by Fodor, is nevertheless somewhat restricted in scope, and therefore ultimately unsatisfactory. In particular, the analysis proposed there has nothing to say concerning pairs such as (79).

Now, however, we are in a position to extend the analysis proposed earlier, and to deal with the problem of causative Verbs in a far more general way than was possible before, Let us begin by examining more closely the differences between sentences such as (79) a. and b. One difference which has often been noted is that the relationship between the Subject-NP John and the event which he brings about (namely, the melting of the metal) is, in some sense, more "direct" in (79) a. than it is in (79) b. Furthermore, this is clearly related to the fact that in (79) a. the NP the metal has a grammatical relation to the causative Verb melt, whereas in (79) b. it has a grammatical relation to the intransitive Verb melt, but not to the matrix Verb cause. To see that this is so, consider the following pair of sentences:

(81) a. John caused Bill to be examined by the doctor.

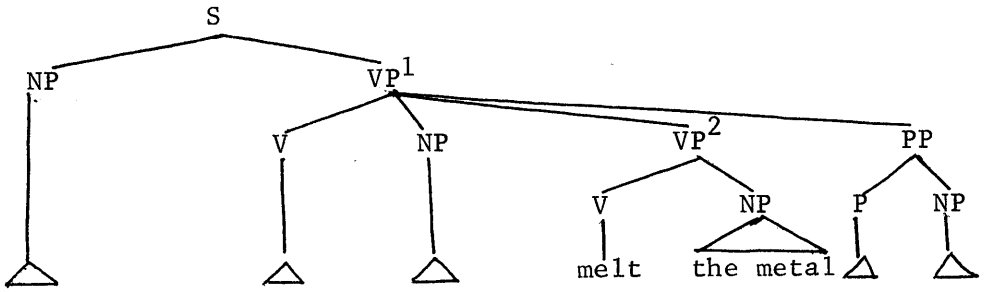
b. John caused the doctor to examine Bill.

Clearly, pairs of this sort are synonymous. In other words the Verb cause behaves, in this respect, just like the Verb believe, and hence must be assigned a subcategorization feature of the following form:

(82) cause: ___ NP VP by NP

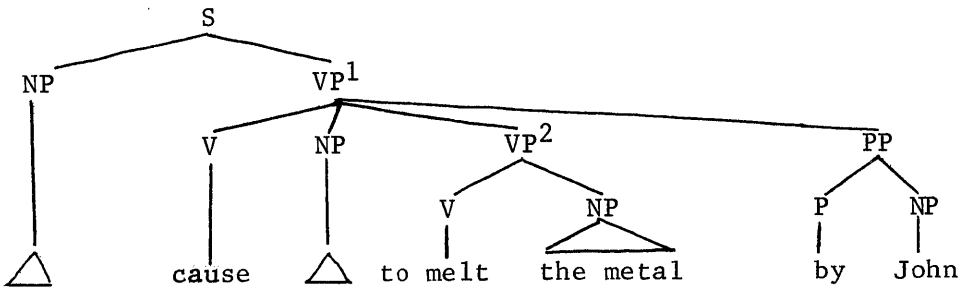
Furthermore, in order to account for sentences such as (79) b., we must obviously have a derivation of the following sort: We begin by applying the lexical insertion transformation for intransitive melt on the lower VP-cycle, after which we will have a structure such as the following:

(83)



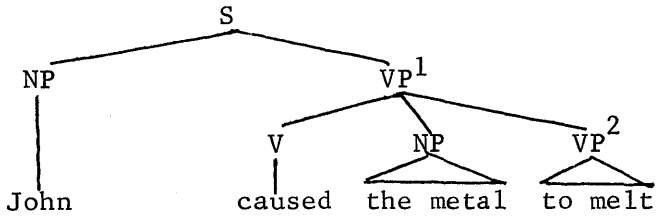
Now observe that in order to insert the lexical item cause, we must have an empty Object-NP in VP^1. Hence the first rule to apply on the VP^1-cycle must be the lexical insertion rule for cause, the result of which is a structure of the following form:

(84)



We must now apply Object-Preposing, which moves the NP the metal into the empty Object-NP in VP^1, after which we move up to the S-cycle and apply Agent-Preposing, which results in the correct surface form (85):

(85)



The derivation thus has the following form:

(86) VP^2: 1. Lexical Insertion: melt

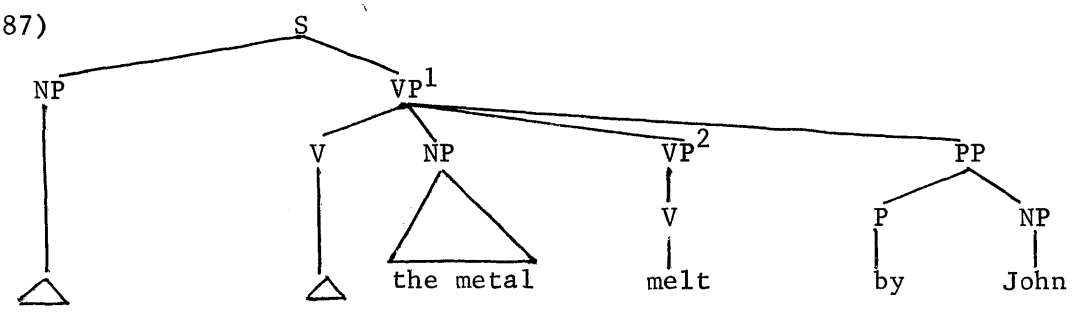
VP^1: 1. Lexical Insertion: cause

2. Object-Preposing

S : 1. Agent-Preposing

Returning now to the stage of the derivation represented by (83), i.e. the stage prior to the application of any rules on the VP^1-cycle, suppose that instead of applying the lexical insertion rule for cause, we were to instead apply Object-Preposing. This would result in a tree of the following form:

(87)



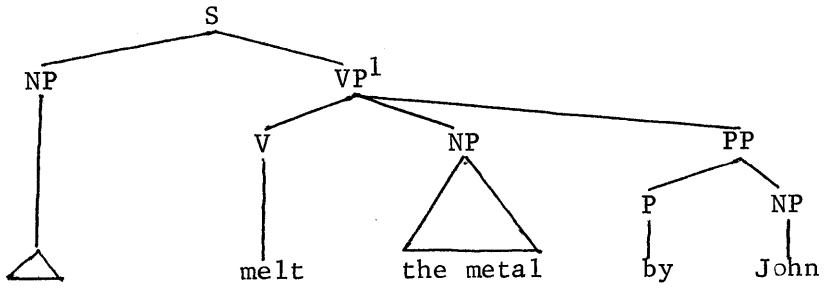
Suppose, furthermore, that we allow the lexical insertion rules, in certain cases, to insert a lexical item which occurs further down in the

tree, rather than inserting a new lexical item. Recalling that the lexical item melt is subcategorized in the following manner:

(88) melt: ___ NP (by NP)

we see immediately that if we remove the Verb melt from VP^2 in (87), the conditions for insertion of melt will be met on the VP^1-cycle, Hence we may re-insert it in the empty V-node, resulting in the following structure:

(89)



Finally, on the S-cycle, Agent-Preposing must apply, moving the NP John into the Subject position. The derivation of sentence (79) a., then, is as follows:

(90) VP^2: 1. Lexical Insertion: melt

VP^1: 1. Object-Preposing

2. Lexical Insertion: melt

S : 1. Agent-Preposing

Comparing (90) with the derivation (86), we see that the only difference is that in the first case we have applied a lexical insertion rule after a structure-preserving rule, whereas in the second case we have applied it before that same rule. The difference between (79) a. (John melted the metal) and (79) b. (John caused the metal to melt) thus turns out to be merely a special case of the general principle which permits lexical insertion rules and structure-preserving rules to apply in any

order with respect to one another.

Suppose, however, that we choose not to re-insert the lexical item melt on the VP^1-cycle in (87). Is there any other lexical item which could be inserted in this context? In fact, there is. Recall that in the analysis of causative Verbs proposed in Chapter II, we argued that causative sentences such as John melted the metal are more closely related to sentences such as John made the metal melt than they are to sentences such as John caused the metal to melt. This observation was correct, and furthermore we are now in a position to explain exactly why it is correct. The difference between make and cause is simply that there is a grammatical relation between make and its surface Object-NP, whereas there is no grammatical relation between cause and its surface Object. To see that this is so, we need only consider a pair of sentences such as the following:

(91) a. John made Bill be examined by the doctor.

b. John made the doctor examine Bill.

These sentences, in contrast to the corresponding pair in (81) with the Verb cause, are clearly not synonymous. This fact can be explained by subcategorizing make in the following manner:

(92) make: ___ NP VP by NP

It follows immediately that in order to generate the sentence John made the metal melt, we must assume a derivation which is precisely parallel to that which we required for the sentence John melted the metal, i.e. we must apply Object-Preposing before the lexical insertion rule for make, on the VP^1-cycle. This derivation would, then, look as follows:

(93) VP^2: 1. Lexical Insertion: melt

VP^1: 1. Object-Preposing

2. Lexical Insertion: make

S : 1. Agent-Preposing

Summarizing briefly, we have the following situation: At the beginning of the VP^1-cycle, after the insertion of intransitive melt in VP^2, we have a structure of the form (83). If we apply the lexical insertion rule for cause, followed by Object-Preposing, we will then derive the sentence John caused the metal to melt, with the NP the metal correctly interpreted as having no grammatical relation to the Verb. If, on the other hand, we apply Object-Preposing first, followed by lexical insertion, then we may either re-insert the Verb melt, in which case we come out with the sentence John melted the metal, containing the "causative" Verb melt, or else we may insert the Verb make, in which case we will get the sentence John made the metal melt. Furthermore, notice that in both cases the NP the metal is correctly interpreted as having a "deep" grammatical relation to the Verb in VP^1.

We see, then, that in the theory proposed here, the relationships between these various "causative" constructions can be accounted for quite simply and naturally, without having to assume any special rules such as Raising, Predicate-Raising, etc. and without the necessity for positing a special level of deep structure. Given the three subcategorization features (82), (88), and (92), a single set of PS rules for English, plus the independently motivated rules of Agent-Preposing and Object-Preposing, the grammar automatically generates the correct surface forms of

these sentences, and, at the same time, accounts correctly for their semantic interpretation.

5.2. Inchoatives

Let us consider next the "inchoative" Verbs discussed in Chapter II. It was argued there, following the earlier analysis of Lakoff (1965), that there is a relationship between the Verbs in the following examples:

(94) a. The metal hardened.

b. The water heated.

and sentences such as the following:

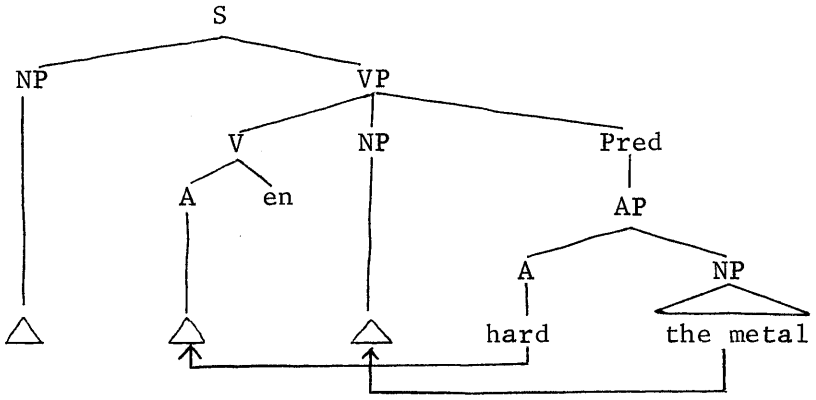
(95) a. The metal became hard.

b. The water got hot.

Lakoff attempted to account for this relationship by deriving both types of sentence from an underlying structure containing an "abstract" Verb BECOME, plus a complement sentence of roughly the form: [NP - be - Adjective]. However, this analysis, like the causative analysis, fails to account for the fact that there is a difference in meaning between the examples of (94) and the examples of (95), which is parallel to the difference between sentences containing causative Verbs and sentences containing the Verb cause, plus an Infinitive complement.

We can now account for this relationship in a somewhat simpler way than before, by deriving both types of sentence from an underlying structure such as the following:

(96)



On the AP-cycle, we insert the lexical item hard, along with its Object-NP the metal, as is indicated in (96). We then go up to the VP-cycle. The Verb harden must be subcategorized as follows:

(97) harden: ___ NP

and since it requires a filled Object-NP, we must apply Object-Preposing first, followed by lexical insertion of the Adjective hard. Furthermore, in this case hard must be taken from the AP node lower down in the tree, because otherwise the VP node in (96) would contain a filled AP node. This in turn, would make it impossible to insert the Verb harden, which does not take a Predicate-AP as one of its complements. On the other hand, if we remove the Predicate-Adjective hard from the AP, then there will be only an Object-NP in the VP, and hence the subcategorization conditions for harden will be met. In addition, we assume that there is a morphological rule which automatically provides the Verb with the affix -en. Finally, on the S-cycle Object-Preposing will apply again, resulting in the correct surface form the metal hardened. The derivation thus looks as follows:

(98) AP: 1. Lexical Insertion: hard

VP: 1. Object-Preposing

2. Lexical Insertion: hard

S : 1. Object-Preposing

Notice that this analysis explains automatically why it would be impossible to have an inchoative Verb, whose Direct Object had no grammatical relation to the Verb. In order to produce such a sentence, we would have to apply lexical insertion for harden before Object-Preposing, on the VP-cycle. However, if we did that, then the VP would still contain a Predicate-AP phrase, at the time of lexical insertion, and hence the conditions for insertion of the Verb harden would not be met. (The same remark also holds in the case of the causative Verbs, discussed in the previous section; thus it is impossible to have a causative Verb, whose Object-NP has no grammatical relation to the Verb.)

Suppose, however, that the V-node in (96) did not dominate Adj. The subcategorization feature for get has the following form:

(99) get: ___ NP [Pred AP]

Hence, we may insert get on the VP-cycle, providing that the Object-NP has already been filled in by Object-Preposing. This would be followed by Object-Preposing again, on the S-cycle, resulting in the correct surface form the metal got hard. Hence, the derivation for sentences such as those in (95) has the following form:

(100) AP: 1. Lexical Insertion: hard

VP: 1. Object-Preposing

2. Lexical Insertion: get

S : 1. Object-Preposing

Note, once again, that in order to make these derivations work without having to assume an ad-hoc rule of Predicate-Raising, it is crucial that the lexical insertion rules be allowed to follow the application of certain syntactic rules.

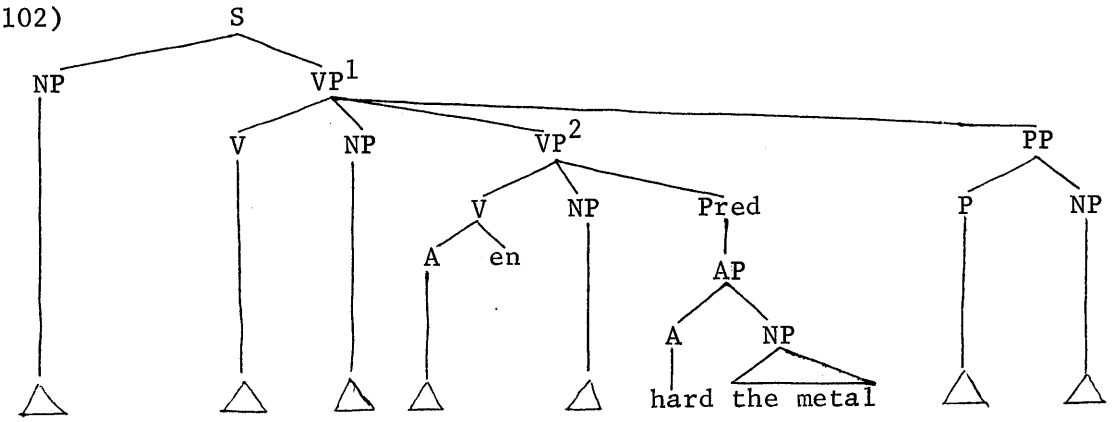
Observe, finally, that "inchoative" Verbs may, in general, be causativized, producing sentences such as the following:

(101) a. John hardened the metal.

b. Bill heated the water.

These sentences can be easily accounted for by assuming a structure of the following sort:

(102)



The derivation is straightforward, and would look as follows:

(103) AP: 1. Lexical Insertion: hard

VP^2: 1. Object-Preposing

2. Lexical Insertion: harden

VP^1: 1. Object-Preposing

2. Lexical Insertion: harden

S : 1. Agent-Preposing

On the other hand, if we were to insert the lexical item become on the VP^2-cycle, and the lexical item make on the VP^1-cycle, we would automatically derive the sentence:

(104) John made the metal become hard.

Finally, if we applied the lexical insertion rule for cause on the VP^1-cycle, followed by Object-Preposing, we would get a sentence such as the following:

(105) John caused the metal to become hard.

with the correct interpretation of "indirect causation."

5.3. Predicate-VP's

We turn next to a reconsideration of the data discussed in Chapter III. Let us begin by comparing the interpretation of two sentences such as the following:

(106) a. John got to be examined by the doctor.

b. John got examined by the doctor.

Example (106) a. is an instance of an Infinitive construction of the type discussed in Chapter IV, while example (106) b. is a "pseudo-passive" form of the type discussed in Section 5.3. of Chapter III. As has been noted several times, the interpretation of these two sentences is quite different. Thus in the first example, John is semantically a receiver, or beneficiary, while in the second example there is no such implication, and the sentence means simply "John was examined by the doctor." The Verb have, it will be recalled, exhibits similar contrasts of this type:

(107) a. John had Bill be examined by the doctor.

b. John had Bill examined by the doctor.

The first example clearly implies that John exerted pressure on Bill to have himself examined by the doctor, whereas the second merely implies that John arranged for Bill to be examined by the doctor.

Looked at in the light of the theory proposed in this chapter, it is clear that the difference between these pairs is simply another instance where the ordering of the lexical insertion rules with the structure-preserving rules plays a crucial role in the interpretation of sentences. The point is that in the a.-examples of (106) and (107) the surface Subject and Object, respectively, have a grammatical relation to the Verb in the matrix VP, whereas in the b.-examples, there is no grammatical relation between the two. Thus these pairs are quite analagous to the difference between force and believe, appear and condescend, and so forth.

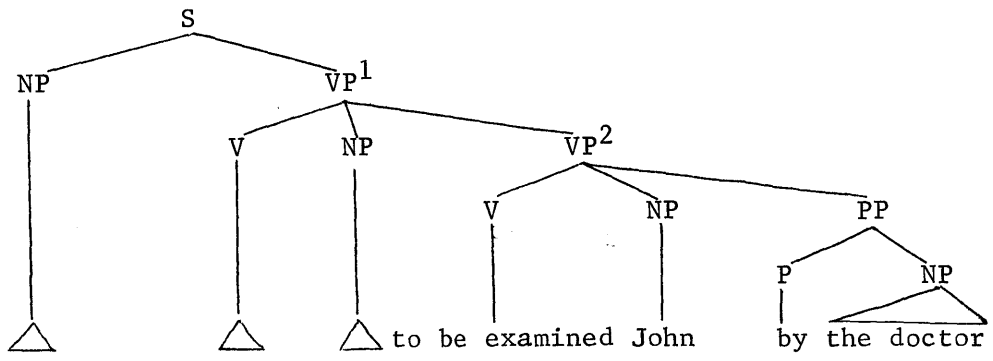
In order to account correctly for the interpretation and surface form of the pairs containing get, we need only assume that get is assigned two different subcategorization features of the following form:[6]

(108) a. get_1: ___ NP to VP

b. get_2: ___ NP EN VP

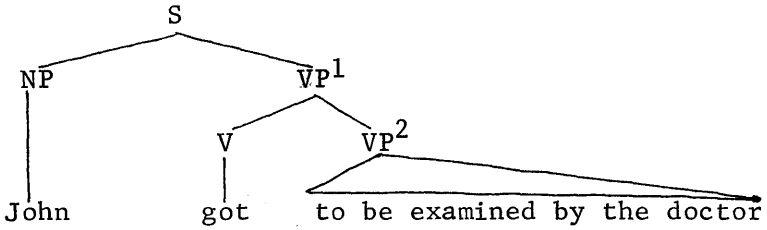
Suppose, first, that we have a structure of the following form:

(109)



Ignoring the intermediate cycle that is necessary to account for the passive complement to be examined, the derivation would proceed in the following manner. On the VP^2-cycle, we insert the lexical item examine, as is indicated in (109). We next move up to the VP^1-cycle. Since the complement VP has the complementizer to, we must insert get_1, which also requires a filled Object-NP. Hence, Object-Preposing must, in this case, apply first, followed by lexical insertion of get. We then go up to the S-cycle, where Object-Preposing is again applicable, so that the NP John is automatically moved into its surface position as Subject of the sentence. The result is the correct surface structure (110):

(110)



and the derivation has the following form:

(111) VP^2: 1. Lexical Insertion: examine

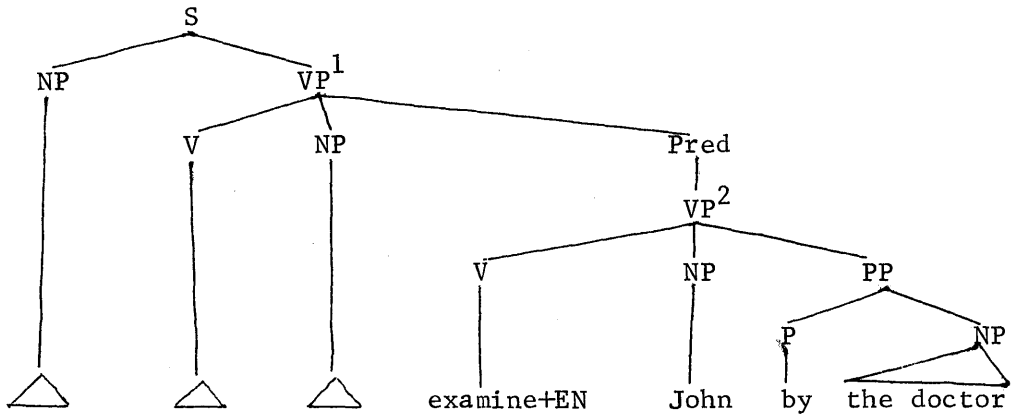
VP^1: 1. Object-Preposing

2. Lexical Insertion: get

S : 1. Object-Preposing

Consider next what happens if we start out with a structure of the following sort:

(112)



On the VP^2-cycle, the only relevant operation is the lexical insertion rule for examine. Moving up to the VP^1-cycle, we see that the complement is a Predicate-VP with the complementizer -EN, and therefore, we can insert get_2, but not get_1. Furthermore, get_2 can only be inserted, if the Object-NP is empty. In this case, therefore, lexical insertion must precede Object-Preposing. Hence, we will have the following derivation:

(113) VP^2: 1. Lexical Insertion: examine

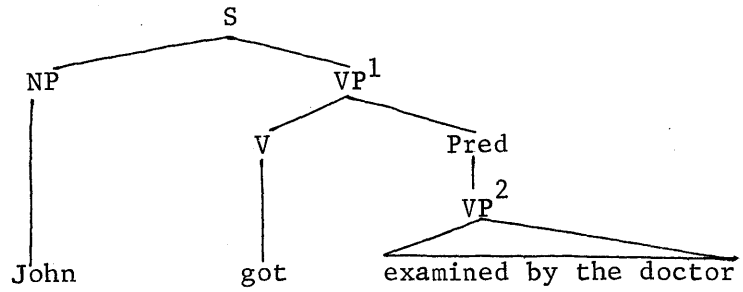
VP^1: 1. Lexical Insertion: get

2. Object-Preposing

S : 1. Object-Preposing

the result of which is the correct surface form (114):

(114)



Comparing the two derivations (111) and (113), we see that once again,

the only difference is that in one case lexical insertion must follow Object-Preposing, whereas in the other case, it must precede.

Obviously, the difference between the sentences in (107) can be accounted for in an entirely analagous fashion. Thus the Verb have, according to the analysis presented in Chapter II, must have two sub-categorization conditions of the following sort:

(115) a. $\underline{\text{have}}_1$: ___ NP to VP by NP

b. $\underline{\text{have}}_2$: ___ NP EN VP by NP

Furthermore, in order to insert the lexical item $\underline{\text{have}}_1$, it will be necessary to apply the relevant preposing rule before lexical insertion, whereas in order to generate sentences containing $\underline{\text{have}}_2$, it will be necessary to apply some structure-preserving rule after the lexical insertion rule. The derivations of sentences (107) a. and b. will therefore be almost identical in form to (111) and (113), the main difference being that on the final S-cycle, we must apply Agent-Preposing, instead of Object-Preposing.

We see, then, that the difference between the Predicate-VP complements discussed in Chapter III and the Infinitive complements (aside from the complements to Verbs such as believe and appear) discussed in Chapter IV turns out to be merely another instance of a far more general principle of grammar, namely, that syntactic rules and lexical insertion rules may apply freely on each syntactic cycle. The behavior of these complements is thus predictable, given a theory of grammar in which there is no level of deep structure, and in which the rules which determine surface syntactic form and semantic interpretation proceed side by side in a single unified

process.

5.4. For-To Complements

At the end of Chapter III, we proposed the following set of base rules for English:

(116) 1. S ⟶ NP Aux VP

2. Aux ⟶ { Tns (M) / (for)-to / POSS-ing } (have+EN)

3. VP ⟶ V (PP) (NP) (Pred) (PP)* ...

4. Pred ⟶ { NP / AP / VP }

These rules account correctly for the fact that Predicate-VP's, in contrast to Infinitives, for-to complements, and that-clauses may never occur with the Perfective element (have+EN), as well as for the fact that the elements Tns (M), for-to, and POSS-ing, are mutually exclusive.

Notice, however, that if the arguments of the last chapter are correct, and Infinitives are to be analyzed as VP's, then these base rules cannot be correct, since the elements of the Auxiliary are generated outside the VP by the rules in (116). These results thus strongly support the analysis proposed in Chomsky (1970), according to which the elements of the Auxiliary are generated as complements to the node VP, beneath a higher node $\overline{V}$. If we extend this analysis to the categories NP and AP, as well, along the lines suggested by Chomsky, then all of the major phrase-node categories $\overline{\overline{V}}$, $\overline{\overline{A}}$, $\overline{\overline{N}}$ can be expended in accordance with a universal schema of the following form:

(117) 1. $\bar{\bar{X}} \longrightarrow \left[\text{Spec}, \bar{X}\right]$ $\quad\quad \bar{X}$

2. $\bar{X} \longrightarrow X$ $\quad\quad$ Comp

where X may be any of the lexical categories V, A, or N (and probably P, as well, cf. Emonds (1969), Jackendoff (1972)). The "Specifier" for $\bar{\bar{V}}$ then contains the elements of the Auxiliary; the Specifier for $\bar{\bar{A}}$ contains the degree element so, too, as...as, comparatives, superlatives, etc; and the Specifier for $\bar{\bar{N}}$ contains the determiner system of Articles, Quantifiers, and so forth.[7]

Furthermore, the considerations of the preceeding section strongly suggest that the element Pred which dominates VP in the PS rules of (116), above, is simply an ad-hoc notation for indicating certain special properties of these VP's, and that what I have been calling "Predicate-VP's" are in fact nothing more than $\bar{\bar{V}}$'s with the special complementizing morphemes -EN, -ing, and -$\emptyset$.[8] I suggest, therefore, that the base rules for English be revised in the following manner:

(118) 1. S $\longrightarrow$ COMP $\quad$ NP $\quad$ VP

2. VP $\longrightarrow$ ($\left\{\begin{array}{l}\text{Tns (M)}\\ \text{(for)-to}\\ \text{POSS-ing}\\ \text{-EN}\\ \text{-ing}\end{array}\right\}$ $\quad$ (have+EN)) $\quad\quad \bar{V}$

3. $\bar{V} \longrightarrow$ V $\quad$ (PP) $\quad$ (NP) $\quad$ (VP) $\quad$ (PP)* $\quad$ (VP) $\quad$ (PP)* $\quad$ ($\left\{\begin{array}{l}\text{VP}\\ \text{S}\end{array}\right\}$)

In order to complicate the terminology as little as possible, I have replaced Chomsky's term "$\bar{\bar{X}}$" with the more familiar term "XP", retaining $\bar{X}$ for what is usually indicated by the term "XP". Following Chomsky (1972) and Bresnan (1970), I assume that the node COMP contains the "sentence introducer" that, as well as an empty NP, marked $\left[+\text{WH}\right]$, into which

questioned elements are moved by the rule of WH-Movement. If we assume that Verbs are introduced into the node V in their Infinitival form, then the fact that all of the elements of the Specifier of VP are optional will automatically account for the form of Predicate-VP complements with the "-Ø" morpheme (e.g. I made John be quiet). Finally, notice that the fact that Predicate-VP complements may never occur with the Perfective element (have+EN) is not really a problem, since many Verbs which take Infinitive complements or POSS-ing complements must also be specified as never co-occurring with this element. Cf., for example, *I forced Bill to have taken out the garbage, *I tried to have gotten there on time, *I persuaded John into having gone, and so on. In the theory proposed here, it would in any case be natural to expect such restrictions to be stated in the lexical entries for Verbs, since they are, for the most part, clearly semantic.[9]

We are now in a position to take a second look at the for-to complements discussed in Chapter IV, and to suggest an analysis which is far more satisfactory than the one proposed earlier. As we have already noted, Verbs which take "for-to" complements, so-called, have the property from the point of view of standard analyses such as Rosenbaum's, that the rule of Equi-NP Deletion (or, in more recent formulations, (CCSD) is always optional. Thus we have pairs of sentences such as the following:

(119) a. I would like for you to leave.

b. I would like to leave.

(120) a. It bothers Mary for Bill to be talked about.

b. It bothers Mary to be talked about.

(121) a. I screamed to John for Bill to leave.

b. I screamed to John to leave.

Notice, however, that the second example in each of these pairs is exactly like an Infinitival VP complement, and could, in fact, be accounted for in terms of the analysis proposed in Chapter IV with no difficulty at all. Furthermore, the general approach to subcategorization developed earlier suggests that the most natural way of accounting for alternations such as those in (119)-(121) would be in terms of a lexical subcategorization feature of the following sort:

(122) like: ___ NP (for NP) to $\overline{V}$

Verbs like force would then differ from Verbs such as like merely in the fact that they do not have the option of choosing a for-phrase:

(123) force: ___ NP to $\overline{V}$ by NP

Finally, recall that a Verb such as scream, when it does not have a to-phrase, requires that the element for NP be present (cf. Chapter IV, Section 4.2.2.), a fact which could be most naturally accounted for by means of a subcategorization feature such as the following:

(124) scream: ___ for NP to $\overline{V}$ by NP

In other words, there seems to be absolutely no reason for supposing that the PP for NP which occurs in "for-to" complements behaves any differently from other PP's with respect to the subcategorization possibilities allowed by the conventions proposed in Chapter II. Thus, just as Verbs may have obligatory Agent-phrases, take optional Agent-phrases, or require that there be no Agent-phrase, so it seems that Verbs may have an optional for-phrase, in the position before an Infinitive

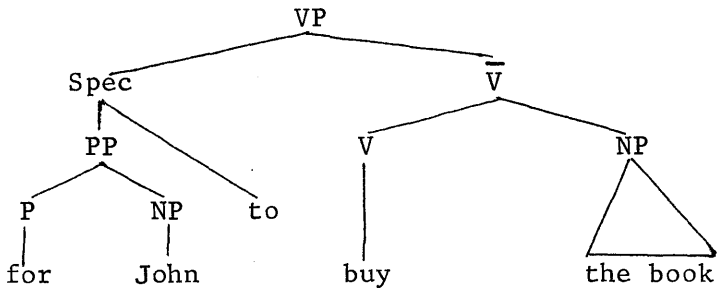
complement. However, this entirely natural approach to Infinitives and for-to complements was made impossible by the assumption, retained from the standard theory of Infinitive complementation, that all verbal complements in English are, in underlying form, just like sentential that-complements.

Observe, however, that given the theory outlined in this chapter, plus the revised base rules in (118), we can now remedy this defect. Suppose that we simply allow as one of the elements in the "Specifier" of VP a PP with the head Preposition for, so that one of the expansions of the node VP would be the following:

(125) VP ⟶ (for NP) to (have +EN) $\overline{V}$

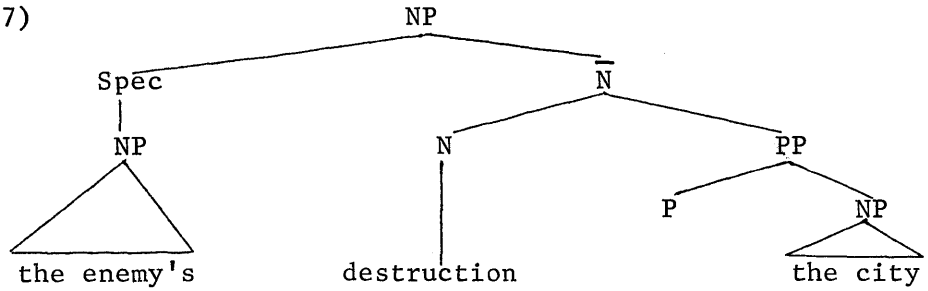
We will now have a PS representation such as the following for a "for-to" complement such as for John to buy the book:

(126)



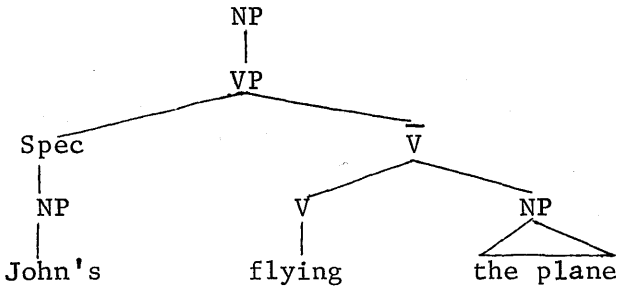
Notice that this proposal makes the structure of a "for-to" complement exactly parallel to that of a derived nominal form such as the enemy's destruction of the city:

(127)



Furthermore, notice that we can immediately extend this analysis to account for the constituent structure of Gerundive nominals, as well, simply by allowing either a NP or a PP in the Specifier of VP. Thus the structure of the nominal John's flying the plane would have the following form:

(128)



In fact, there is some support for this proposal, for, as we noted in Chapter IV (cf. footnote , Section 4.3.0.), there are Gerundive complements which behave just like "true" Infinitive complements in that their Subject is obligatorily deleted, while in other cases the deletion is optional. (Cf., for example, I forced Bill into buying the book, but *I forced Bill into John's buying the book, which is exactly parallel to I forced Bill to buy the book and *I forced Bill for John to buy the book.) Finally, notice that since the distribution of the elements for-to and POSS-ing is completely predictable in terms of whether or not the VP is immediately dominated by NP, we may omit reference to these elements entirely in the expansion rule for VP, and simply allow the Specifier of VP to generate either an NP or a PP. We will thus have the following PS rule for VP:

(129) VP ({ Tns (M) / PP / NP / -EN / -ing }) (have+EN) $\overline{V}$

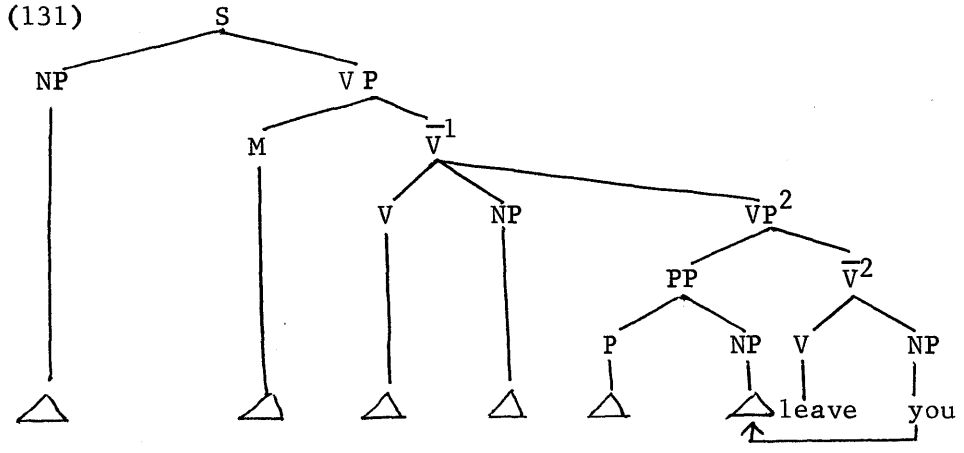
This makes the structure of for-to complements (including "true" Infinitives) and Gerundive nominals, as well as derived nominals, precisely parallel in structure. At the same time, since the elements PP and NP are mutually exclusive with respect to the special complementizers -EN and -ing, we account automatically for the fact that "Predicate-VP's" never have an independent Subject-NP.

Consider next the interpretation of sentences containing for-to complements. In the theory proposed here, it is entirely natural to suppose that all of the phrase-nodes S, VP, $\overline{V}$, NP, $\overline{N}$, AP, $\overline{A}$, etc. are cyclic nodes. Let us see, therefore, how a pair of sentences such as (119) a. and b. would be derived, under the assumption that both $\overline{V}$ and VP are cyclic nodes. As we have already noted, the Verb like must be subcategorized as follows:

(130) like: ___ NP (for NP) to $\overline{V}$

Suppose, furthermore, that we start out with a structure of the following form:

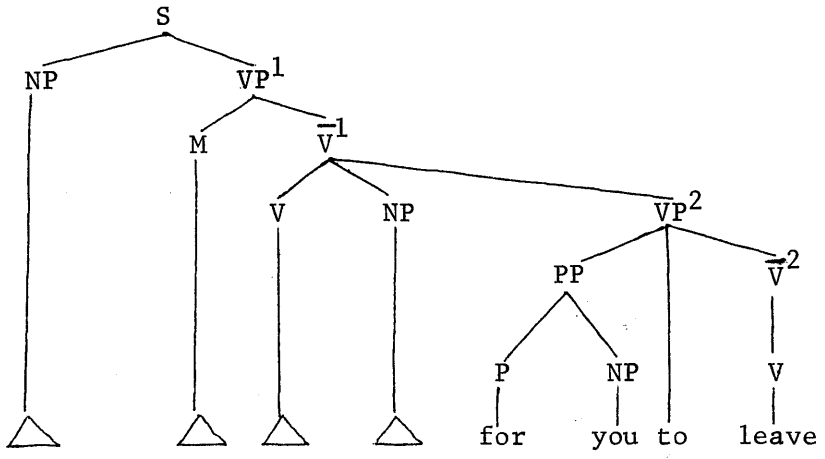
(131)



On the $\overline{V}^2$-cycle, we insert the lexical item leave, along with its Object-

NP you. (Actually, of course, there would be a separate cycle on the Object-NP. However, in this case, that fact is not relevant, so that we may omit reference to NP-cycles for the sake of simplicity.) No other rules are applicable, and we therefore go up to the VP^2-cycle. We see immediately that Object-Preposing is applicable on this cycle, and we therefore move the NP you into the empty NP in the Specifier of VP^2. No other rules are applicable, and so we may go on to the $\bar{V}^1$-cycle. At this point, no structure-preserving rules are applicable. In particular, notice that there is no rule which could move the Subject of the Infinitive out of VP^2. Observe, however, that since VP^2 is not dominated by NP, we must insert the elements for and to in the Specifier of VP^2. We now have a structure of the following form:

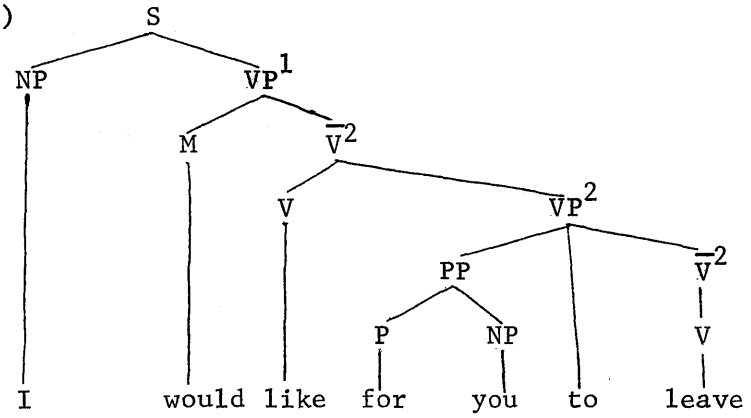
(132)



after the application of lexical insertion to the Object-NP in $\bar{V}^1$. Checking the subcategorization feature for like, we see that all the conditions are met, i.e. we have a filled Object-NP, a filled for-phrase and a $\bar{V}$ with the Infinitive marker to. Hence, we may insert like, thus completing the $\bar{V}^1$-cycle. On the VP^1-cycle, nothing happens, except that

the Modal would is inserted. Finally, on the S-cycle, Object-Preposing is applicable once again, and the NP me is therefore moved into the Subject position. The result of applying these rules in the manner described is the correct surface form (133):

(133)



while the derivation looks as follows:

(134) $\bar{V}^2$: 1. Lexical Insertion: leave

VP^2: 1. Object-Preposing

VP^1: 1. Complementizer Insertion: for-to

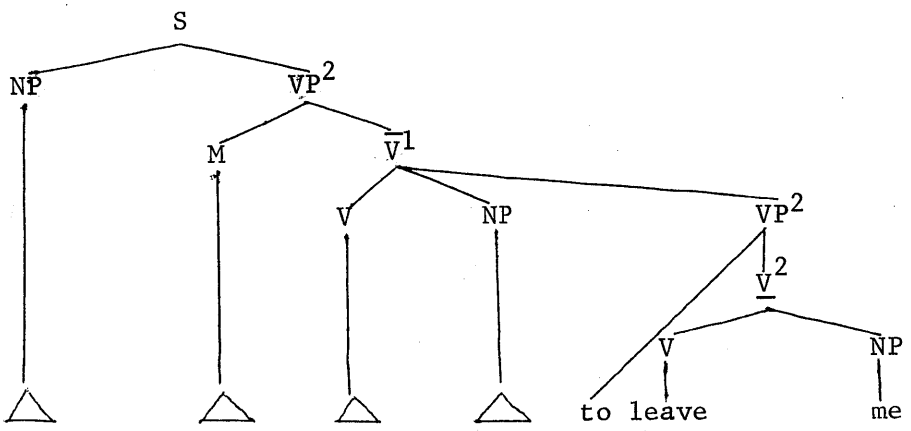
2. Lexical Insertion: like

$\bar{V}^1$: 1. Lexical Insertion: would

S : 1. Object-Preposing

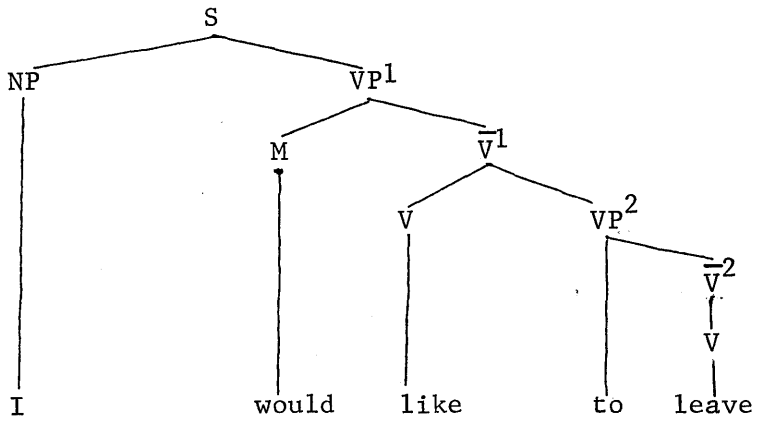
Consider, in contrast, what happens if we start out with a structure which is identical to (131), except that there is no PP in the Specifier of VP^2:

(135)



On the $\bar{V}^2$-cycle, we insert the lexical item leave, exactly as we did in the previous derivation. We then move up to the VP^2-cycle. However, in this case the VP^2-cycle is vacuous, since there are no rules that can apply on it, and so we go right on to the $\underline{V}^1$-cycle. The first rule to apply on this cycle is Complementizer-Insertion, which inserts the morpheme to into the Specifier of VP^2. Now observe that Object-Preposing is applicable; in fact, we must apply Object-Preposing, in order to be able to apply the lexical insertion rule for like, since it requires a filled Object-NP. Hence, we must apply Object-Preposing first on the $\bar{V}^1$-cycle, followed by lexical insertion of the Verb like. Notice, however, that at this point, we could instead apply the lexical insertion rule for Verbs such as seem or appear, both of which require an empty Object-NP, provided that the Specifier of VP^2 also contains the Perfective element have+EN. In that case, we would come out with a surface sentence such as Bill seems to have left. Continuing with the derivation of (119) b., however, we next go up to the VP^1-cycle, and insert the Modal would, after which we must apply Object-Preposing on the S-cycle. The result of these operations is the correctly interpreted surface structure (136):

(136)



The derivation looks as follows:

(137) $\underline{V}^2$: 1. Lexical Insertion: leave

VP^2: (vacuous)

$\bar{V}^1$: 1. Complementizer Insertion: to

2. Object-Preposing

3. Lexical Insertion: like

VP^1: 1. Lexical Insertion: would

S : 1. Object-Preposing

Obviously, derivations analogous to these may be used to account for all instances of "true" for-to constructions. Hence, we may simply dispense with the proposal of the last chapter, which attempted, mistakenly, to treat for-to complements as though they were full sentences, similar to that-clauses. Note, again, that it is crucial that (1) the structure-preserving rules and the lexical insertion rules be applied on each syntactic cycle, and (2) that the lexical insertion rules be allowed to apply after the structure-preserving rules within the same cycle.

Let us consider next the derivation of a sentence such as John forced Bill into buying the book. The subcategorization feature for force must,

in this case, have the following form:

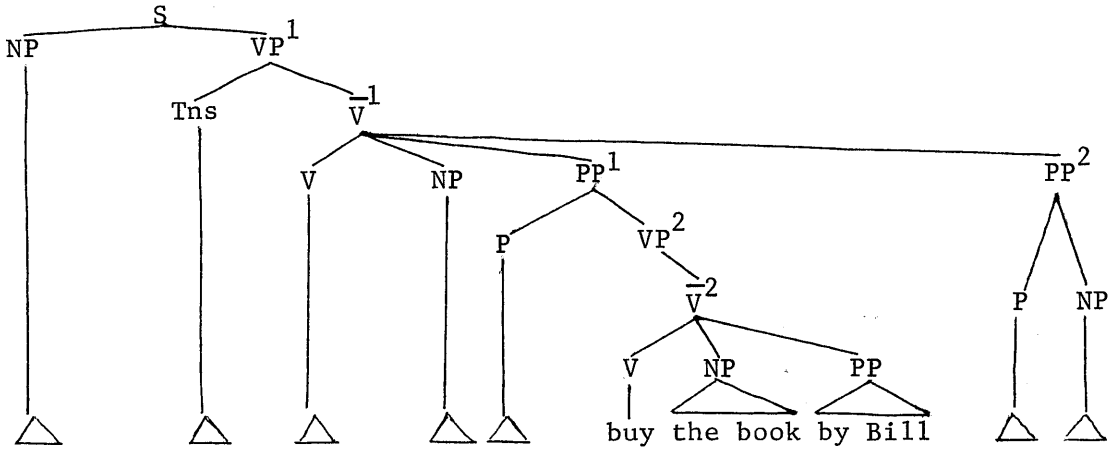
(138) force: ___ NP into [NP ing $\bar{V}$] by NP

Notice that we could simplify this representation somewhat, if we allowed Prepositions to subcategorize not only NP's, but VP's as well. Since Infinitives never appear in surface structure after Prepositions anyway, we can specify that the POSS-ing complementizer is inserted into the Specifier of any VP which is immediately dominated by either NP or PP. Given this slight modification in the PS expansion rules for PP, we can now write the subcategorization feature for force in the following manner:

(139) force: ___ NP into ing $\bar{V}$ by NP

We start out with a structure of the following form:

(140)

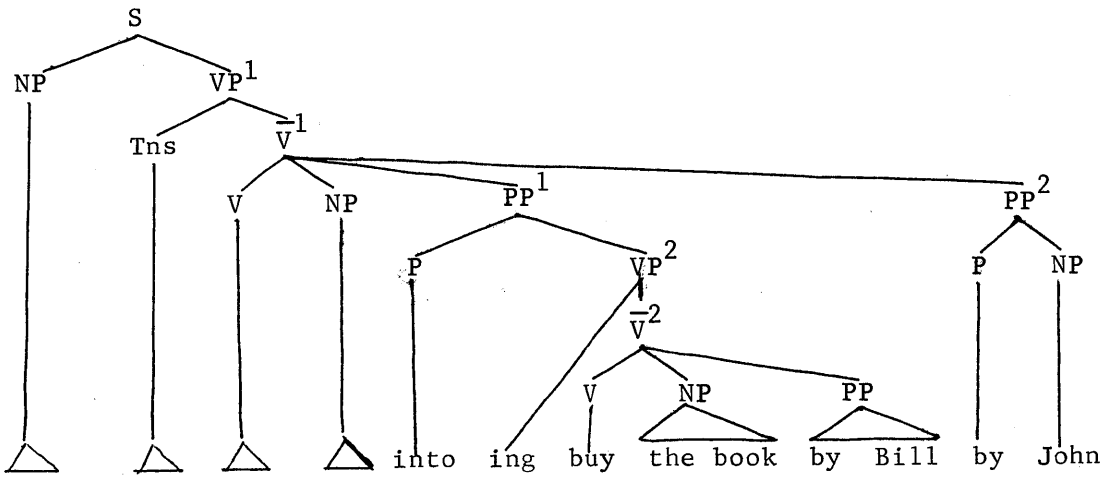


We first apply the lexical insertion rule for buy on the $\bar{V}^2$-cycle, as is indicated in (140), after which we move up to the VP^2. In this case, the VP^2-cycle is vacuous. Notice, however, that if we had generated a Subject-NP in VP^2, then Agent-Preposing would have been applicable, and the result would have been a POSS-ing complement (after the application of complementizer insertion on the next higher cycle) of the form: John's buying the

book, as in, say, the sentence I disapprove of John's buying the book.

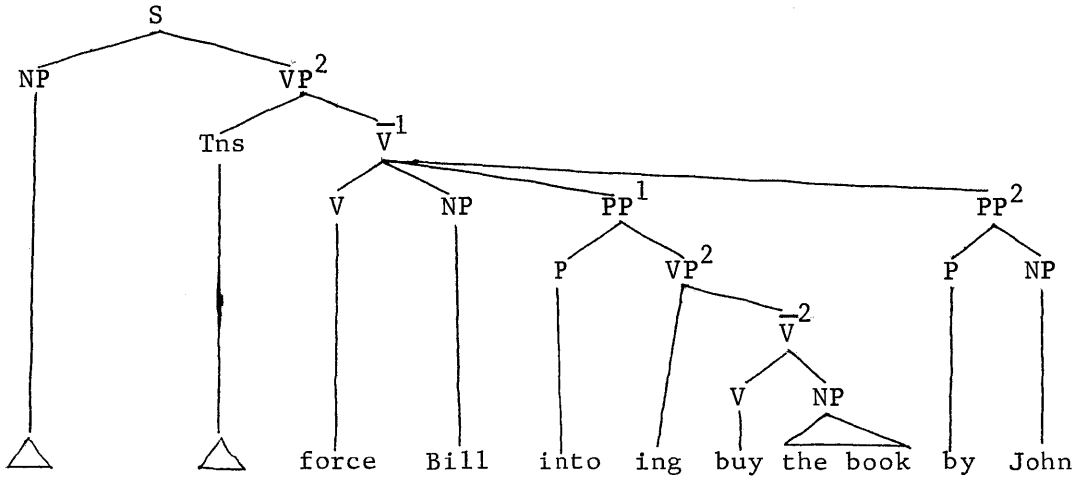
Continuing with the derivation in (140), we next go to the PP^1-cycle, at which point we insert the complementizer -ing in the Specifier of VP^2, since it is dominated by PP, as well as inserting the Preposition into. We now have a structure of the following sort:

(141)



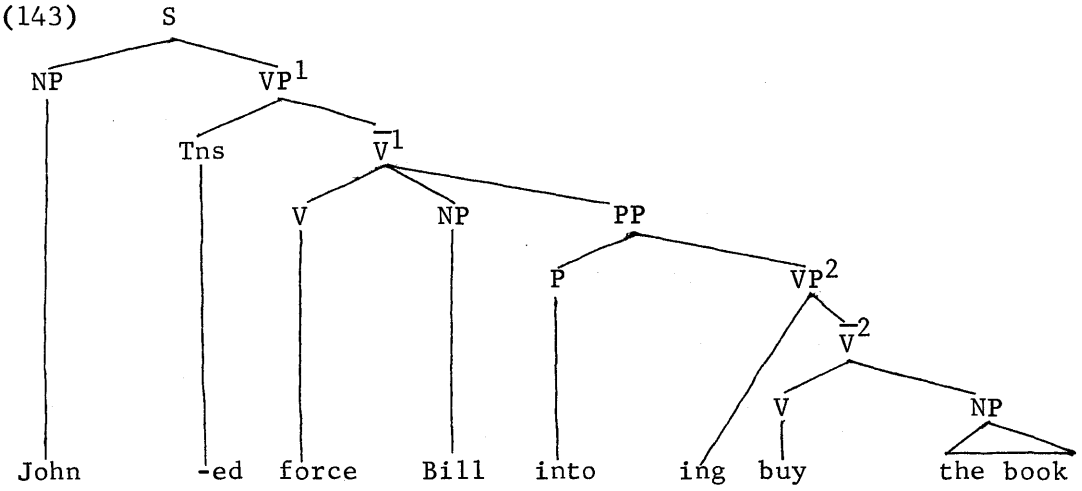
Moving up to the $\bar{V}^1$-cycle, we see immediately that the conditions for insertion of force are met (after insertion of the by-phrase in PP^2), except for the fact that the Object-NP is unfilled. However, Agent-Preposing is applicable, as long as we modify the statement of the rule in a trivial manner, so as to allow a Preposition to intervene between the 'Subject'-NP and the Verb. Given this slight modification in the rule of Agent-Preposing, we are free to apply it before lexical insertion, after which the subcategorization conditions for force will be met. The result of applying Agent-Preposing and the lexical insertion rule for force will be a tree of the following form:

(142)



Finally, on the VP^1-cycle, we insert a tense morpheme, say 'Past', after which Agent-Preposing applies on the S-cycle, giving us the correct surface form (143):

(143)



The derivation thus looks as follows:

(144) $\bar{V}^2$: 1. Lexical Insertion: <u>buy</u>

VP^2 : (vacuous)

PP^1 : 1. Lexical Insertion: <u>into</u>

2. Complementizer Insertion: -<u>ing</u>

$\bar{V}^1$: 1. Agent-Preposing

2. Lexical Insertion: force

VP^1: 1. Lexical Insertion: 'Past'

S : 1. Agent-Preposing

Obviously, the derivation of sentences such as I am counting on your being given a ride will be similar, except that Agent-Preposing must be applied on the VP^2-cycle, rather than on the $\bar{V}^1$-cycle, while the derivation of the sentence I am counting on being given a ride will be virtually identical to that in (144). Thus, in order to account for these two sentences, we must simply allow for an optional 'Subject'-NP in the VP complement to the Verb count (in this sense):

(145) count: ___ NP on (NP) ing $\bar{V}$

Notice, incidentally, that although we have the sentence I am counting on you to give me a ride, containing an on-phrase and an Infinitival VP complement, we do not have a sentence of the form *I am counting (on) to be given a ride. This is automatically accounted for, if we assign count another feature of the following form:

(146) count: ___ NP on NP to $\bar{V}$

A Verb such as presume, on the other hand, has an optional PP:

(147) presume: ___ NP (upon NP) to $\bar{V}$

which automatically accounts for the fact that we get both Bill presumes to be an expert on these matters and Bill presumed upon me to give him a ride, with the correspondingly different interpretations.

All of these considerations seem to fit together in a rather natural way, greatly simplifying the analyses of the previous chapter, and thus lend

further support to the theory proposed in this chapter.

5.5. Tough-Movement

We are now in a position to analyze the classic contrasts between John is eager to please, John is likely to please, and John is easy to please. What I wish to show is that the correct surface form and the proper interpretation of each of these examples can be accounted for within the theory proposed here, without the necessity for a level of deep structure, and by means of rules which are all independently motivated.

Let us consider first the case of eager. This Adjective clearly behaves exactly like Verbs such as condescend, try, refuse, and so forth, as shown by the non-synonymity of pairs such as the following:

(148) a. John is eager to be examined by the doctor.

b. The doctor is eager to examine John.

Furthermore, notice that eager may also take a for-to complement, just like Verbs such as like, wish, and so on:

(149) a. John is eager for Mary to be examined by the doctor.

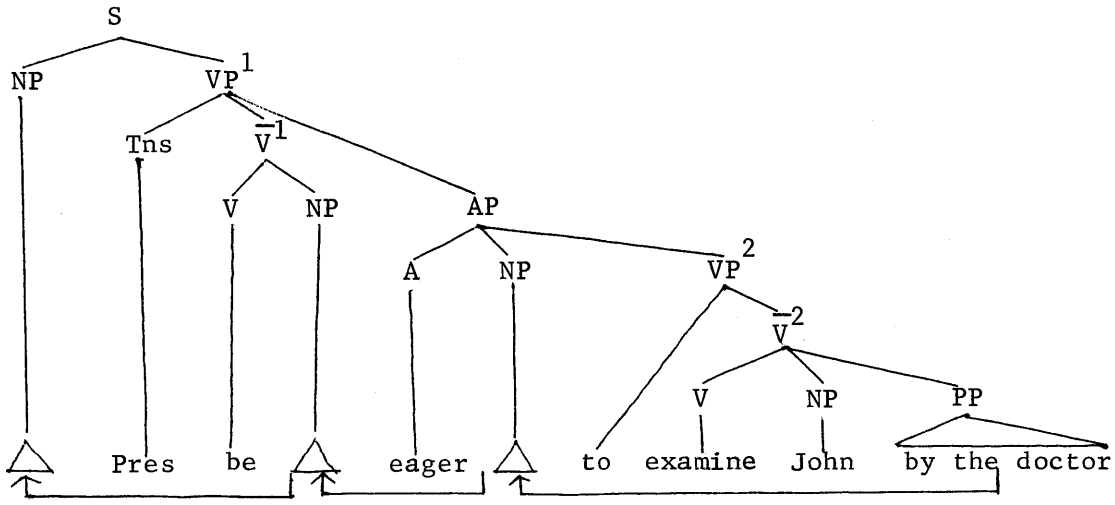
b. John is eager for the doctor to examine Mary.

In order to account for these facts, we need only subcategorize eager in the following manner:

(150) eager: ___ NP (for NP) $\overline{V}$

An example such as (148) b., will then be derived automatically from a structure of the following sort:

(151)



On the $\bar{V}^2$-cycle, we insert the lexical item examine, along with its Object- and Agent-phrase. The VP^2-cycle is vacuous, in this case, and we therefore go up to the AP-cycle. On this cycle, we insert the complementizer to, after which we apply Agent-Preposing and the lexical insertion rule for eager, in that order. We next go to the $\bar{V}^1$-cycle, and apply Object-Preposing. On the VP^2-cycle, the tense morpheme is inserted, and, finally, on the S-cycle the NP the doctor is moved into its surface position as Subject of the sentence. The derivation is thus as follows:

(152) $\bar{V}^2$: 1. Lexical Insertion: examine

VP^2: (vacuous)

AP : 1. Complementizer Insertion: to

2. Agent-Preposing

3. Lexical Insertion: eager

$\bar{V}^1$: 1. Object-Preposing

2. Lexical Insertion: be

VP^1: 1. Lexical Insertion: 'Present'

S : 1. Object-Preposing

A sentence containing a <u>for-to</u> complement, e.g. example (149) b., will be derived in a similar manner, except that in such cases the VP^2 complement will contain a PP in its Specifier, so that Agent-Preposing will apply on the VP^2-cycle, rather than on the AP-cycle.

Consider next the Adjective <u>likely</u>. Adjectives of this sort behave like intransitive Verbs such as <u>appear</u>, <u>seem</u>, etc., as is shown by the fact that pairs analogous to (148) a. and b. are synonymous:

(153) a. John is likely to be examined by the doctor.

b. The doctor is likely to examine John.

Furthermore, <u>likely</u> never takes a <u>for-to</u> complement:

(154) a. *It is likely for John to be examined by the doctor.

b. *It is likely for the doctor to examine John.

Adjectives of this type must therefore be subcategorized in the following manner:

(155) <u>likely</u>: ___ NP to $\overline{V}$

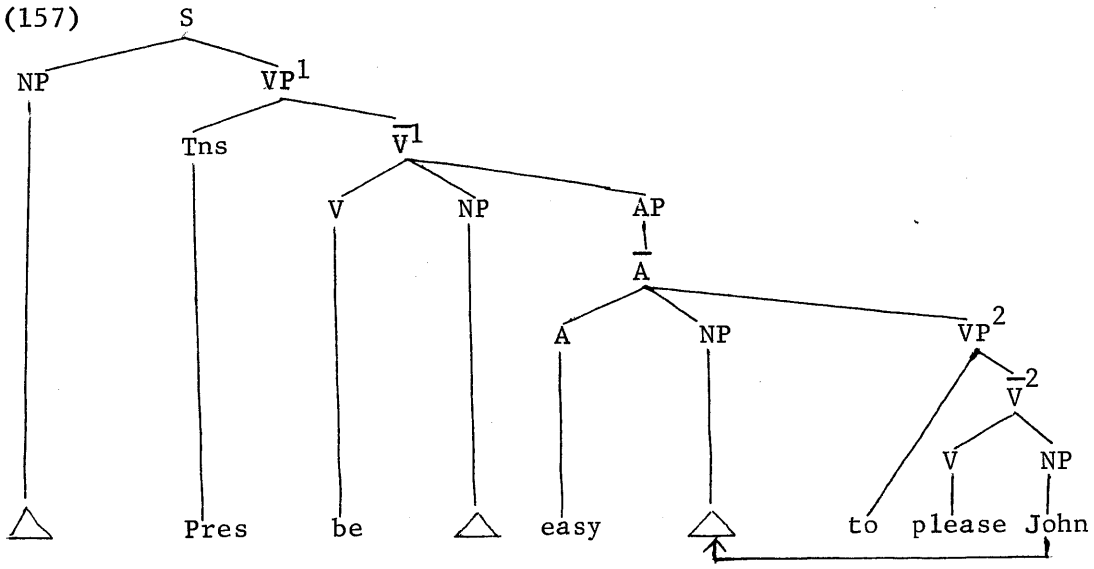
Example (153) b. can now be derived from a structure identical to that in (151). In fact, the derivation is exactly parallel to that in (152), except that on the AP-cycle we must apply the lexical insertion rule for <u>likely</u> first, followed by Agent-Preposing, thus accounting correctly for the interpretation. Otherwise the derivations are identical.

Consider, finally, the example <u>John is easy to please</u>. It is well known that the surface Subject of sentences of this kind bears a grammatical relation to the Verb in the Infinitive complement, as is made apparent by the existence of variants of the form:

(156) It is easy to please John.

Let us assume that sentences of this kind derive from a structure of the following sort:

(157)



Clearly, what we need in order to derive the correct surface form is a rule which moves the Object-NP John in $\bar{V}^2$ into the Object position in AP. But now recall that we in fact already have just such a rule, namely, the rule of Object-Movement (cf. Chapter IV, Section 3.2.), which accounts for the interpretation of the Object-NP in examples such as the following:

(158) a. John gave Mary a book to read.

b. I left something for you to eat.

c. I used the knife to cut the salami with.

d. John bought Mary a painting to look at.

Thus, in order to account for examples of the easy to please type, we do not even need to add any new rules to the grammar. Further support for the view that the same rule is involved in both the examples of (158) and the easy to please sentences is provided by the fact that Passive comple-

ments are excluded in both constructions:

(159) a. *John is easy to be pleased.

b. *I bought Mary a book to be read.

c. *I used the knife for the salami to be cut with.

d. *John bought Mary a painting to be looked at.

The parallelism between the two types of sentences is brought out even more clearly by a consideration of sentences such as the following:

(160) a. It is easy for Mary to please John.

b. John is easy for Mary to please.

Here, not only is the Object-NP moved out of the Infinitive complement, but also the Agent-phrase Mary is moved out into a for-phrase, leaving only the bare Infinitival Verb to please. Examples of this type are thus entirely parallel in structure to examples such as John bought a book for Mary to read, in which both the Agent and the Object of read are raised out of the Infinitive complement, leaving only the Verb to read.

On the surface, it looks as though the complements in (160) might equally well be analyzed as for-to complements. However, as has been noted by Bresnan (1971) and Chomsky (1972), there are a number of facts which show that the for-phrase in these examples must be subcategorized by the Adjective easy. For one thing observe that only the Infinitival part of the complement may be preposed:

(161) a. To please John is easy for Mary.

b. *For Mary to please John is easy.

Furthermore, there are selectional restrictions imposed on the Object of for:

(162) a. *It is easy for there to be a man on the moon.

b. It is necessary for there to be a man on the moon.

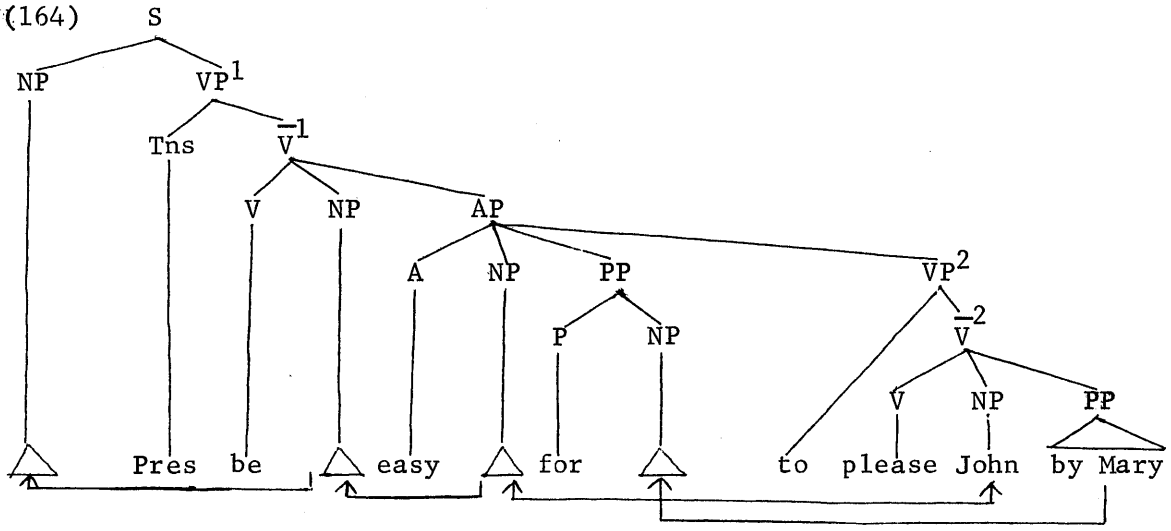
contrary to what we would expect, if the for-phrase was in fact part of the VP complement. Finally, note that there are other predicates, e.g. pleasant, a waste of time, etc. (cf. Chomsky (1972), pp. 8-10), which may take the complementizer for, in addition to the for-phrase which is subcategorized by the predicate in the main clause:

(163) a. It is pleasant for the rich for the poor to do the hard work.

b. It is a waste of time for us for them to teach us Latin.

These facts are easily incorporated into our analysis, if we assume structures of the following form:

(164)



Then, on the AP-cycle, not only will Object-Movement insert the NP John into the Object position after easy, but also Agent-Preposing will automatically move the NP Mary into the for-phrase. Notice, also, that the lexical insertion rule for easy must apply after Agent-Preposing, since, as was shown above, the NP in the for-phrase has a grammatical relation

to the Adjective. On the other hand, it must apply before Object-Movement because there are no selectional restriction between easy and its derived Object-NP. We must therefore have a derivation of the following form:

(165) $\bar{V}^2$: 1. Lexical Insertion: please

VP^2: (vacuous)

AP : 1. Agent-Preposing

2. Lexical Insertion: easy

3. Object-Movement

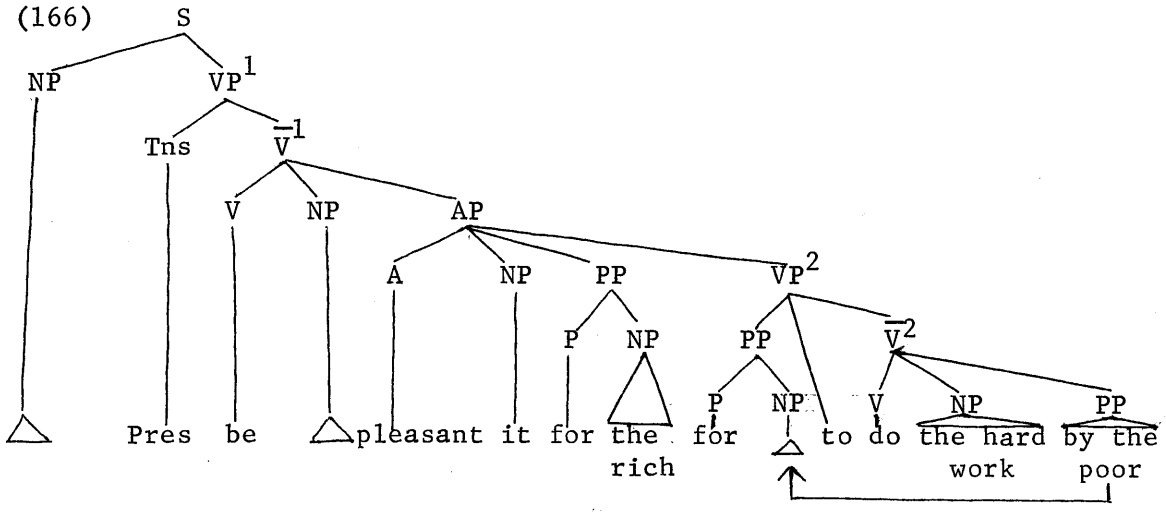
$\bar{V}^1$: 1. Lexical Insertion: be

2. Object-Preposing

S : 1. Object-Preposing

Finally, in order to account for examples such as those in (163), we can assume structures of the following form:

(166)



The derivation is similar to that of (164), except that Agent-Preposing will, in this case, apply on the VP^2-cycle, rather than on the AP-cycle:

(167) $\bar{V}^2$: 1. Lexical Insertion: do

VP^2: 1. Agent-Preposing

AP : 1. Lexical Insertion: pleasant

2. Complementizer Insertion: for-to

3. It-Insertion

$\overline{V}^1$: 1. Lexical Insertion: be

2. Object-Preposing

S : 1. Object-Preposing

Since easy does not allow a PP in the Specifier of its Infinitive complement, it must be subcategorized as follows:

(168) easy: ___ NP (for NP) to $\overline{V}$

For predicates such as pleasant, on the other hand, the complementizer for-phrase is optional, and hence we must assign to them a subcategorization feature of the following form:

(169) pleasant: ___ NP (for NP) (for NP) to $\overline{V}$

Notice that if we generate both an Object-NP and an Agent-phrase in the Infinitival complement, but only an empty Object-NP after the Adjective easy:

(170) [easy - NP - [to please - John - by Mary]]

as is, of course, permitted by (168), then the derivation will block, since Agent-Preposing and Object-Movement are both obligatory in this context. Thus after the application of Agent-Preposing, which moves the Agent-NP into the empty Object-NP, and after lexical insertion of easy, Object-Movement must apply obligatorily. However, the Object-NP will already be filled, and hence the derivation will block.

Observe, however, that there is still one slight problem which remains

to be taken care of. As things stand now, the lexical entries for likely and easy are identical, just in case the optional for-phrase allowed by the latter is not realized:

(171) __ NP to $\overline{V}$

The question is, then, how do we know whether to apply Agent-Preposing or Object-Movement on the AP-cycle in a structure such as (157)? Unless we can, it will be possible to generate ungrammatical sentences such as *John is likely to please. This difficulty can be taken care of, if we modify our analysis slightly and assume that Adjectives such as easy actually require an it in the Object-position which is anaphoric with the VP complement. We then allow Object-Movement to replace the it with the Object of the complement VP, whereas rules such as Agent-Preposing we do not formulate in this manner. There is, in fact, support for this proposal, for observe that although we find Pseudo-cleft sentences with easy:

(172) What is easy is to please John.

they are impossible with likely:

(173) *What is likely is for John to leave.

Under the analysis of the Pseudo-cleft construction proposed in Chapter IV, this fact would be explained, if easy, but not likely, required a pronominal Object, anaphoric with its complement VP.

5.6. Indirect Questions

Yet another advantage of the re-analysis of VP complements proposed in section 5.4. is that we can now treat Infinitival Indirect Questions in a more satisfactory way. As has been noted by Emonds (1969), the wh-word

which is moved to the front of the clause in Indirect Questions cannot co-occur with the for-phrase of a for-to complement. Thus there are no Indirect Questions in English of the following form:

(174) a. *I don't know what for Bill to buy.

b. *I asked Mary what for him to do.

although we do find, of course, Infinitival Indirect Question forms such as the following:

(175) a. I wonder what to buy.

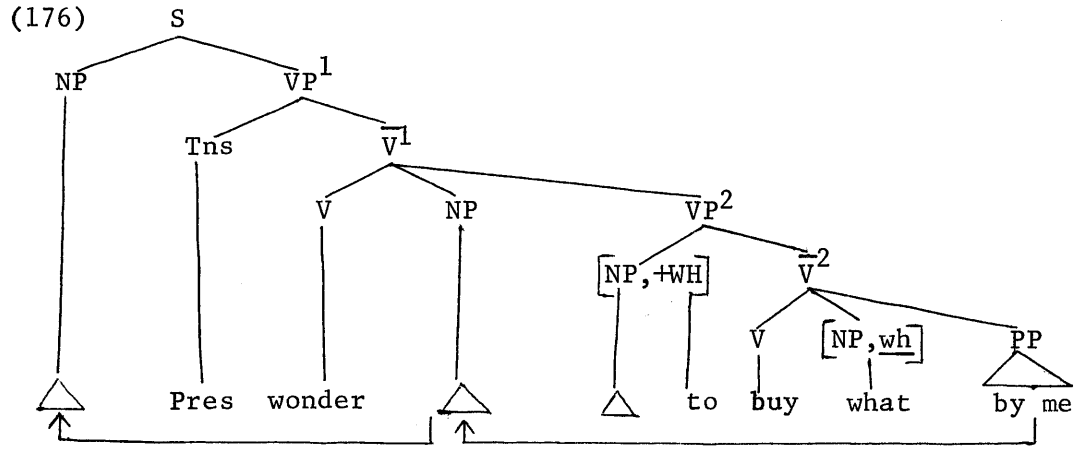
b. I asked Mary what to do.

It was observed in Chapter IV that this distribution can be explained, if we assume, following Chomsky (1972) and Besnan (1970), that the PP which is generated in the COMP node of sentences has the feature [±WH] associated with it, where the feature [+WH] is the "trigger" for WH-Movement. However, we were forced to abandon this proposal, because the analysis of Infinitive complements assumed there did not permit Infinitives to take 'Subject'-NP's. This in turn led to an analysis in which certain NP's subcategorized by the Verb of the matrix clause had to be marked in a rather ad-hoc manner with the feature [+WH]. Not only does this proposal fail to explain why only one NP in the matrix VP can have the feature [+WH], but also it claims, in effect, that there is no relationship between Indirect Question formation in Infinitives and Indirect Question formation in full S's, since the two processes are treated in totally different ways.

Now, however, we are in a position to remedy this defect. All that we need to do is to permit the PP which occurs in the Specifier of VP

complements to be associated with the same feature [±WH] that serves as the trigger for WH-Movement in full sentences. This immediately makes WH complementation in S's completely parallel with WH complementation in Infinitives and, at the same time, automatically accounts for the fact that Indirect Question formation is impossible in for-to complements. I propose, therefore, to derive a sentence such as (175) a. from a structure of the following sort:

(176)



If, in addition, we permit only NP's which have the feature wh to be moved into a +WH marked NP, then we can automatically account for the fact that Agent-Preposing does not move the NP me into the empty NP in the Specifier of VP^2. On the other hand, notice that there is nothing to prevent Agent-Preposing from moving the Agent-NP into the empty Object-NP in $\bar{V}^1$, as long as we assume that WH-Movement is a post-cyclic (or possibly last-cyclic) rule, as has been suggested a number of times in the literature. Let us therefore assume, tentatively, that WH-Movement is post-cyclic, i.e. it applies only after all of the cyclic rules have applied. We will then have a derivation such as the following for (176):

(177) $\bar{V}^2$: 1. Lexical Insertion: buy

VP^2: (vacuous)

$\bar{V}^1$: 1. Complementizer Insertion: to

2. Agent-Preposing

3. Lexical Insertion: wonder

VP^1: 1. Lexical Insertion: 'Pres

S : 1. Object-Preposing

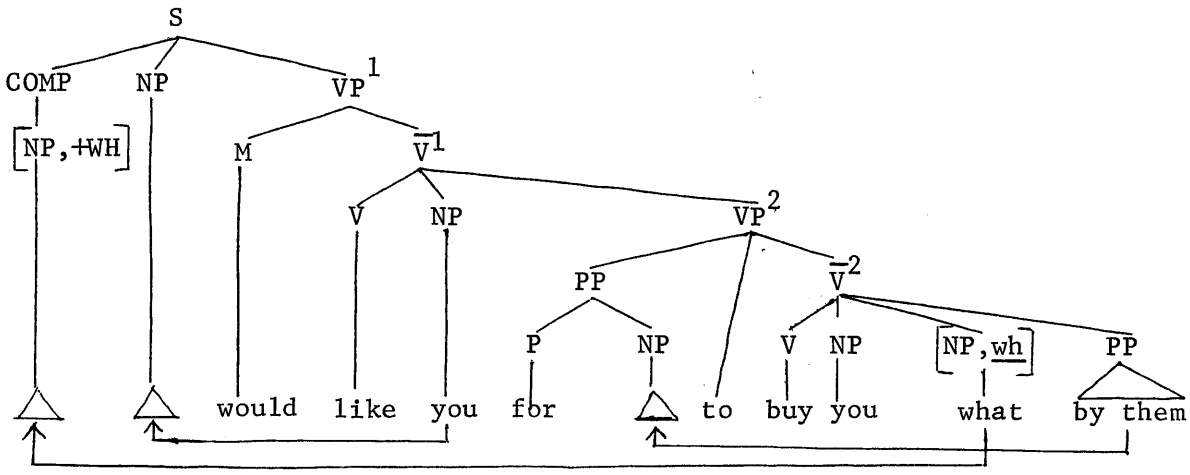
Post-cycle: 1. Wh-Movement

In contrast, consider the derivation of a sentence such as the following:

(178) What would you like for them to buy you?

Here, the complement contains a for-phrase, while the COMP of the main S contains the [+WH] NP. Hence we must have a structure such as the following:

(179)



Here, Agent-Preposing must apply on the VP^2-cycle, moving the NP them into the for-phrase in the Specifier of VP^2. This is followed by Lexical Insertion of like on the $\bar{V}^1$-cycle, and Object-Preposing on the S-cycle.

Finally, on the post-cycle, the wh-word what gets moved into the +WH NP in the COMP of S. In addition, we may assume, as seems reasonable, that all of the transformations which Emonds (1969) calls 'Root' transformations apply on the post-cycle. This includes the rule of Subject-Auxiliary Inversion, among others. Hence, we will have a derivation of the following form:

(180) $\bar{V}^2$: 1. Lexical Insertion: buy

VP^2: 1. Agent-Preposing

$\bar{V}^1$: 1. Complementizer Insertion: for-to

2. Lexical Insertion: like

VP^1: 1. Lexical Insertion: would

S : 1. Object-Preposing

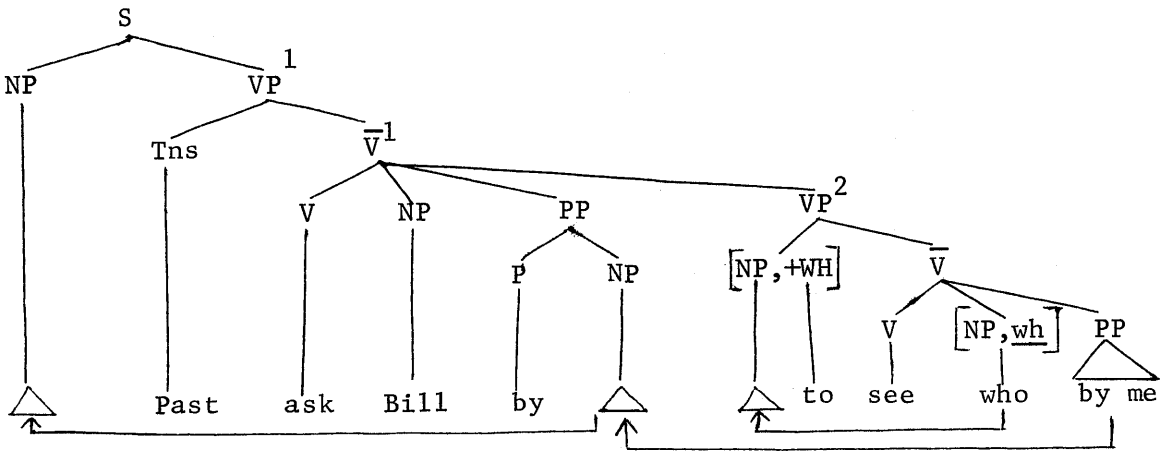
Post-cycle: 1. Wh-Movement

2. Subject-Auxiliary Inversion

The result of these operations is the correctly interpreted surface form what would you like for them to buy you?

Consider next the derivation of a sentence such as I asked Bill who to see, where the "controller" of the Infinitive complement is the Agent-NP I. We may derive sentences of this type from a structure of the following form:

(181)



The derivation is similar to that of (176), except that in this case Agent-Preposing must move the Agent-NP in the Infinitive complement into the Agent-phrase in $\bar{V}^1$, followed by Wh-Movement on the post-cycle. The derivation would look as follows:

(182) $\bar{V}^2$: 1. Lexical Insertion: see

VP^2: (vacuous)

$\bar{V}^1$: 1. Agent-Preposing

2. Lexical Insertion: ask

VP^1: 1. Lexical Insertion: 'Past'

S : 1. Agent-Preposing

Post-cycle: Wh-Movement (in VP^2)

But now consider a question of the following kind:

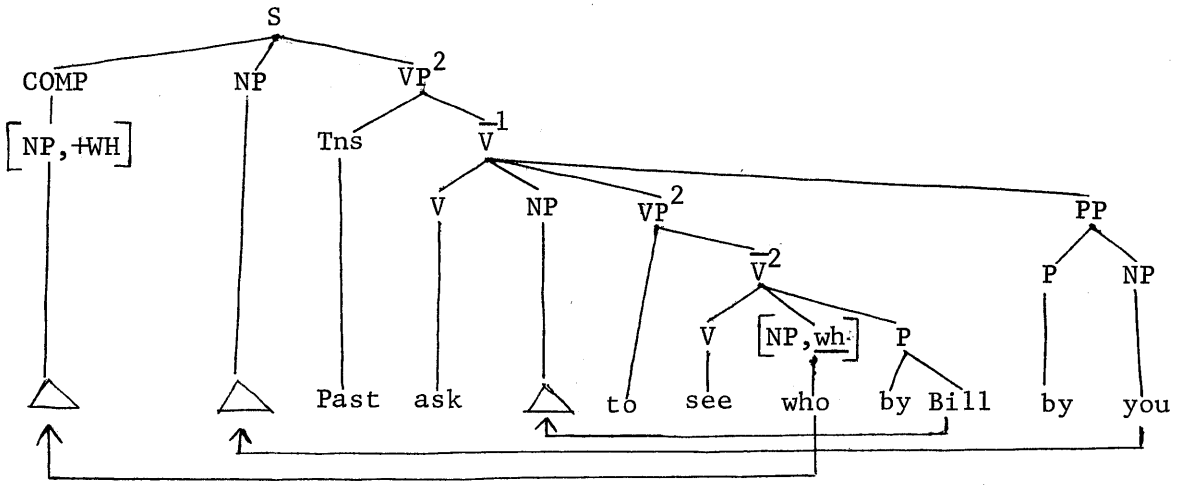
(183) Who did you ask Bill to see?

We see that the interpretation of this sentence is quite different from that of I asked Bill who to see. The "controller" NP in (183) is Bill, and it is thus interpreted in the same way as sentences such as I told Bill who to see, who did you tell Bill to see, and so on. We can account

for the fact that the wh-word in (181) cannot be moved into a [+WH] NP in the COMP of S, simply by requiring that the rule of Wh- Movement move the wh-word into the nearest empty NP marked with [+WH]. This will ensure that the wh-word always moves into the specifier of VP in Indirect Questions, and not the COMP node in S.

A sentence such as (183) is obviously the WH-Question form of the sentence I asked Bill to see someone. Thus, in order to derive (183), we must have the following sort of structure:

(184)



and the derivation will proceed as follows:

(185) $\bar{V}^2$: 1. Lexical Insertion: see

VP^2: (vacuous)

$\bar{V}^1$: 1. Agent-Preposing

2. Lexical Insertion: ask

S : 1. Agent-Preposing

Post-cycle: 1. Wh-Movement

2. Subject-Auxiliary Inversion

Looking now at the subcategorization features that must be assigned to these Verbs, we see that wonder, for example, must have a feature of the following form:

(186) wonder: ___ NP [NP,+WH] to $\overline{V}$

The Indirect Question forms containing ask, on the other hand, can be accounted for with a feature of the following sort:

(187) ask: ___ NP by NP [NP,+WH] to $\overline{V}$

while examples such as (183) obviously require a second subcategorization feature for ask, having the following form:

(188) ask: ___ NP to $\overline{V}$ by NP

Consider, finally, the Verb tell. This Verb takes either a WH-complement, or a plain Infinitival complement. Furthermore, the controller is the same in both cases, namely, the Object-NP. Thus we find Indirect Questions such as the following:

(189) I tole Bill what to do.

as well as sentences with an ordinary Infinitive complement such as (190):

(190) I told Bill to do something.

However, we only find forms in which the wh-word has been moved into the COMP of S corresponding to the second of these examples:

(191) What did you tell Bill to do?

Obviously (190) and (191) can be accounted for by assigning tell a subcategorization feature of the form (188), while the Indirect Question sentence (189) requires a feature of the following sort:

(192) tell: ___ NP [NP,+WH] to $\overline{V}$ by NP

Comparing (188) and (192), we see immediately that they may be collapsed

by means of the parenthesis notation into a single feature of the following form:

(193) tell: ___ NP ([NP,+WH]) to $\overline{V}$ by NP

Furthermore, this is clearly the correct generalization: the Verb tell requires an Object, an Infinitive complement, and an Agent, and may optionally take a WH-complementizer. In contrast, the two features (187) and (188), which must be assigned to ask, are not collapsible by means of parentheses, as is proper, since the sense of the Verb in the two cases is quite different. Notice, also, that this analysis expresses the fact that the Verb tell is like the Verb like in allowing an optional Subject-NP to occur in the Specifier of its VP complement. The only difference is that the former allows an optional WH-complementizer, whereas the latter allows optionally the complementizer for.

6.0. Conclusion

We see, then, that a variety of considerations tend to support the view arrived at in this chapter that there is no level of linguistic organization which is independent of "semantics", on the one hand, and of "surface structure", on the other. The general point is that in order to state in the most general way certain kinds of relationships between sentences, namely, just those which are expressed, in this framework, by means of the structure-preserving rules, it is not only unnecessary, but in fact impossible, to assume a level of deep structure. Of course there are a variety of ways in which one could attempt to preserve a notion of deep structure. Notice, for example, that it would be perfectly possible, in the revised analysis of the complement system presented in the last section, to re-introduce into the theory the whole apparatus

of coreferential complement Subjects, CCSD, Raising, and so forth. However, the crucial point is that not only is such a move unnecessary, since the theory can already account for all of the relevant facts without the use of these devices, but, more importantly, it would clearly be wrong, since it would obscure the fact that a few simple and extremely general rules, such as Object-Preposing, Agent-Preposing, Dative Movement, Preposition Deletion, etc., all of which are needed in the grammar anyway, are sufficient to explain, in the most general way, the relationships between sentences with which we are concerned. The argument is thus completely analagous to the one which Halle (1959) used in order to demonstrate the non-existence of a taxonomic phonemic level in phonology: In order to state certain grammatical processes in their most general form, it is impossible to assume the existence of an "intermediate" level of linguistic organization.

There is, however, another point, which is brought out most clearly by the arguments presented in Section 4.0. This point is that not only does the assumption of a level of deep structure make it impossible to state in the most general way certain relationships <u>between</u> sentences (i.e. relationships which are "transformational", in the broadest sense of this term), but it also makes it impossible to account adequately for the <u>surface form</u> of sentences. This is true, not only in the special case of the complements of Verbs such as <u>force</u> and <u>believe</u>, but in many other cases as well. Thus the whole discussion of "Predicate-VP" complements, including, in particular, the "progressive" and "passive" constructions, is concerned primarily with the

fact that theories which assume a level of deep structure make it difficult to describe, in a well motivated way, the actual surface form of these constructions.

Furthermore, this point is one which has been somewhat neglected in recent debates concerning the necessity for a level of deep structure. For some years, theorists have been exerting strenuous efforts to constructing an argument against deep structure, analagous to Halle's argument against the phonemic level in phonology. However, all of these arguments, one by one, have been refuted, and the reason that it has been possible to refute them so easily is that sufficient attention has not been paid to surface structure. In order to demonstrate that deep structure does not exist, it is not sufficient to show merely that some particular rule, or even class of rules, can be stated more simply in a theory which has no level of deep structure. Rather, it must be demonstrated that the <u>whole grammar</u> is simplified by dropping the assumption that there is a level of deep structure. In particular, it must be shown that the description of relationships between sentences at the "superficial" level of surface structure is facilitated in a grammar with no level of deep structure.

The most important difference, then, between the theory proposed in this book and theories of "Generative Semantics" is that the theory proposed here is tightly constrained by surface structure, on the one hand, and by semantic considerations, on the other, whereas theories of Generative Semantics are, in effect, constrained only by semantic considerations. Naturally, any theory must, in one way or another, produce representations which describe surface form correctly. However,

the point is that in theories of Generative Semantics, the surface form of sentences does not in any way constrain the class of permissible grammatical rules. This means that it is possible, in such theories, to set up virtually any kind of representation of the "meaning" of sentences that one can think of, and it will always be possible to map this representation onto surface structure by one or another of the devices that are allowed in the theory, because there are virtually no constraints on the kinds of operations which these devices are allowed to perform.

6.1. Formally speaking, the theory of grammar proposed in this chapter may be described in the following terms: The grammar G of a language contains the following devices: (1) A single set of PS rules which characterizes the infinite set of surface structures of the language; (2) a set of structure-preserving rules; (3) A lexicon; (4) A set of 'Root' transformations, to which I return shortly; and (5) A set of 'minor movement rules'.

There is no distinction between deep structure and surface structure. The PS rules generate P-markers, all of whose pre-terminal symbols dominate the terminal symbol Δ. Lexical items are inserted into P-markers in a cyclical fashion, starting with the lwermost cyclical node, and working upwards. All major phrase-nodes which dominate one of the lexical categories V, N, A, or P are cyclic nodes. The environments in which lexical items may be inserted are determined by a set of 'sub-categorization features', which constitute, in effect, a part of the semantic representation of the lexical item. The subcategorization

features also specify 'selectional restrictions' that must be met by the phrases, in whose environment the lexical items are inserted. Note that the lexical insertion transformations are structure-preserving, in the sense that they may only insert lexical items in syntactic configurations which are permitted by the PS-rules.

The structure-preserving rules, including the lexical insertion transformations, apply freely within each syntactic cycle. There are no extrinsic ordering constraints imposed on either the structure-preserving rules, or the lexical insertion rules. Derivations are subject to the general condition that any node dominating the terminal symbol Δ must be filled at least once in the course of the derivation, or else interpreted as an 'unspecified NP'. In addition, obligatory structure-preserving rules are subject to the constraint that they must apply if their structural description is met.

The structure-preserving rules are limited to performing the following sorts of operations: (1) They may replace a node of category X which dominates some specified element (including, in particular, the null terminal symbol Δ) with another node of the same category; (2) They may delete specified items; (3) They may insert specified items into nodes in positions where the PS rules allow these nodes to be generated.

The grammar thus effectively prevents the structure-preserving rules from doing anything, except moving nodes of a certain category from one position where nodes of that category are permitted by the PS rules to another position where such nodes are permitted by the PS rules, and also to filling in surface structure nodes with specified items and to deleting

specified nodes from positions in surface structure. It is therefore true to say that in this grammar the only purely syntactic function of transformations is to express relationships between the surface forms of sentences.

However, it is also the case that the structure-preserving transformations are essential in accounting for the semantic interpretation of sentences, so that they have a "semantic", as well as a "syntactic" function.[10]

The theory proposed here thus makes no sharp distinction between the process of "forming" sentences and the process of interpreting them semantically. Rather, the two processes take place simultaneously. Surface structures are generated directly by the structure-preserving rules and the lexical insertion rules, in the manner described above, and, at the same time, information which is relevant to the meaning of sentences is spun off at various points in the derivation. In particular, of course, the subcategorization features associated with Verbs play a crucial role both in the process of generating the well-formed surface structures of the language and in the process of determining the semantic interpretation of these structures.

Furthermore, as was noted at the beginning of this chapter, we could equally well start with the class of surface structures, with lexical items inserted in some random fashion, and apply the structure-preserving rules and the lexical insertion rules in reverse. The rules would then automatically reject all uninterpretable structures, and at the same time specify all information relevant to the semantic interpretation of the interpretable ones.[11]

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6.2. There is, then, no need for a level of deep structure. The structure-preserving rules and the lexical insertion rules apply freely on each syntactic cycle, and the result is a well-formed, correctly interpreted surface structure. However, there are two classes of transformations which, Emonds (1969) has shown, do not obey the structure-preserving constraint. We have yet to discuss the place of these rules in the theory proposed here.

The first--and more important--of the two classes of transformations which are not structure-preserving are those that Emonds calls 'root' transformations. These are rules such as Subject-Auxiliary Inversion, Topicalization, Right- and Left-Dislocation, Inversion Around be, Subject-Simple Verb Inversion, Negative Adverb Preposing, and a variety of other rules. It would be natural, in this framework, to suppose that all of these rules are post-cyclic, and hence not part of the transformational cycle at all. However, this immediately calls into question my claim that deep structure does not exist. For suppose that we simply define 'deep structure' as the level of representation characterized by the PS rules, taking the structure-preserving rules to be, in effect, interpretive semantic rules, and then define the output of the Root transformations as 'surface structure'. The transformational component of the grammar would then consist of the Root transformations, plus the class of Minor Movement rules (see below)

That this proposal is nothing more than a mere terminological quibble is made evident, I believe, by a consideration of the following points: Note, first of all, that whether we choose to call the structure-preserving rules "interpretive" or not, it is still the case that not all

of the information concerning grammatical relations which is relevant to the meaning of sentences is contained at the level of 'deep structure', in this new sense of the term. Nor is it the case that deep structure, as now defined, is the point at which all lexical insertion rules are applied. Thus, of the three criteria for a level of deep structure mentioned by Chomsky (1972) (cf. p. 66), the new level only meets one, namely, the condition that the rules of the categorial compoenent define the grammatical relations and the order of constituents. One is free, of course, to use the term 'deep structure' in any way one pleases, but it is clear that the term, as newly defined above, bears little conceptual resemblance to the notion that it was originally intended to indicate.

Secondly, if we consider carefully the function of the Root transformations, we see that in every case they perform a specific semantic function. Thus the function of Subject-Auxiliary Inversion, for example, is to "mark" questions in surface structure. Similarly, the various types of topicalization rules which belong in this class invariably serve to signal foregrounding, or emphasis, of some particular element of the sentence. Furthermore, as Chomsky (1971, 1972), Jackendoff (1969), and others, have recently shown, there are a variety of semantic henomena, including the interpretation of quantification and negation, the determination of focus and presupposition, pronominalization, aspects of the interpretation of Tense and Aspect, and so forth, which are directly related to surface structure, rather than to deep structure. In most cases, in fact, it is not only surface structure, in the sense in which I have been using the term here, namely, to indicate

the structures characterized by the PS rules, which is relevant, but the structures which result from the application of Root transformations, and even certain phonological rules (in particular, of course, stress assignment).

Hence, the existence of a class of transformations which are not structure-preserving, far from supporting a theory containing a level of deep structure, in fact lends further support to my claim that such a level is unnecessary, since these rules, and/or the structures resulting from their application, also have semantic effects. The only interesting question regarding Root transformations is to what extent their form and function can be defined in general terms within the theory of grammar, and how narrowly the class of possible post-cyclic transformations can be constrained by the theory of universal grammar.

Let us consider, finally, the class of 'Minor Movement Rules'. As this class of transformations is defined in Emonds (1969), the Minor Movement Rules are extremely limited in scope. Basically, they are restricted to moving a node which is not a major phrase-node (i.e. it is either an affix or a lexical category) over an immediately adjacent node. Although rules of this type have yet to be dealt with in any systematic way within the theory of transformational grammar, it fairly evident that in many cases they have more to do with morphology and phonology than they have to do with syntax. For example, the Affix Hopping rule, originally proposed by Chomsky in Syntactic Structures, which attaches the affixes Tns, -ing, -EN, and others to the constituent immediately to its right, is merely a device for expressing

dependencies between discontinuous constituents. Rules of this type are, in effect, a kind of "readjustment rule." That is, they adjust surface forms in various ways, in order to make them conform with rules of morphology, and to make them appropriate as input to the phonological component. Furthermore, it is quite possible that given an adequate theory of lexical subcategorization and morphological form, such rules could be eliminated from the grammar entirely. Other rules, such as the Particule Movement rule discussed in Fraser (1965), are heavily constrained by phonological considerations of various sorts, suggesting that they, too, are basically readjustment rules of a certain type. In particular, Minor Movement rules often seem to be necessary, in order to define the notion "phonological word" properly. In cases of this sort, it would be natural to investigate the possibility of explaining the need for such rules in terms of more general, perhaps even universal, phonological principles.

In any case, it seems clear that the existence of a class of Minor Movement Rules cannot possibly affect the claim that the grammar contains no level of deep structure. To insist, for example, on calling the representations generated by the PS rules "deep structure", and the output of these rules "surface structure", would quite obviously be nothing more than a matter of terminology, having nothing to do with the real issues involved. Furthermore, note that all of the Minor Movement Rules discussed in the literature to date are, in any case, cyclic rules, so that the possibility of a terminological innovation of the sort just mentioned does not even arise.[12]

I conclude, then, that the existence of non-structure-preserving rules of the type that Emonds refers to as Root transformations and Minor Movement Rules, respectively, do not in any way affect the major conclusions of this chapter. In fact, it is quite natural, within the framework proposed here, to regard the former as optional, post-cyclic rules, all of which affect the meaning of sentences in various ways. In the case of Subject-Auxiliary Inversion and the Imperative rule, for example, this immediately allows us to dispense with the ad-hoc markers "Q" and "Imp", which were used to trigger these rules in earlier theories (cf. Katz and Postal (1964)), and return to the more natural view, proposed originally in Syntactic Structures, that these rules are simply optional transformations which express relationships between surface forms that cannot be represented adequately within the limits of a PS grammar.

Additions - Chapter V

[1]The semantics of the Verb shoot is even more complicated than is indicated by this discussion. Note, for instance, that Verbs such as shoot must also have an unspecified Instrumental-phrase, indicating the class of firearms, in order to account for the fact that a sentence such as John shot Bill presupposes that John used a gun, a pistol, or some other type of firearm. This Instrumental-phrase may appear overtly in sentences such as John shot Bill with a gun. Hence, the subcategorization feature for shoot must contain an Instrumental-phrase which is optionally underlined. Furthermore, notice that if the Agent-phrase is unspecified, we may form pseudo-intransitives of the form this gun shoots (deer) well, by means of Instrumental-Preposing, as well as pseudo-intransitives such as deer shoot easily with this gun, by means of Object-Preposing. Note also that shoot may also take PP-Direct Object with at, as in John shot at Bill (with a gun), in which case we may apply Dative Movement and Preposition Deletion, yielding sentences of the form John shot a gun (at Bill). All of these facts may be accounted for by subcategorizing shoot in the following manner:

(a) shoot: NP ___ $\left(\left\{\begin{matrix}\text{PP} & \text{at NP} \\ & \text{of NP}\end{matrix}\right\}\right)$ $\text{with}\left(\underset{[\text{Firearm}]}{\text{NP}}\right)$ $\text{by}\left(\underset{[\text{Animate}]}{\text{NP}}\right)$

Finally, note that there is a completely different sense of the lexical item shoot which occurs in sentences such as the ball shot across the floor (to Bill), John shot the ball across the floor (to Bill). In

this sense, the Verb shoot behaves exactly like other causative Verbs of motion such as roll, move, slide, etc.

[2]Note that I am simplifying somewhat. Actually, as was shown in Chapter IV, believe requires a "deep" Indirect Object-NP. However, the assumption that the surface Subject of believe derives from the Agent-phrase does not affect the argument which follows.

[3]Again, I am simplifying, since, as was shown in Chapter IV, the surface Objects of Verbs such as force are actually deep Indirect Objects. However, nothing hangs on the precise nature of the Object-NP, for the purposes of this discussion.

[4]Notice that it would be possible to avoid the conclusion that there is no level of deep structure by re-defining the notion "structure-preserving rule" in an appropriate way. Suppose, for example, following a suggestion made by Noam Chomsky (personal communication), that we define the structure-preserving rules in the following manner: A structure-preserving rule may either (1) fill an empty node X with some node Y of the same category, or (2) replace X with Y, if X is identical to Y. Given this definition, it would be possible to retain the assumption that the lexical insertion rule for force precedes Agent-Preposing on the VP^1-cycle, in the derivation discussed in the text. Thus if the NP Mary is inserted into the Object position, producing the structure (66), then the derivation will block, because the Agent-NP in VP^2 and the Subject of the Infinitive are not identical. If, on the other hand, we insert the NP Harry, then Agent-Preposing, under the revised definition, will be able to apply, replacing the Object-NP Harry with the identical Agent-NP Harry, and thereby produce the correct surface structure. Since all the

lexical insertion rules can now be applied before all the structure-preserving rules on each syntactic cycle, we have succeeded in "preserving" a level of deep structure. It is clear, however, that this proposal is merely a notational variant of the theory proposed here, since there is no motivation for re-defining the structure-preserving rules in this manner, aside from the fact that it allows one to avoid derivations in which lexical insertion rules follow structure-preserving rules.

[5]It has been noted by McCawley (1970) that if English is considered to be a "Verb-initial" language at some level, then the rule which raises complement Subjects into Subject position can be collapsed with the rule which raises complement Subjects into Object position. This observation, while correct, is beside the point, since the issue is whether _any_ raising rule of the kind required in the standard treatment of Infinitive complementation is motivated on syntactic grounds.

[6]Note that I am once again simplifying these features for the purposes of exposition. Thus the Object-NP in the feature for get_1 should actually be an Indirect Object, while the feature for get_2 should contain a Direct Object. I return to the exact role of the complementizers _EN_ and _to_ directly.

[7]See Bowers (forthcoming), Selkirk (forthcoming), and Jackendoff (forthcoming) for articles on various aspects of the "Base Schema Hypothesis".

[8]Note that the use of the category "Pred" to explain the special properties of "Predicate-AP's", "Predicate-NP's", and "Predicate-PP's" is doubtless equally _ad-hoc_, suggesting that we eliminate this category

from the PS rules altogether. Notice also that it would be entirely natural to suppose that the category S is itself simply the next higher phrase-node after VP which is "induced" by the lexical category Verb, and that the elements of the COMP node therefore constitute the "Specifier" of $\overline{\overline{V}}$, in the same way that the elements of the Auxiliary constitute the Specifier of VP. As is noted in Chomsky (1970), this system is similar in many respects to the type of phrase structure analysis developed by Harris (1951).

[9]See Brecht (1972) for some important observations on the connection between Tense and Aspect, and Verb complementation.

[10]Note that the kinds of relationships expressed, in languages like English, by means of structure-preserving rules, will not necessarily be expressed in the same way in other languages. Thus in a case language such as Russian or Latin, for example, the analogues of structure-preserving rules are very often case-changing rules. Undoubtedly, the theory proposed here must be generalized, to accommodate languages which utilize syntactic devices different from those which are typical of English. Notice that one could, in fact, replace the notion "structure-preserving movement rule" by a set of general conditions on the lexical insertion rules. Thus Object-Preposing, for example, might be restated in the more generalized form: "Insert the Direct Object NP in the Subject position, unless there is an Agent, or the Verb is in the Past Participial form, in which case, it must be placed in the Direct Object position." Stated in this way, it is easy to see that the analogue of Object-Preposing in a case language might be a statement of the form: "The Direct Object takes the Nominative case, unless there

is an Agent, or the Verb has a past participial ending, in which case it must be in the Accusative case." In other languages, the equivalent rule might involve placing a special mark on the Verb, rather than actually "moving" the NP to some other position in surface structure. Or, the two might be combined. Thus in Russian, for example, when the Object is put in the nominative case, the affix -sja is generally required on the Verb. Other, less general, conditions of this type would be associated with the lexical entries for particular Verbs, or with lexically specified classes of Verbs.

As these remarks suggest, it is my opinion that it is far less certain than is generally supposed by those working within the framework of transformational grammar that the devices which have been developed largely on the basis of work on English are necessarily the appropriate sorts of devices for describing languages which are typologically quite different from English. The problem is, of course, that transformations are so powerful, at present, that virtually any problem in any language can be described transformationally. Real progress in linguistic theory thus depends crucially on restricting the power of the devices permitted in grammatical description, as has been argued recently by Chomsky (1970, 1971, 1972).

I am indebted to Richard Brecht and Leonard Babby for helping me to clarify my thinking on these matters.

[11] In fact, one interesting consequence of the theory proposed here is that there is, in many cases no meaningful distinction between "interpretive semantic rules", which map syntactic structure onto semantic interpretation, and "transformational" rules of the type

permitted in much recent theorizing, which map semantic interpretation onto syntactic structure. For example, the rule of "Neg-Transportation", which relates sentences such as I don't believe that Bill has left and I believe that Bill hasn't left, could, in our theory, be regarded either as a "transformation" which raises the Neg in the complement of certain Verbs such as believe, think, etc. into the matrix clause, or as an "interpretive" rule which changes the "scope" of the negative element.

[12]Notice that it would be quite possible for a grammar to contain structure-preserving rules which never happen to apply before any lexical insertion transformations, within the same cycle. However, this fact cannot be used as an argument in favor of a level of deep structure, any more than the existence of phonological rules which happen never to apply before the level of "phonemic" representation can be used to justify such a level, in the face of an argument such as Halle's.

CHAPTER VI

EPILOGUE: UNIVERSAL SEMANTICS

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0.0. Introduction

The theory proposed in the preceding chapters strongly suggests that to a considerable extent, the form of particular grammars is determined by semantic considerations which are universal, and which therefore do not need to be stated as part of the grammars of particular languages. There are, of course, aspects of grammatical form which do not depend on semantic considerations. The theory of universal grammar must specify, among other things, constraints on the class of possible P-markers, constraints on the class of possible transformational rules, and constraints on the class of possible morphological devices. Many of these constraints are doubtless purely formal, and hence independent of meaning, though the extent to which this is true is still unknown. How ver, beyond these purely formal limitations on the class of possible structures which are available to languages, it would appear to be the case that grammatical form, for the most part, is a direct reflection of semantic structure.[1]

In the theory proposed here, there is no level of deep structure whose properties can be determined in complete independence of semantic considerations. Rather, the surface form of sentences, and their interpretation, is generated simultaneously through the application of the structure-preserving transformations and the lexical insertion rules. This suggests, naturally enough, that the "grammatical relations" specified in the subcategorization features for heads of phrases are

really semantic relations of a highly abstract character, and that the basic function of the structure-preserving rules is to express systematic semantic relationships between lexical items which cannot be adequately accounted for by means of the PS rules alone. The abstract meaning of lexical items which is represented by the information contained in the subcategorization features would then be related to the more "concrete" representations of universal semantic theory in much the same way that "underlying" phonological representation is related to universal phonetic representation. Just as the phonological system of each language represents an "induction" from the total set of articulatory and accoustic features which are distinctive in natural languages, so, we may hypothesize, the semantic system of each language--as represented by the abstract semantic relations specified in the lexical entries for words--is induced by the total set of semantic relations which are, in principle, encodable into the grammars of natural languages.

This hypothesis leads immediately to a number of important predictions. For one thing, if 'grammatical relations' are, in fact, highly abstract semantic functions, then we should expect to find that the mapping of grammatical relations onto the more specific semantic relations universal semantic theory is not arbitrary, but highly systematic. In particular, we should expect to find that the subcategorization features associated with heads of phrases are connected in a systematic way with the meaning of these lexical items. Thus if the subcategorization features associated with two different Verbs contain

the same grammatical relations, then we would expect them to share many of the same semantic features. This prediction is borne out by the facts. As we have noted throughout this study, predicates which are subcategorized the same way invariably turn out to form 'semantically natural classes.' Thus Verbs of possession, for example, no matter what surface forms they may appear in, are invariably subcategorized to take a 'deep' Object-NP and a to-phrase. Verbs of action, on the other hand, invariably are subcategorized to take an Object-NP and an Agent-phrase. Furthermore, when we combine two types of subcategorization feature, we find that the Verbs whichcan appear in such frames have a meaning which is predictable, given the meaning of the predicates which can appear in the two simpler frames. So, for example, if we take the subcategorization feature which is associated with Verbs of possession and add an Agent-phrase, we find that the Verbs associated with this more complex feature form a natural class of predicates which are, semantically, actions involving transfer of possession. Hence, the semantic relationship between Verbs such as own, belong, have, etc. and Verbs such as buy, sell, receive, get, and so forth, is precisely mirrored in the formal relationship between the subcategorization features [___ NP to NP] and [___ NP to NP by NP].

Secondly, we should expect to find that the specific interpretation of 'deep' grammatical relations varies systematically, depending on the semantic features associated with the head of the phrase in which the NP in question appears. Again, this expectation is fulfilled. Thus, we have seen, for example, that a to-phrase is interpreted as 'Experiencer' in the case of Verbs of perception, but as 'Possessor' in

the case of Verbs of possession.

Finally, a third prediction which is made by the hypothesis that grammatical relations are highly abstract semantic relations is that the grammatical rules which relate sentences to one another, namely, the structure-preserving transformations, should reflect semantic relationships between lexical items. In particular, we would expect to find that the same rules apply in different syntactic environments, whenever the lexical items in question are similar in meaning. Furthermore, this should hold, regardless of whether or not the semantic relationship between the lexical items is accompanied by a regular morphological relationship. Again, this prediction is confirmed. Thus Verbs of action, for example, undergo Agent-Preposing, whereas Verbs of possession are subject to other grammatical rules such as Dative Movement, Object-Preposing, and so forth.

In the section which follows, I shall elaborate somewhat on each of these points, attempting to outline in a very general way the approach to meaning which is suggested by the theory of grammatical relations proposed in the preceding chapter. In Section 2.0. I shall consider the role which is played by the notational conventions for collapsing subcategorization features in the mapping of grammatical relations onto semantic relations, offering a specific hypothesis as to the significance of the parenthesis and the braces notation. I conclude with a very brief consideration of the 'intrinsic content' of grammatical relations and the matter of universal semantic rules.

1.0. Grammatical Relations and Semantic Relations

If the motivation for syntactic rules is, as I have suggested,

based not only on purely structural considerations, but also on semantic factors, then we might expect to find that syntactic transformations tend to apply in different syntactic environments, whenever the lexical items in question have some regular semantic relationship to one another. In fact, this seems to be the case. Thus Chomsky (1972), for example, has noted that the components of the "Passive", Object-Preposing and Agent-Postposing, may apply either in the domain of the NP or in Sentences, so that corresponding to the Passive sentence the city was destroyed by the enemy, we find nominals of the form the city's destruction by the enemy. Clearly, it is no accident that there is a lexical relation between the Verb destroy and the Noun destruction, as well as a semantic relation between the meaning of the sentence and the meaning of the corresponding nominal, and that the components of the Passive "generalize" to the domain of the NP. Furthermore, notice that the components of the Passive may even apply in nominals whose head Noun has no lexically related Verb form, as long as the Noun is similar semantically to other types of Verbs and Nouns whose structures permit "passivization". Thus from the nominal John's picture, in which it has the sense of "the picture that John painted", we can form the nominal the picture by John, by means of Agent-Postposing. And likewise, from the picture of Mary, which has the sense "the picture that someone painted of Mary", we can derive by Object-Preposing the surface form Mary's picture. On the other hand, the phrase John's picture, when it has the sense of "the picture that John has, owns, etc.", cannot yield the picture by John, which is surely not unrelated to the fact that

we do not have sentences such as *the picture is had by John, though we do have a picture of John's, with the same sense, parallel to the picture is John's.

To see how extensive relationships of this sort can be, consider the following set of related sentences:

(1) a. Sociology interests Bill.

b. Bill is interested in Sociology.

c. Sociology is interesting to Bill.

d. John interested Bill in Sociology.

e. Bill was interested in Sociology by John.

f. Bill has some interest in sociology.

g. Sociology is of some interest to Bill.

h. Bill's interest in Sociology.

i. The interest of Sociology to Bill.

j. Sociology's interest to Bill.

Although each of these examples differs slightly in meaning from each of the others, two facts are nevertheless clear: (1) There is a derivational relation between each of the various forms of the stem interest; (2) The semantic relation of the Nouns Sociology and Bill to the "predicate" interest is similar, if not the same, in every case. Now in standard theories of syntax, containing a level of deep structure, the only sentences which there is clear motivation for relating to one another are (1) d. and e. Even under the Lexicalist Hypothesis, it would only be possible to relate (1) b. and (1) h., (1) a. and (1) c., and (1) i., j. and (1) c. (or possibly (1) a.).

There is thus a rather arbitrary classification imposed on these sentences, whereby (1) d. and e. are related in terms of a "purely syntactic" transformational rule, while others--such as the nominal forms--are related to one or another of the sentences containing Adjectives or Verbs partly by means of "syntactically motivated" transformations and partly by means of lexical rules, while still others--such as (1) f. and g.--can presumably be related to the others only by means of interpretive semantic rules.

I submit that contrary to what is claimed by the standard theory, there is a single "underlying" lexical representation associated with each of these derivational forms, which we may represent roughly as follows:

(2) ___ to NP in NP^2

The differences among the examples in (1) arise simply from the fact that each of the various derivational forms must be inserted in different syntactic structures. Thus (1) a. derives from a structure of roughly the following kind:

(3) $[_{S}$ ___ - $[_{VP}$ interest - to Bill - in Sociology$]]$

The Adjective interested, on the other hand, is inserted in the following structure:

(4) $[_{S}$ ___ - $[_{VP}$ be - ___ - $[_{VP}$ interested- to Bill - in Sociology$]]]$

The Adjective interesting must be inserted in exactly the same sort of structure. However, different rules apply to the -ing form of

of the Adjective and the 'Passive' -EN form of the Adjective, so that the NP Sociology is preposed in the former case, whereas the NP Bill is preposed in the latter. Sentences (1) d. and e., as mentioned in f.n. 2 would derive either from a causative construction containing a VP of the form found in (3), or else from a structure li e (3) with a by-phrase, in addition to the Indirect Object and the Direct Object-phrases. The nominal form (1) h. obviously corresponds to the Adjectival construction (4), while (1) i. and j. are variants of a nominal form corresponding to the -ing Adjective construction. (Alternatively, one might want to relate (1) i. and j. to the Verbal construction (3).) Thus both, marked appropriately to indicate the Adjectival form from which they are derived, would be inserted in a structure such as the following:

(5) $[_{NP}\ \underline{\quad}\ -\ [_{\bar{N}}$ interest - to Bill - in Linguistics$]]$

Finally, notice that if we allow the constructions have interest and be of interest to be listed as wholes in the lexicon, a possibility wh ch must be allowed for in any case in order to account for idioms such as kick the bucket, read the Riot Act, and so on, we can then derive examples (1) f. and g. from structures such as the following:

(6) a. $[_{S}\ \underline{\quad}\ -\ [_{VP}$ be - of some interest - to Bill - in Sociology$]]$

b. $[_{S}\ \underline{\quad}\ -\ [_{VP}$ have - PP - some interest - to Bill - in Sociology$]]$

Example (1) f. is derived from (6) b. by means of the regular rules of To-Dative and Indirect Object Movement, while (1) g. is derived from

(6) a. by means of the same preposing rule (perhaps an extension of Locative-Preposing) that applies in the derivation of (1) a. and (1) c.

We see, then, that in the theory proposed here all of the examples in (1) can be treated in a unified manner as different syntactic manifestations of the single stem interest, which has the same "deep" grammatical relations in every case. Notice, however, that in the standard theory such an approach is impossible, because there is division between "purely" syntactic transformations and "semantic" rules.

1.1. Let us consider next an example of a slightly different kind. If, as I have suggested, syntactic rules are not arbitrary, but reflect semantic and lexical considerations, then we might expect to find not only cases, such as the one just discussed, where a single lexical structure is associated with a variety of surface structures, but also cases in which several different lexical structures are associated with the same lexical item, so that a sentence containing a certain Verb, for example, will undergo different transformations, depending on its meaning. In fact, we have analyzed many such examples in the preceding chapters. Consider, for example, the different 'senses' of the Verbs feel, taste, and smell, illustrated by sentences such as the following:

(9) a. John felt the wood with his fingers.

b. John felt the wood on his fingers.

c. The wood felt smooth to John on his fingers.

(10) a. John tasted the soup with his tongue.

b. John tasted the soup on his tongue.

c. The soup tasted delicious to John.

According to the standard theory, the fact that the Verbs taste and fe l may occur in surface structures such as these is an accident. There is nothing in the theory which suggests that the meanings of these sentences could not be associated with some entirely different set of structures, nor is there anything which would explain why these three structures should be associated with these particular Verbs. However, if we begin to compare the sentences in (9) and (10) with other sentences, we see that the patterns are not at all arbitrary. First of all, notice that when the Verbs feel and taste occur in sentences such as (9) and (10) a., they must be interpreted as actions, semantically. Thus they are similar in meaning to sentences such as the following:

(11) a. John touched the wood with his fingers.

b. Bill hit the wood with his hand.

c. Mary painted the wall with a brush.

d. The man broke the vase with a hammer.

Furthermore, the Subject of the sentence in the a.-examples of (9) and (10) is the Agent of the action, just as it is in examples such as (11). In the b.-sentences of (9) and (10), on the other hand, the Verbs taste and feel refer to sensations or perceptions, rather than actions. Thus (9) b. refers solely to the fact that the wood aroused in John's fingers a certain type of sensation, which John himself perceived in a certain way. Likewise, in (10) b., there is no

action involved, but rather the sentence refers to John's perception of the sensation of taste on his tongue. Furthermore, other Perception Predicates are manifested syntactically in a similar way, for example, the following:

(12) a. John saw the wood on the table.[3]

b. John heard a noise in his ears.

c. Bill sensed Mary's presence in the room.

d. Mary perceived a flaw in the woodwork.

In the examples of (12), as in (9) b. and (10) b., the surface Subject is interpreted not as an Agent, but simply as the Experiencer of the sensation or perception described by the Verb. Consider finally the c.-sentences in (9) and (10). These are similar semantically to the b.-sentences, in that there is an Experiencer - NP, which is contained in the to-phrase in surface structure, as well as a NP which denotes the object perceived--the surface Subject, in this case--but we find in addition a Predicate-AP which describes how the object of perception tastes, feels, etc. We note immediately that this same pattern is found associated with other Perception Predicates:

(13) a. The music sounded loud to John.

b. The pie looked burnt to Bill.

c. The stew smelled horrible to me.

d. The painting seemed ugly to me.

indicating once again that the relationship between semantic interpretation and syntactic structure is not arbitrary.

Now in order to account for these relationships, I proposed in

Chapter III to assign Verbs such as feel and taste three subcategorization features of the following form:

(14) a. ___ of NP by NP

b. ___ PP of NP to NP

c. ___ of NP AP (to NP)

Let us indicate the semantic interpretation of the three different senses of the Verbs feel and taste by means of the labels 'Action', 'Perception', and 'Appearance'. I shall assume that these are semantic markers which may be associated with the heads of phrases. Observe, now, that given a knowledge of the semantic features associated with a given Verb, it is possible to predict which of the subcategorization features in (14) must be associated with that Verb, and hence to predict the surface form of the sentences in which it may appear. Consider, for example, the Verbs look and sound. These Verbs, unlike feel and taste, have only the semantic marker 'Appearance' as part of their semantic structure. We would therefore predict that they would be allowed to be inserted into syntactic structures in accordance with the subcategorization feature (14) c., but not in accordance with either (14) a. or b. And in fact that is the case, as the following paradigms show:

(15) a. *John looked the wood.

b. *John looked the wood with his (own) eyes.

c. The wood looked smooth to John.

(16) a. *John sounded the noise with one ear.

b. *John sounded the noise in his ears.

c. The noise sounded loud to John.

Consider next the Verbs see, hear, sense, and perceive. These Verbs have the feature 'Perception', but neither of the features 'Action' or 'Appearance', from which it follows that we would expect them to be insertable in the environments specified by (14) b., but not in those specified by (14) a. or c. Again, this result is correct, as is shown by the following paradigms:

(17) a. *John deliberately heard the no se.

b. John heard a loud noise in his ears.

c. *The noise heard loud to John.

(18) a. *Bill intentionally perceived a flaw in the woodwork.

b. Bill perceived a flaw in the woodwork.

c. *The flaw in the woodwork perceived to Bill.

Finally, consider the Verbs look at, listen to, touch, sniff, etc. These have only the feature 'Action', and we therefore predict that they should only be able to occur in the environments specified by (14) a., a conjecture which is borne out by the facts:

(19) a. Bill deliberately listened to the noise they were making.

b. *Bill listened to the noise in his ears.

c. *The noise listened loud to Bill.

(20) a. John deliberately touched the wood.

b. *John touched the wood on his hand.

c. *The wood touched smooth to John.

Consider also the various nominal forms of these Verbs. In general, it seems that it is mostly Verbs with the subcategorization feature (14) c. that have derived nominal forms. Thus we find examples such as the smooth feel of the wood on Bill's fingers, the wood's smooth feel, the delicious taste of the soup, the soup's delicious taste, the loud sound of the music, the table's look, the ugly look of the table, the stew's horrible smell, and so on, although nominals with the marker 'Action' appear in a few limited contexts, e.g. John's first taste of the stew, our first look at the house. In addition we find our first sight of land and John's perception of the flaw, with the marker 'Perception'.

Finally, notice that we find various pseudo-transitive forms for these Verbs. We have for example, corresponding to look at and look, constructions of the following sort:

(21) a. John took a look at the table. (cf. also John had a look at the table)

b. The table has an ugly look to me.

and similarly, Bill took a taste of the soup, the soup had a terrible taste; the air has an awful smell; the bell has a tinkly sound; the wood has a smooth feel; and so on. Obviously, those nominals which have the marker 'Action' can occur in pseudo-transitive constructions with take, while those with the marker 'Appearance' require the Verb have. In addition, we may assume that the differenece between John took a taste of the soup and John had a taste of the soup reflects the difference between the semantic marker 'Action' and the marker 'Perception'.

1.2. We see, then, that not only may the same lexical structure be associated with a number of rather different syntactic forms, but also the same lexical structure may be associated with whole classes of lexical items which are phonologically and morphologically unrelated to one another. Notice, however, that while we can predict from the semantic nature of a given predicate the type of syntactic structure in which it may appear, the converse is not necessarily true. For example, given the lexical structure (14) a., it is not possible to determine the precise semantic nature of the Verb, nor the exact nature of semantic relation between the Verb and its Agent, or of the semantic relation between the Verb and its Object. Thus the Verbs make, hit, feel, and refuse may all be associated with this structure, but they also differ from one another in many ways. The Verb make, for example, is a process Verb (cf. "John made the statue in three days"), whereas hit is a point-action Verb (cf. John hit Bill for three days, which can only be interpreted as repetitive action). Likewise feel, though it is a process Verb, like make, is different from it in that it carries no presupposition that its Object was non-existent before the action was begun. Finally, make, hit, and feel all involve physical action, but refuse is a purely psychological action.

Consider next the lexical structure (14) b. Although we know that a Perception-Predicate which has neither the feature 'Action' nor the feature 'Appearance' must appear in the structures specified by (14) b., the converse is clearly false. Thus Verbs of possession,

for example, may appear in structures of exactly the same kind, if the analysis proposed in Chapter III is correct. Furthermore, if we insert a Verb such as have or own in this structure, the semantic relation of the to-phrase to the Verb is completely different. In one case, the Object of to is the Experiencer of a sensation; in the other, it is the Possessor of some object, although, as has already been mentioned, the first interpretation is correct, if the Object-NP refers to a sensation or perception, in what I have called pseudo-transitive constructions. Finally, if we allow an Agent-phrase, as well, then the Object of to is interpreted semantically as the Goal (the term is from Gruber (1965)) of the action, and may be either a 'place' or a 'person', as in John hit the ball to Mary, John hit the ball to the center of the park, etc.

Notice, however, that while Verbs with different semantic structures may be associated with the same lexical structure, the different interpretations assigned to a particular grammatical relation are mutually exclusive in the sense that no Verb may occur with more than one phrase having the grammatical relation in question to the Verb. There are, for example, no Verbs of Perception which can also take a to-phrase having the semantic interpretation 'Possessor', or one having the interpretation 'Goal'. Similarly, it would be impossible to have a Verb with two Agent-phrases, meaning something like "to force to buy", as though there were a hypothetical Verb "force-buy" which could be used in a sentence of the form I "force-buy"d the book by Bill with the interpretation "I forced Bill to buy the book."[5]

1.3. These facts suggest once again that the grammatical relations in terms of which lexical subcategorization features are defined are in fact simply semantic relations of a highly abstract sort. Furthermore, they suggest that the part of the semantic component which is responsible for relating lexical and syntactic structure to the class of universal semantic relations is organized in a manner which is similar in some respects to the way in which the phonological component relates underlying phonological representations to phonetic representations. Thus, just as an underlying phonological segment such as /d/ can be manifested phonetically either as a [d] or as a [t], depending on the environment in which it occurs, so the "underlying" grammatical relation "Agent-of" may be manifested semantically in a variety of ways, depending on the environment in which it occurs. In particular, of course, the semantic structure of the verbal element plays a crucial part in determining the specific semantic role of a given NP in the sentence in which it is contained.

Likewise, consider the to-phrase which occurs after the Direct Object in a number of different contexts. As has already been noted, the specific semantic relation of a to-phrase to the predicate varies systematically according to the semantic class to which the Verb belongs. Thus if the Verb belongs to the class of Perception Predicates, then the Object of to has the semantic relation 'Experiencer-of' to the Verb. If the Verb belongs to the class of predicates involving 'Possession', then the Object of the to-phrase receives the semantic interpretation 'Possessor-of'. Finally, if the Verb is

an 'Action' predicate, and if it takes an Agent-phrase, then the to-phrase contains what we may refer to as the Goal of the action.

We might express relationships of this sort in a manner somewhat reminiscent of the way in which disjunctively ordered rules are written in phonology:

(22) [to NP] → { 'Experiencer-of' / V [Perception] ... ——
'Possessor-of' / V [Possession] ... ——
'Goal-of' / V [Action] ... —— }

Similarly, the interpretation of the Direct Object-NP will also vary in a way that is dependent on the meaning of the main Verb. Restricting ourselves to the cases covered by (22), above, we may write the semantic rule for the interpretation of Object-phrases roughly as follows:

(23) [of NP] → { 'Object perceived' / V [Perception] ... ——
'Object possessed' / V [Possession] ... ——
'Affective object' / V [Physical action] ... —— }

Naturally, these rules are only crude approximations of the actual semantic rules involved, and in particular the lack of an adequate system for representing networks of semantic relations makes it difficult to put forward any really substantive proposals concerning the nature of such rules. However, they do serve to express in a formal way the disjunctive character of the rules that must, in one way or another, be involved in the interpretation of grammatical

relations. Later on we shall refine our formulation of such rules to a certain extent.

2.0. The One-Many Hypothesis

Continuing to examine the system of semantic relations and the mapping which relates them to grammatical functions such as "Agent", "Object", "Indirect Object", and so forth, let us see whether anything more explicit can be said about the nature of this mapping. I have already pointed out the disjunctive character of rules such as (22) and (23). Notice, furthermore, that kwhile a single grammatical relation may be (and in fact generally is) associated with more than one semantic relation, the opposite situation, namely, a mapping of a single semantic relation onto several grammatical relations, does not seem to arise.[6] This suggests that we may impose the following general constraint on the rules that map underlying grammatical relations onto the system of semantic relations that constitutes one part of the meaning of sentences:[7]

(24) The mapping of grammatical functions onto semantic relations is always one-many, and never many-one.

This constraint is to be interpreted as part of the evaluation measure for grammars of natural languages, and would have the effect of ruling out any grammar in which it is necessary for the mapping of grammatical relations onto semantic relations to be many-one, rather than one-many.[8]

Notice, however, that as it stands (24) is somewhat vague. In fact, we can immediately distinguish between a strong from and a

weak form of the one-many hypothesis. The strong form would maintain that the mapping of grammatical relations onto semantic relations must be one-many, and furthermore, that this relation must hold across the lexicon, or in other words:

(25) The mapping of grammatical functions onto semantic relations is always one-many, and never many-one, and furthermore the mapping is the same for all lexical items.

The strong form of the one-many hypothesis thus rules out any overlapping between lexical items in the mapping of grammatical relations onto semantic relations. The weak form of the one-many hypothesis, on the other hand, would require only that the mapping be one-many over the class of subcategorization features associated with each particular lexical item, and would thus permit some semantic relation SR to be associated with two different grammatical functions, GR_1 and GR_2, say, as long as GR_1 was associated with some lexical item LI_1 and GR_2 was associated with some lexical item LI_2, where LI_1 and LI_2 are distinct lexical items. We may thus formulate the weak form of the one-many hypothesis in the following manner:

(26) Within any given lexical item, the mapping of grammatical functions onto semantic relations must be one-many, and never many-one.

2.1. We have, then, two possible versions of the one-many hypothesis, the strong form (25), and the weak form (26). Which of these is correct? There is evidence which appears, at first glance, to support the weak form of the one-many hypothesis. Consider, for example, the relation between the Verbs give and receive, as they

appear in sentences such as the following:

(27) a. Bill gave the book to John.

b. John received the book from Bill.

Now it has been argued with some cogency by Gruber (1965) that there is a pervasive semantic pattern in English which he calls the 'Source-Goal' pattern. In both (27) a. and b., for instance, the NP Bill would be semantically the Source, while the NP John would be the semantic Goal of the action. In the case of Verbs of Possession, the presence of both a Source and a Goal implies an interpretation in which possession of some object is transferred from one person (the Goal). Thus both of the sentences in (27) describe a transaction such that before the event in question takes place Bill is in possession of the book, whereas after the event has taken place John is in possession of the book. Similarly, in pairs such as John bought the book from Bill, Bill sold the book to John, the NP Bill is in both cases the Source, while the NP John is the Goal, and both sentences describe an event in which possession of the book is transferred from Bill to John, the difference between buy and sell and other pairs being merely that in the former case the transaction must be accompanied by an exchange of currency of some type. Gruber notes, furthermore, that the pattern is not restricted to Verbs of Possession. Thus for Verbs of Motion we have sentences such as the ball rolled from A to B, where we might describe A as the Source of the motion, and B as the Goal of the motion. Likewise, we find the same pattern manifested in the case of more "abstract" actions such as teaching and learning. Thus in the pair of sentences John taught Bill French, Bill

learned French from John, the person who knows French before the action described by the Verb, while the Goal is Bill, the person to whom this knowledge is imparted, as a result of the action expressed by the Verb.

Now observe that in general a from-phrase is interpreted as the semantic 'Source' while a to-phrase is interpreted as the 'Goal'. However, the converse is not in general true. Recall, for example, that the subcategorization features proposed for give and receive in Chapter III were of roughly the following form:

(28) a. give: ___ (PP) of NP to NP by NP

b. receive: ___ PP of NP to NP from NP

This means that the semantic Goal will be associated with an 'underlying' to-phrase in both cases, but that the semantic Source is associated with the from-phrase in the case of receive and with the by-phrase in the case of give. These Verbs thus provide a clear counter-example to the strong form of the one-many hypothesis, assuming that Gruber's analysis is correct, since we have a situation in which the semantic relation 'Source-of' is associated with two different grammatical relations.[9]

On the other hand, pairs such as give and receive are consistent with the weak form of the one-many hypothesis, since within each of the lexical items give and receive, the mapping of grammatical functions onto semantic relations is one-many, and not many-one.

Unfortunately, however, the weak form of the one-many hypothesis is also inadequate. Consider, for example, a Verb such as rent, which may appear both in sentences of the form (27) a. and also in sentences

of the form (27) b.:

(29) a. We rented the house to Bill.

b. Bill rented the house from us.

Here we have a situation in which subcategorization features of the form (28) a. and (28) b. are both associated with a single phonological form. Hence, by the conventions proposed in Chapter II, these must be collapsed into a single feature of the following form:

(30) rent: NP ____ (PP) of NP to NP $\left\{\begin{array}{l}\text{by NP}\\ \text{from NP}\end{array}\right\}$

However, it is still the case that the single semantic relation Source is associated with two different grammatical functions. Furthermore, the mapping of grammatical functions onto semantic relations is many-one within the single lexical item rent, thus providing a counter-example to even the weak form of the one-many hypothesis.

2.2. We see, then, that both the strong form and the weak form of the one-many hypothesis are too strong. These observations suggest that the phonological form of lexical items is relatively unimportant in determining the semantic interpretation of sentences. However, if that is the case, then what are the precise conditions in which overlap is permitted in the semantic interpretation of grammatical functions, if indeed there are any such conditions at all?

A closer consideration of the examples just discussed suggests that the answer lies in the nature of the relationship between subcategorization conditions, rather than in the particular way that the subcategorization conditions happen to be associated with phonological forms. Notice that both in the case of give and receive and in the

case of rent, two subcategorization features are involved. Furthermore, in both cases the two features have the property that they can only be collapsed by means of the braces notation, as shown in the lexical entry (30) for the Verb rent. This naturally suggests that two grammatical functions GR_1 and GR_2 may be mapped onto a single semantic relation SR, just in case they are mutually exclusive with respect to the subcategorization features in which they appear.

Stating the condition in this way will immediately allow us to account for both give-receive and rent, since the relevant subcategorization features are collapsible by means of the braces notation. Let us define the notion "lexical entry", in the following manner:

(31) Given the set of subcategorization conditions for a lexical item, expand them in terms of the braces notation. The items derived by this expansion are lexical entries.[10]

We can now restate the one-many hypothesis as follows:

(32) For any given lexical entry, the mapping of grammatical relations onto semantic relations is one-many, and never many-one.

Notice that (31) automatically implies that two grammatical relations may not be mapped onto the same semantic relation, if the subcategorization features with which they are associated are collapsable by means of the parenthesis notation. To take a concrete example, consider the pair of sentences:

(33) a. John hit the ball.

b. John hit the ball to Bill.

In order to account for these two examples, we need the following pair of subcategorization conditions:

(34) a. ___ of NP by NP

b. ___ of NP to NP by NP

These, in turn, may be collapsed by means of the parenthesis notation into the single feature (35):

(35) NP ___ of NP (to NP) by NP

If we take GR_1 and GR_2 to be the Direct Object relation and the to-phrase relation, respectively, then (32) claims that it is impossible for there to be a lexical item, or pair of lexical items, such that the Direct Object in (34) a. and the to-phrase in (34) b. are mapped onto the same semantic relation SR. This conclusion is certainly correct for the specific examples in (33), and I can think of no examples which contradict the general claim. For example, I know of no Verb having an optional Agent-phrase, such that some NP in a non-Agentive sentence is mapped onto the same semantic relation as the Agent-phrase.

There are numerous examples, on the other hand, which support the claim that two grammatical functions GR_1 and GR_2 may be mapped onto the same semantic relation SR, just in case the subcategorization features F_1 and F_2 with which they are associated are collapsable by means of braces. One particularly simple example of this sort has been discussed by Gruber (1965). Gruber notes that there are a number of Verbs which take Directional phrases, for which the head Preposition is apparently optional. Consider, for example, the following pairs:

(35) a. I walked across the bridge in two minutes.

b. I walked the bridge in two minutes.

(37) a. John swam across the channel in record time.

b. John swam the channel in record time.

(38) a. Bill ran through a stop-light.

b. Bill ran a stop-light.

Gruber argues, quite correctly, I believe, that to use an optional deletion transformation in cases of this sort is wrong, and that these are specific lexical facts, rather than general syntactic facts. On the other hand, it is clear that however we analyze these pairs syntactically, the NP's the bridge, the channel, and a stop-light have exactly the same semantic relation to the Verb in both the a.- and the b.-sentences in (36)-(39), respectively. Suppose that we simply derive the a.-sentences from structures containing a Directional-phrase, and the b-sentences from structures containing a Direct Object-NP. We will thenneed two subcategorization features such as the following, in order to account for, say, (36) a. and b.:

(39) a. ___ across NP by NP

b. ___ of NP by NP

But now observe that these two features can only collapse by means of the braces notation:

(40) NP ___ $\left\{\begin{matrix}\text{across NP} \\ \text{of NP}\end{matrix}\right\}$ by NP

which means, according to (32), that the Object-NP and the Directional-phrase should be able to be mapped onto the same semantic relation, as is indeed the case.

Somewhat more interesting are examples, also discussed by Gruber, in which two subcategorization features of the form (39) are associated with different phonological forms. Thus consider the relation between enter and go into, exit and go out of, cross and go across, etc.:

(41) a. Bill entered the room.

b. Bill went into the room.

(42) a. Mary crossed the bridge.

b. Mary went across the bridge.

As Gruber puts it, it is as if the Prepositions into, out of, and across were, in a sense, incorporated into the Verbs enter, exit, and cross, respectively. In the framework proposed here, the possibility of incorporation follows automatically from the modified one-many hypothesis (32). Thus the Verb enter, for example, would be assigned the subcategorization feature (43):

(43) ___ of NP by NP

while the Verb go would have, among others, a subcategorization feature such as the following:

(44) ___ into NP by NP

Just as in examples such as (36)-(38), these two features may only be collapsed by means of the braces notation:

(45) NP ___ $\begin{matrix} \text{of NP} \\ \text{into NP} \end{matrix}$ by NP

which means, according to (32), that it should be possible for both the Direct Object of enter and the Directional-phrase of go to be mapped onto the same semantic relation, as in fact happens in this case.

Note once again that examples such as (36)-(39) and (41)-(42) refute both the strong and the weak forms of the one-many hypothesis. On the other hand, the revised one-many hypothesis (32) allows both sets of examples to be accounted for in terms of a single general principle. The phenomenon of incorporation is thus exactly parallel to give-receive and rent, in that the possibility of mapping two different grammatical functions onto the same semantic relation depends crucially on the relationship between the subcategorization features in which these grammatical relations may appear, rather than on the particular phonological form with which the subcategorization features are associated. There are many further examples which support the modified one-many hypothesis. To take only one, let us consider the relationship between the Agentive and non-Agentive senses of feel, taste, etc., or likewise the relation between the Verbs see and look at, hear and listen to, etc. The difference between these Verbs is, I have argued, reflected in subcategorization features such as the following:

(46) a. ___ PP of NP to NP (by NP)

b. ___ of NP by NP

Thus (46) a. accounts for sentences such as the following:

(47) a. John felt the cloth (on his fingers).

b. Bill saw the house.

c. Harry heard the music.

while (46) b. accounts for Agentive sentences such as these:

(48) a. John felt the cloth (with his fingers).

b. Bill looked at the house.

c. Harry listened to the music.

Notice, however, that the semantic relation of the NP in Subject position to the Verb is the same in both (47) and (48). In both cases the animate Subject must be the Experiencer of the Verb of Perception. But the surface Subject of the sentences in (48) derives from an Agent-phrase, so that we have once again a situation in which the mapping of grammatical functions onto semantic relations is many-one Observe, however, that this result is exactly what is predicted by the modified one-many hypothesis, for if we examine the subcategorization features (46) a. and b., we see immediately that they can only be collapsed by means of the braces notation:

(49) ___ ⟨PP⟩ of NP $\left\{\begin{matrix}\text{to NP}\rangle \\ \text{by NP}\end{matrix}\right\}$ (by NP)

3.0. The Intrinsic Content of Grammatical Relations

So far we have discussed the mapping of grammatical relations onto semantic relations in purely formal terms, without taking into consideration the fact that grammatical relations are themselves semantic relations of a highly abstract kind. However, it is clear that the grammatical relations in terms of which lexical items are subcategorized have an intrinsic semantic content of their own, which plays an important role in the interpretation of sentences. Consider, for example, the Verbs of Perception just mentioned. We have observed that both a by-phrase and a to-phrase may have the semantic interpretation 'Experiencer-of'. Observe, however, that even though the Agent-NP in a sentence such as John felt the cloth

with his fingers must be interpreted semantically as the Experiencer, it is nevertheless the case that the NP John is also an Agent. In other words, the grammatical relation 'Agent-of' retains its "intrinsic" semantic content, even when it must be mapped onto some other semantic function, such as 'Experiencer-of'.

Problems of a similar nature arise in phonological theory in connection with the interpretation of the distinctive features (cf. Chomsky and Halle (1968)). Although we may succeed in giving an account of the phonological rules of a language which is formally correct, the resulting grammar will nevertheless be needlessly complex, unless we take into consideration the fact that the distinctive features, even in their purely classificatory function, have intrinsic phonetic content.

In phonology, a theory which fails to take account of the fact that distinctive features have intrinsic phonetic content is defective in at least two ways. First of all, such a theory has no way of dealing with the fact that certain underlying vowel and consonant systems are more natural than others, or, to put the matter in slightly different terms, that certain phonological systems are less 'marked' than other systems. Secondly, a purely formal theory of phonology cannot account for the fact that a great many phonological rules, or parts of rules, are perfectly predictable on universal grounds. Again, it is a matter of 'markedness': some types of rules are more natural, and hence less 'marked' than other types of rules. In a theory which is overly formal, there is no way of constructing an evaluation measure which will reflect the degree of naturalness of

underlying phonological system, nor is there any way of representing the fact that some rules are more natural than other rules. Thus any four-vowel system that is possible within system of the distinctive features will be just as complex as any other four-vowel system, and likewise any rule which uses n symbols will be evaluated as having a complexity equal to that of any other rule which uses n symbols.

The problems that arise in connection with 'underlying' systems of grammatical relations and the semantic rules which map them onto the set of universal semantic relations are precisely analagous to those which have been encountered in phonological theory. Just as the distinctive features, even in their purely classificatory function, have intrinsic <u>phonetic</u> content, so the grammatical relations, even though they are definable in syntactic theory in a purely formal way in terms of relationships between nodes in P-markers, have intrinsic <u>semantic</u> content. Furthermore, syntactic theories which fail to take account of this fact are defective in ways that are quite analogous to the ways in which overly formalistic phonological theories are defective.

Consider first the system of underlying grammatical relations in terms of which the lexical items of each language are subcategorized. It has been noted repeatedly by linguists of all persuasions that the same basic grammatical relations tend to appear over and over again in the most diverse languages. Traditional notions such as 'Agent', 'Direct Object', 'Indirect Object', 'Benefactive', 'Goal', 'Source', and so on, if not, strictly speaking, universal, are at least so

similar in the languages of the world that for practical purposes there is little conceptual difficulty involved in transferring the use of these terms from one language to another perfectly freely.[11] Clearly, this is not an accident. Furthermore, it is equally clear that systems of grammatical relations are subject to conditions of semantic naturalness that are quite analagous to the conditions of phonological naturalness that restrict the class of possible underlying phonological systems permitted in natural languages. Just as it is natural for the distinctions of height and backness to be primary in vowel systems, in contrast to features such as rounding and lowness, which we expect to be secondary, so it is apparently natural for notions such as 'Agent', 'Direct Object', 'Indirect Object', and so forth, to be primary in systems of grammatical relations, in comparison with other distinctions, which may or may not be found in any given language.

Consider next the rules which relate systems of grammatical relations to the set of possible semantic relations specified by universal semantic theory. Let us consider, in particular, the rules for the interpretation of <u>to</u>-phrases in English which were proposed in the preceding section. It seems fairly obvious that a grammar of English which has to contain a rule of roughly the form:

(50) $\left\{\begin{matrix}[\text{to NP}] \\ [\text{by NP}]\end{matrix}\right\} \longrightarrow$ 'Experiencer' $/ \_\_ \begin{matrix}\text{V} \\ [\text{Perception}]\end{matrix} \ldots \_\_\_\_$

is missing an important fact, namely, that a rule of this sort is one which we should expect to find in the grammar of any language.

Likewise, the rule proposed by Chomsky (1972) which allows an animate Agent to be interpreted optionally as a personal Agent is clearly universal, and therefore should not need to be part of the particular grammar of English.

The only way to account for facts of this kind, it seems to me, is to admit that grammatical relations have an intrinsic semantic content, of a highly abstract sort, and that there are principles which govern the interpretation of grammatical relations and impose naturalness conditions on systems of grammatical relations, which are universal in character, and which therefore do not need to be included in the grammars of particular languages. Furthermore, it seems natural to hypothesize (though for the moment, it is nothing more than a theoretical possibility) that these principles, like the "markedness" conditions proposed for phonology by Chomsky and Halle, are not absolute universals, but rather state conditions of naturalness for semantic rules and for systems of grammatical relations.

It seems to me that there is a definite possibility--one which is well worth exploring--that given the theory of grammatical relations proposed in this work, it may be unnecessary for there to be <u>any</u> language-specific semantic rules governing the interpretation of the 'underlying' grammatical relations, in terms of which the lexical items of each language are subcategorized. Evidence in favor of this hypothesis would constitute the next step toward the verification of the claim made at the beginning of this chapter that the form of particular grammars is largely determined by semantic considerations.

3.1. There are a number of obvious ways that one might modify the theory proposed in the preceding chapters, so as to allow universal semantic rules such as (50) to link up with the grammar, thus making it unnecessary for such rules to be built into the semantic components of each particular language. Suppose, for example, that rather than having the by- or to-phrase in (50) mapped directly onto the semantic relation 'Experiencer-of', we assume instead that there is a semantic feature [+Agent] associated with the Object of the Preposition by. Likewise, let us assume that there is a semantic feature [+Dative] associated with the Object of the Preposition to. We can then specify that whenever the lexical insertion rule for a Verb with the semantic feature [+Perception] applies in the environment of a NP with either of the features [+Agent] or [+Dative], it automatically "links" with the universal semantic rule (50), adding the feature [+Experiencer] to the NP in question.

Notice that semantic features of this sort are necessary in any case in order to distinguish the different uses of Prepositions. Thus, for example, we must somehow distinguish the sense of by which occurs in Bill was hit by John from the sense of by which occurs in the sentence John was standing by the door. Furthermore, notice that these features must be taken account of in the subcategorization features for Verbs. Thus the Verb hit must be subcategorized to take the Preposition by, plus a NP with the feature [+Agent], whereas the Verb stand must be subcategorized to take the Preposition by, plus a NP with the feature [+Location]. Which features are

allowed to occur with the Object of any given Preposition is, of course, a semantic property of each particular Preposition.

Having thus separated the semantic properties of lexical items which are language-particular from universal semantic relationships such as those expressed in rule (50), we may reformulate the latter in the following manner.

(51) $$\left\{ \begin{matrix} \text{NP} \\ [+\text{Dative}] \end{matrix} \right\} \longrightarrow [+\text{Experiencer}] \quad / \quad [\overset{\text{V}}{+\text{Perception}}] \cdots \_\_$$

(51) is a universal semantic rule which links with any lexical insertion rule which inserts A Verb of Perception into some syntactic structure containing a NP marked with either of the features [+Agent] or X [+Dative], and automatically adds to the NP in question the feature [+Experiencer].

To take a specific example, let us assume that the Preposition by, in English, is subcategorized in the following manner:

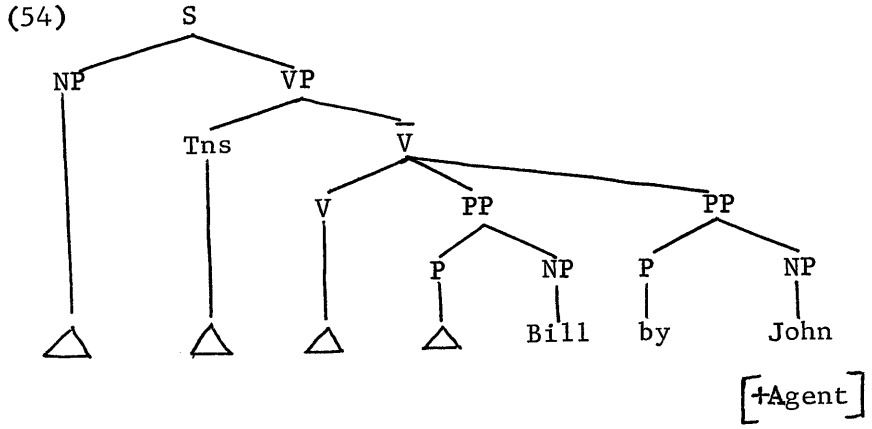
(52) by: $\_\_ \left\{ \begin{matrix} \text{NP} \\ [+\text{Agent}] \\ [+\text{Location}] \end{matrix} \right\}$

Furthermore, let us assume that the Verb look at is subcategorized in roughly the following manner:

(53) Look at: ___ NP by $\overset{\text{NP}}{[+\text{Agent}]}$

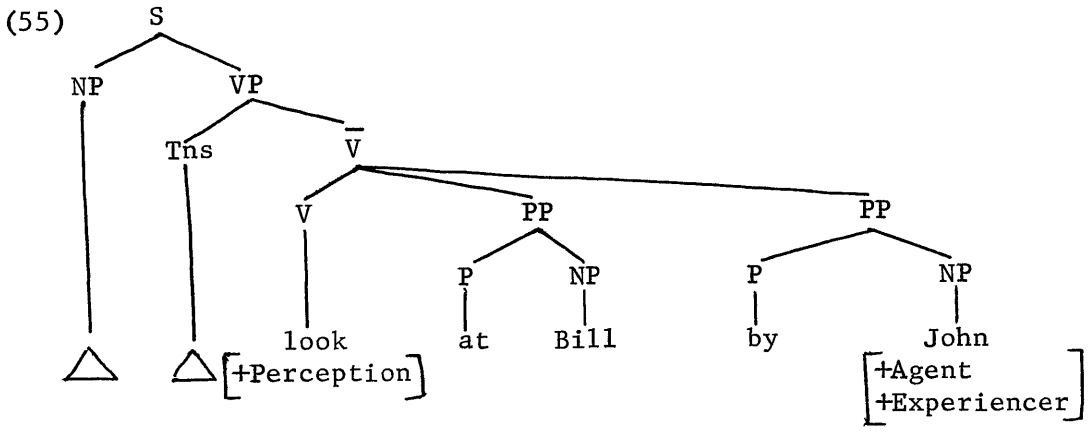
After lexical insertion has taken place on the PP and NP cycles, we will have a structure of the following form?

(54)



Looking at the subcategorization feature for the Verb look at, we see immediately that the conditions for lexical insertion are met, on the $\bar{V}$-cycle. Furthermore, with the subcategorization condition for look at, and the feature +Experiencer is therefore automatically added to the Agent-NP John, along with the insertion of the Verb look at. The result is a structure of the following sort:

(55)



Observe that since the universal semantic rule (51) is dependent on the presence of the feature +Agent , rather than on the presence of the Preposition by, exactly the same device can be used to account for the interpretation of analagous sentences in languages in which the gramma-

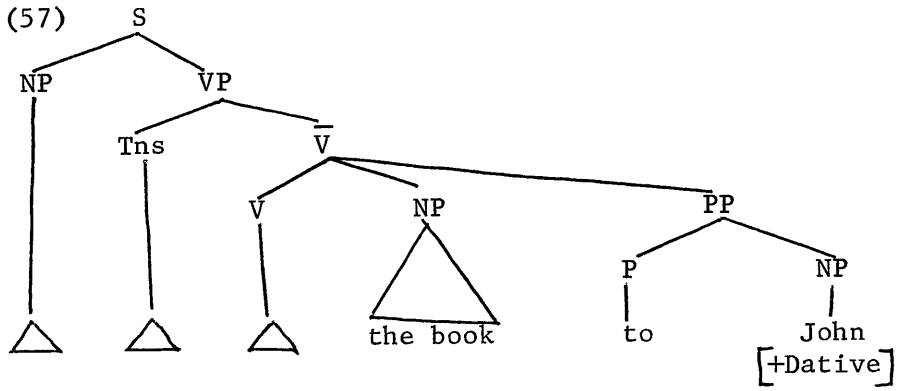
tical relation Agent-of is signalled by some entirely different morphological device. Thus, for example, in a language in yich the Agent-NP is marked with the Instrumental case-ending, the semantic rule (51) will link with the lexical insertion rule for a Verb corresponding to the English Verb look at in exactly the same manner, as long as we specify in the grammar of that language that NP with the Instrumental ending require the feature +Agent .

There are many other semantic rules of this type which can be eliminated entirely from the grammars of particular languages by means of this device. Consider, for example, the other rules for interpreting to-phrases in English that were discussed briefly in the preceding section. The Object of the Preposition to, it will be recalled, must be interpreted as 'Possessor', in the case of Verbs of possession, but as 'Goal', in the case of Verbs of action. Assuming that to requires that its Object have the feature +Dative in all of these cases, we can now rewrite the rule for interpretion to-phrases in the more general form shown below:

(56) $$\overset{\text{NP}}{[+\text{Dative}]} \left\{ \begin{array}{lll} [+\text{Experiencer}] & / & \overset{\text{V}}{[+\text{Perception}]} \ \ldots \\ [+\text{Possessor}] & / & \overset{\text{V}}{[+\text{Possession}]} \ \ldots \\ [+\text{Goal}] & / & \overset{\text{V}}{[+\text{Action}]} \ \ldots \end{array} \right\} \text{———}$$

Suppose now that we generate a structure such as the following:

(57)

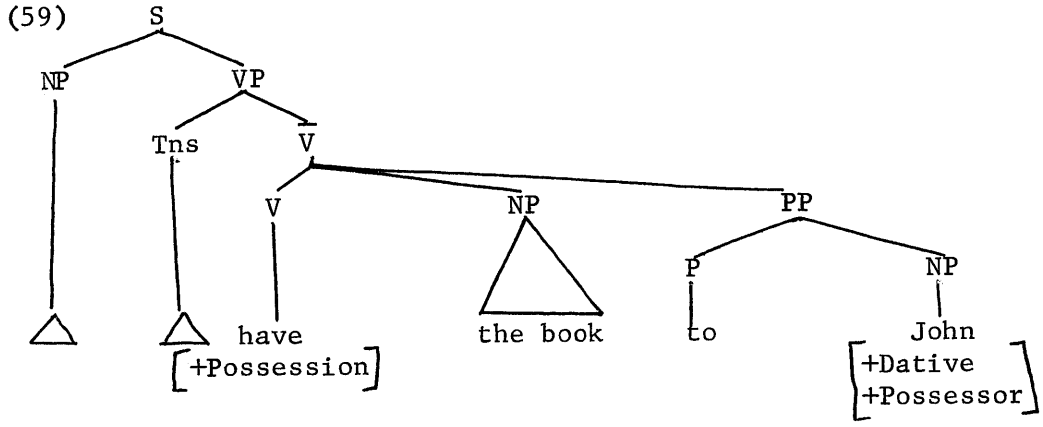


The subcategorization feature for a Verb such as have must have roughly the following form:

(58) have: $\left[\underline{\quad}\ \text{NP}\right]$ $\left[+\text{Possession}\right]$ to $\left[\underline{\text{NP}}\right]$ $\left[+\text{Dative}\right]$

Looking at the structure (57), we see that the conditions for insertion of have are met on the $\bar{V}$-cycle. Furthermore, the lexical insertion rule for have can link with the second part of the semantic rule (51). Hence, the feature [+Possessor] will automatically be added to the NP John, along with the lexical insertion of the Verb have, resulting in a structure such as the following:

(59)



Consider next the Verb give, as it occurs in a sentence such as

Bill gave the book to John. This Verb, like the Verb have, is a Verb of possession. However, it is also a Verb of action, since it requires an Agent. Hence, it must be subcategorized roughly as follows:

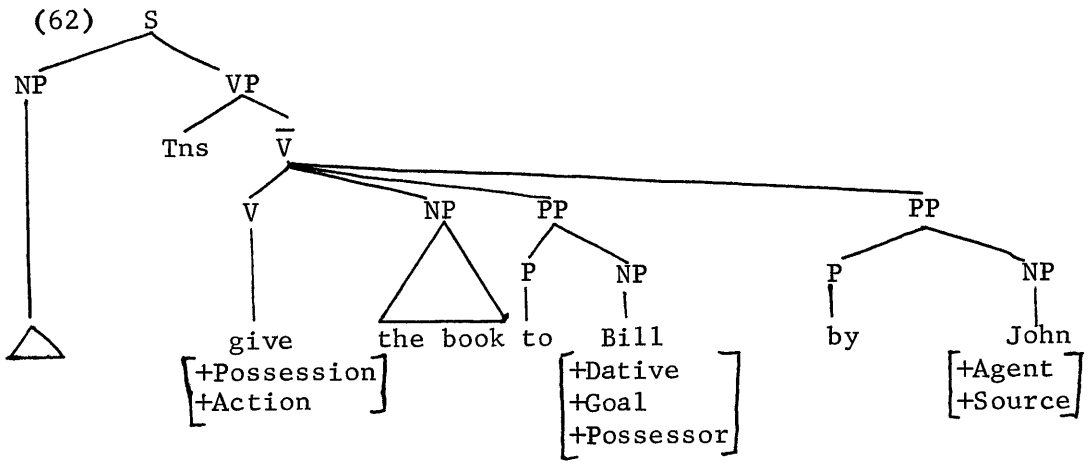
(60) give: [___ / +Possession / +Action] NP to [NP / +Dative] by [NP / +Agent]

But now observe that if we insert give in the proper environment, it will be able to link with both the second and the third parts of rule (56), above. Therefore, the NP marked [+Dative] will automatically acquire the features [+Possessor] and [+Goal], as is correct, since the NP John in the sentence Bill gave John the book is not only semantically the 'Possessor-of' the book, but is also the 'Goal-of' the action of giving, the Agent of which is Bill. Furthermore, recall that there is a semantic rule which interprets the Agent of Verbs such as give as the sematnic 'Source'. This fact can now be accounted for by means of a semantic rule of the following kind:

(61) NP [+Agent] [+Source] / V [+Possession / +Action] ... to [NP / +Dative] ... ____

This rule states that a NP marked [+Agent] is given the feature +Source, just in the case the Verb is either a Verb of possession or action, and the sentence also contains a NP marked [+Dative]. This rule will then link with the subcategorization feature for give, automatically giving the Agent-NP Bill in the example above the additional feature +Source.

Thus the result of applying the lexical insertion rule for give will be a structure such as the following:



where all three of the features [+Goal], [+Possessor], and [+Source], are supplied automatically through the linking of the lexical insertion rule with the universal semantic rules (56) and (61). Notice that in the case of a Verb such as roll, the universal semantic rules will correctly mark the Object of a to-phrase with the feature [+Goal], but not with the feature [+Possessor], since Verbs such as roll have the semantic feature [+Action], but not the feature [+Possession]. Thus the NP Bill in John rolled the ball to Bill is interpreted as the Goal of the action of rolling, the Agent of which is John, but not as a Possessor.

3.2. Obviously, there will be a great many more redundancies of this sort which can now simply be eliminated from the lexical specifications of Verbs in the grammars of particular languages. This, in turn, raises the possibility that the only interpretive semantic rules which are needed in the grammar at all are, in fact, universal semantic rules, and that the grammars of particular languages are fully describable in terms of a few highly abstract features such as [+Agent], [+Dative], [+Instrumental], and so forth, plus the grammatical relations definable

at the level of surface structure.

This hypothesis, if it can be maintained, combined with the fact that there is no necessity for a level of deep structure, would be sufficient to demonstrate that the form of particular grammars is determined by semantic considerations. The theory of grammar would then have roughly the following form. Semantic theory specifies an infinite set of representations which are universal, and hence common to all languages. Each language abstracts from the set of universal semantic relations a semantic system of its own, which is then mapped onto the set of surface structures specified by the PS rules for that language, by means of lexical insertion rules, structure-preserving rules, root transformations, minor movement rules, and so forth. The problem which faces a child who is attempting to learn a language is roughly as follows. Given a set of lexical items, the distribution of these lexical items in surface structure, and a knowledge of the meaning of sentences, he must attempt to construct a set of PS rules and a set of highly abstract semantic notions, which are sufficient to relate the meanings of sentences to their surface forms, given the limitations on the class of possible structure-preserving rules, the class of possible subcategorization features associated with lexical items, and the conditions of naturalness which govern the mapping of grammatical relations onto semantic relations.

The theory proposed in this book thus suggests that the grammar of each language represents a particular solution to the problem of associating surface form with meaning, and that there is no separate

level of linguistic organization which has properties that can be determined for each language without reference to meaning.

Additions - Chapter VI

[1]This is, of course, an idealization. Every language contains exceptions to rules, frozen forms, idioms, and so forth. No actual language maintains a perfectly systematic relationship between form and meaning. This merely reflects the fact that grammars change. Furthermore, it is clear that an adequate account of linguistic change is itself dependent on an idealized model of linguistic structure.

[2]In the case of the "causative" forms in (1) d. and e., we could either allow for an optional (by NP) phrase in the subcategorization feature for the Verb interest, or else, following the analysis proposed in Chapter II, allow VP's to occur in the causative construction.

[3]It is an interesting phenomenological fact that a thing perceived visually is subjectively located at a point external to the perceiver, not in the organ of vision. This fact is reflected linguistically in the impossibility of a sentence such as *John saw the wood in his eyes. The sensations of touch, smell, and taste, on the other hand, are subjectively associated with the organ of sensation. There are other interesting facts of this sort. Thus noises may be located in the ears, or in a general area external to the perceiver, but not apparently in a specific location. Thus one can say Bill heard a noise near the table, by the tree, upstairs, etc., but not *Bill heard a noise on the table, beside the tree, etc. Furthermore, notice that in the case of vision and hearing an Instrumental-phrase can occur with both see and hear, which refer to perceptions, and with look at and listen to, which are actions. However, if the Object of the Instrumental-phrase is the organ

of perception, it goes more naturally with the Perception Verbs, e.g. I saw the explosion with my (own) eyes, I heard it with my (own)ears, but ?I looked at the house with my eyes, ?I listened to the sound with my ears. (Notice, however, I looked at it with my one good eye, I listened to it with the ear that wasn't deaf, which seem all right.) Perhaps the point is that for taste, touch and smell, the organ of sensation is conceptualized as an 'instrument' only when the Verb refers to an action, whereas for vision and hearing the organs of sensation are conceptualized as 'instruments' even in the case of simple perception. This in turn would seem to be related to the fact that the object perceived is, for both vision and hearing, located outside the perceiver, so that the organ would then be subjectively perceived as an 'instrument', which allows the sight or sound in question to be 'received' and passed on to the brain, whereas for taste, touch, and smell the object perceived is not subjectively separable from the contact with the organ of sensation which is responsible for producing the sensation.

[4]Sentences (19) b. and (20) b. are interpretable, of course, but only in the Agentive sense. Notice that the sense of touch which occurs in The chair was touching John's arm, the chair touched the table, etc. requires a non-personal Agent. All of the true Perception Predicates, on the other hand, such as look at, listen to, feel, smell, etc., require a personal Agent, and do not allow non-personal Agents.

[5]For similar reasons, I would reject attempts such as those of Postal and others (cf. Postal (1970), McCawley (1968), etc.) to derive complex predicates such as remind and kill from bi-propositional struc-

tures by means of rules such as Predicate-Raising. A sentence such as "X reminded Y of Z" cannot be derived from the same source as the sentence "X struck me as being like Z", or even from the source which underlies "X made Y think of Z", since these sentences have different distributions. On the other hand, there are certainly lexical and semantic relationships between these sentences. For example, both remind and strike require Indirect Object-NP's in their lexical representations. Furthermore, in the sense of remind that Postal is interested in, it requires a non-personal Agent in its lexical representation, and the same is true of strike (again, in the sense of it strikes me that... or he strikes me as..., as opposed to the sense of John struck the wall with a hammer, which is quite different). Furthermore, think of also takes an Indirect Object-NP in its lexical representation, as well as a Direct Object with the Preposition of, as in I thought of an elephant. Thus the only difference between the lexical representations of Bill reminds me of an elephant and I thought of an elephant is that the former has a non-personal Agent, whereas the latter does not. Similarly, the sense of remind in John kindly reminded me of my appointment has a personal Agent in its lexical representation; and so on. It is difficult to see how relationships of this sort could be naturally accounted for in the framework advocated by Postal, McCawley, etc.

Notice, incidentally, that the causative analysis proposed in Chapters II and V is completely different from the one proposed by McCawley. My analysis is intended only as a way of accounting for morphological relationship between the transitive and intransitive forms of melt, burn, boil, etc.

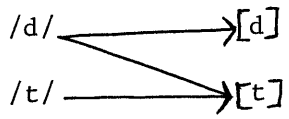
[6]This statement will be qualified shortly.

[7]I am indebted to Noam Chomsky for suggesting this formulation, and also for suggesting the strong and weak forms of the constraint discussed below.

[8]I leave open the question of whether (24) is to be interpreted as an absolute constraint on the functioning of grammatical rules, or whether it could be a type of markedness constraint, which would merely make many-one mappings more expensive than one-many mappings. See Chomsky (1972) for discussion of the distinction.

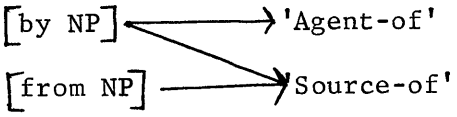
[9]Notice that formally this situation is analagous to cases of overlapping in phonology. Thus consider a case in which underlying /t/ is mapped onto phonetic [t], while underlying /d/ becomes either phonetic [d] or phonetic [t], depending on context. Diagrammatically, the mapping would be as follows:

(A)



The mapping of grammatical relations onto semantic relations in the case of give and receive has exactly the same form:

(B)



[10]Note that in the case where two subcategorization features share no part of their environment in common, it is trivially true that they may be collapsed by means of the parenthesis notation, thus giving rise to the possibility of complete overlap in the mapping of grammatical relations onto semantic relations.

[11] There are, to be sure, dangers involved in this practice, as well, as has been emphasized many times by those working within the tradition of anthropological linguistics. Obviously, it is necessary, when working on a language of which one is not a native speaker, to take great care not to impose notions derived from one's own language onto the language under investigation. Nevertheless, it seems to me that the dangers of using the known to investigate the unknown have been somewhat exaggerated, on occasion.

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